SPECIES IN DANGER

PERCEPTIONS, CONSERVATION & MANAGEMENT OF WILD BIRDS IN TRADE

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TRAFFIC International

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Edited by

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We would also like to express our gratitude to all those who supported this project in the countries visited. Special thanks are given in the individual country profiles to those individuals and organisations that made especially important contributions to this report.

Comparison and analysis of trade data would not have been possible without the assistance of the World Conservation Monitoring Centre, who prepared net trade tables and provided global trade information from the CITES database, and TRAFFIC USA, who provided US trade information.

Finally, we wish to express our sincere gratitude to Steven Broad for his assistance during all phases of this project.

PREFACE

The international bird trade has become the focus of increasing attention and criticism from a variety of non-governmental organisations and some national governments. By and large, the recent discussion and controversy have focused on the perceptions and opinions of various factions within the key consumer areas of the United States and Europe. Little effort has been made to solicit the views of range countries with respect to utilisation and export of their avian wildlife resources. Further, the importance of the wild bird trade to the economies of range countries has not been assessed, nor have the management programmes for wild birds within these countries been reviewed.

Recognising an imbalance in the current discussion of the international bird trade, the TRAFFIC Network recommended at its annual meeting in 1990 that the views, perceptions, management programmes and economics associated with the trade in key producer countries be evaluated. In collaboration with, and supported by a generous grant from, the World Wide Fund for Nature (United Kingdom), TRAFFIC developed a project to examine the perceptions of the current trade and trade controls within five producer countries, and to identify methods for developing and implementing sustainable use programmes in areas where trade did not appear to be adequately controlled. The present report is the result of this project.

The project was endorsed by the CITES Secretariat. The Secretariat explained the objectives of the project and the purpose of individual country visits to the CITES Management Authorities of the countries selected. The Secretariat additionally requested that the governments provide what assistance they could.

Five countries were visited in the course of this study: Argentina, Guyana, Indonesia, Senegal and Tanzania, providing a picture of the trade in each of the major exporting regions of South America, Asia and Africa. All five have national policies for the 'sustainable use of wildlife', and are Parties to CITES. In addition to being among the largest known suppliers of wild-caught birds to world markets, based on available trade data, these countries are the principal source of wild-caught birds for the pet markets in the United States and Europe. They would therefore obviously be most affected if US or European Community trade ban campaigns were successful.

A standard protocol for acquiring information regarding the wild bird trade was followed, which included: interviews with senior officials in the agencies responsible for wildlife management; collection of information regarding government trapping and export controls; compilation of data on export volumes; and meetings with bird traders. In addition to the principal researcher, a second individual, or 'counter-part', familiar with the country, its culture and language collaborated in the preparation of the country reports for Argentina, Indonesia and Senegal.

CITES Management Authorities were the principal point of contact within each national government. Interviews were held with senior government officials in the Management Authority, with officials in the Scientific Authority (when the latter existed), with exporters associations, and local conservation NGOs (if active in the country). In those instances where the CITES Management Authority was under the authority of a larger government body (e.g. a Ministry of Agriculture) the appropriate government Minister or other senior official was also informed of the purpose of the project and interviewed. This was particularly important with respect to determining national government policies regarding the harvest of wild birds for export.

Everyone contacted during the course of this study was helpful. At no time did the researchers have the impression that information was being withheld or that officials or exporters were attempting to obfuscate the process. On the contrary, records were provided willingly and, when time permitted, exporters gave the researchers tours of their holding facilities.

Information collected during each visit was compiled in a draft country report. This report was given to the head of the CITES Management Authority for review and comment prior to completion of individual country visits. As a result, technical points were often clarified and misunderstandings avoided.

The country profiles in Part 3 are based largely on the information provided by government representatives and traders. They document the extreme variation in government procedures and perceptions of the requirements for the sustainable use of wildlife. The country profiles do not attempt to evaluate the efficacy of the governments' trade-control programmes, nor do they attempt to provide an in-depth analysis of the validity of the views and philosophies of those interviewed. Under no circumstances should they be construed as an endorsement of the procedures and administrative controls reported by the countries visited.

As a follow-up to the country visits, a symposium was convened by TRAFFIC and WWF to provide governments of both producer and consumer countries the opportunity to discuss the findings of the individual studies, and to make recommendations for better management of wild bird resources. As the symposium included representatives of authorities in countries that have opted to severely restrict or ban trade in wild-caught birds, as well as representatives from the major

import markets, the present report has benefitted significantly from the proceedings of this meeting.

In addition to the country profiles in Part 3, this report provides an overview of the larger international bird trade (Part 1) and an analysis of trade-related economics (Part 2). Finally, in Part 4, an attempt has been made to identify the necessary national policy framework and implementation strategies that are necessary if wild bird resources are to be wisely exploited.

Some may feel that this report raises more questions than it answers, and they may well be right. Rather than being a definitive examination of the trade, this document should be seen as a vehicle from which a more even-sided dialogue on the bird trade issue might emerge. In addition, it is hoped that the discussion and recommended actions suggested in Part 4 will help national governments and others concerned with the trade to take immediate remedial actions as appropriate. The individual country profiles should serve as a benchmark from which to assess future efforts to manage the wild bird trade.

In short, it is obvious that this report does not provide a **final answer**. Instead, it is a further step in an on-going process directed at ensuring that the wild populations of bird species in trade are managed in a sustainable manner.

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THE WILD BIRD TRADE — AN OVERVIEW

Teresa A. Mulliken, Steven R. Broad and Jorgen B. Thomsen[1]

INTRODUCTION

People of many different regions and cultures maintain wild birds in captivity, a practice extending back several thousand years. Providing meat, feathers, companionship and beauty, captive wild birds were kept by ancient Egyptians, early Greeks and Romans, and the native peoples of Southeast Asia, the Caribbean and South and Central America.

Exotic birds have been traded internationally in large numbers since at least the mid-nineteenth century. A "brisk trade" in cage birds was reported in the United States as early as 1865 (Oldys *in* Banks, 1976), with Europe annually supplying hundreds of thousands of birds, primarily captive-bred Canaries (*Serinus canaria*), to the US market by the early 1900s. Large numbers of wild-caught birds have been supplied by Africa, Asia, and Central and South America to overseas markets, especially those of Europe and the United States, throughout this century. The international trade increased in size and species diversity as shipping times were reduced through use of steam and then air transport (Oldys *in* Banks, 1976; Banks, 1976). Today the pastime of keeping wild birds for pleasure is common throughout much of the world, giving rise to the international trade in millions of wild-caught birds each year.

The international bird trade has become the focus of increasing attention and criticism in the past few years. A number of non-governmental organisations (NGOs) and some national governments have expressed concern that trapping wild birds to support foreign pet markets may be depleting certain wild avian populations. Objections to what are perceived to be inhumane aspects of the trade have also been raised by some animal welfare and bird protection organisations.

The growing controversy reflects the broad spectrum of opinion regarding 'appropriate' human uses of wild birds and, in fact, of all wildlife. Opinions range from those who see wild birds as a resource to be utilised for human benefit, as long as such use does not endanger wild populations, to those who believe that wild birds have inherent rights of their own, and therefore should not be taken or harassed for human purposes.

Several recent initiatives have been taken to address the international bird trade in the context of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In 1990, the CITES Animals Committee formed a 'Working Group on Bird Trade' to examine the international trade in wild-caught birds more closely. Almost simultaneously, the General Assembly of IUCN — The World Conservation Union adopted a resolution calling for additional review of the trade in wild-caught birds by CITES Parties (IUCN, 1990). As a result of these and other actions, the bird trade will almost certainly be a major issue at the eighth meeting of the Conference of the Parties to CITES in March 1992.

The international bird trade has also been placed on the agendas of national governments in the major consumer markets of the United States and Europe. In the United States, the Cooperative Working Group on Bird Trade, composed of representatives from conservation, animal welfare, avicultural and pet industry organisations, developed a series of recommendations to address problems associated with the trade. Some of the Working Group's members are currently supporting legislation that would generally phase-out imports of wild-caught birds for the pet trade over a five-year period, with some exceptions. A coalition of animal welfare and conservation groups is supporting legislation that would immediately ban US imports of wild-caught birds for the pet trade.

In Europe, the European Parliament has adopted a Resolution calling for a ban on European Community (EC) imports of wild-caught birds for the pet trade, in response to a campaign launched by animal welfare and bird protection organisations. This Resolution serves as a recommendation to the European Commission, and is not binding.

A group of animal welfare and conservation organisations has also succeeded in convincing many airlines to announce that they will no longer transport wild birds. Over 40 carriers had made such announcements as of December 1991.

It is clear that the international bird trade will remain the subject of debate for some time to come. Regardless of the forum for discussion, it is essential that evaluation of this trade and related trade-control initiatives is based on the best available scientific evidence. Furthermore, the trade must be viewed in the broadest possible context — and not as if it exists in a vacuum. A wide range of questions must be considered: how is trade affecting the status of different species in the wild? Are range countries capable of adequately controlling and managing wildlife utilisation, including harvest of wild birds for export, in a sustainable manner? What impact would greatly reducing or banning international trade have on the related issues of species and habitat conservation? Are rural communities and/or range country governments benefitting from trade? Is captive breeding of birds an effective alternative to wild harvest? How should

[1]Teresa Mulliken, Research Officer, TRAFFIC International; Steven Broad, Assistant Director, TRAFFIC International; Jorgen Thomsen, Director, TRAFFIC International.

animal welfare and mortality concerns be viewed and addressed in the larger context of wildlife utilisation?

It is also important for the objectives of different trade-control initiatives and those of their proponents and opponents to be clear: ethical/moral considerations regarding the trade should be identified and considered independently from biological considerations.

Objective analysis will be required if the status of species in trade is to be reasonably assessed and effective actions taken to ensure their conservation in the wild. This is particularly important when bird trade issues are debated in the international arena of CITES.

The purpose of this paper is not to address the question of whether the international trade in live birds is 'right' or 'wrong', or to debate the merits of different trade initiatives. Instead, it is intended to provide an overview of the current trade, and to highlight those aspects that are of greatest concern: changes in wild bird populations, trade-associated mortality, distribution of economic benefits and the effectiveness of current trade controls. It is hoped that this information will provide a starting point from which to examine trade issues in more detail.

COMPONENTS OF THE INTERNATIONAL BIRD TRADE

Species

Over 2600 of the approximately 9600 described bird species have been recorded in international trade during the past 20 years (Inskipp, 1990). Accurate trade volumes for most species are unknown, however, owing to varying or non-existent import and export reporting requirements.

Documentation of international trade in species listed in the CITES Appendices is more extensive than that of trade in non-CITES species. Trade in CITES Appendix III species appears to be less consistently recorded than trade in Appendix I and II species (Mulliken and Thomsen, in prep.). It seems likely that CITES trade figures do not accurately reflect total trade volumes for a number of CITES-listed species.

Information available from the United States, the United Kingdom and three major exporting countries (Senegal, Tanzania and China) indicates that the majority of birds in trade are passerines, or songbirds (Order Passeriformes). Approximately 59% of all birds imported into the United States from 1984 to 1988 were passerines (Mulliken and Thomsen, 1990), with this order accounting for 81% of all birds imported into the United Kingdom during 1988 and 1989 (MAFF, 1989; MAFF, 1990). Over 90% of birds recorded as exported from Senegal, and over 80% of birds recorded as exported from Tanzania during 1990 were passerines (Edwards and Biteye, this volume; Edwards and Broad, this volume). Exports from China are also believed to be composed primarily of passerines (Melville, 1989).

The vast majority of passerine species are not listed in the CITES Appendices, therefore the songbird trade is poorly documented. Inskipp (1990) estimates that a minimum of 655 passerine species have been traded internationally since 1970. It appears that passerines commonly referred to as 'finches' (families Estrildidae, Fringillidae, Ploceidae) are traded in the largest numbers, with far fewer specimens of other families appearing in international trade.

Psittacines form the next largest group of birds in international trade. With all but two psittacine species included in the CITES Appendices, trade figures for this order are relatively comprehensive compared to those for passerines. The net CITES reported trade in psittacines for the years 1982 to 1988 ranged from a low of 476,917 birds per year to a high of 624,198, and averaged 539,701 birds per year (Broad, 1990).

International trade in other avian orders appears to involve much smaller numbers of birds. Unfortunately, trade analysis is again limited for non-CITES species by lack of data. Except for the orders Falconiformes, Psittaciformes[2] and Strigiformes, which are included in their entirety in the CITES Appendices, available trade data are almost certain to represent only a fraction of the actual world trade.

World Trade Volumes

The total number of live wild-caught birds traded internationally is unknown. Inskipp (1979) estimated that a minimum of 7.5 million birds were traded annually during the early 1970s, a period during which trade appears to have peaked. The total world trade appears to have declined since that time, coinciding with increased trade restrictions and more effective trade controls adopted by a number of countries during the 1970s and 1980s. Several countries that had been important suppliers of wild-caught birds to the world market banned exports (e.g. India, Columbia, Bolivia), and many countries adopted more rigorous trade

[2]Three psittacine species. Budgerigar *(Melopsittacus undulatus)*, Cockatiel *(Nymphicus hollandicus)* and Rose-ringed Parakeet *(Psittacula krameri)*, are excluded from the listing of the order Psittaciformes in Appendix II of CITES. Rose-ringed Parakeet is listed in CITES Appendix III, however.

controls following their accession to CITES.[3] Net world trade figures for CITES-listed birds are contained in Annex 1.

Extrapolating from the 1983 to 1988 trade volumes of major producer and consumer countries, the international trade in wild birds is currently estimated to involve between two and five million specimens per year (Inskipp, 1990). Lack of information regarding exports of live birds from China has created much of the uncertainty with respect to the total number of birds in trade. A Chinese Government official indicated that as many as three million birds were exported in one recent year (Melville, 1989). The majority of these were almost certainly non-CITES, primarily passerine, species. The majority of this trade has not been documented in Chinese trade records, or in the records of countries of impórt, however (Inskipp, 1990). Exports from China are believed to be consumed primarily by East and Southeast Asian countries, which do not record non-CITES imports.

The estimate of total world trade given above does not include birds that die during capture, transport or holding prior to export; nor does it include domestic trade. Available information indicates that pre-export mortality and domestic trade both involve large numbers of birds. Estimates of pre-export mortality rates are provided in several trade studies (Bruggers, 1982; Inskipp, 1983; Nash, 1990; Panagis and Stutterheim, 1985; Ramos and Iñigo, 1985). Pre-export mortality was estimated to range from as few as 5% of the birds removed from the wild for export in India (Inskipp, 1983), to as many as 60% of birds trapped for (illegal) export in Mexico (Ramos and Iñigo, 1985).

The number of live birds removed from the wild for domestic trade is unknown. Available information suggests that as many as several hundred thousand birds per year may be trapped for internal trade in certain Pacific, South American and Central American countries (e.g. Carvalho, 1986; Thomsen and Brautigam, 1991). It seems unlikely, however, that the combined domestic live bird trade of range states is as large as the international trade.

Undocumented illegal trade is also not reflected in the total trade estimate given above. This trade is by its very nature impossible to quantify, but has been estimated to involve at minimum tens of thousands of birds (Thomsen and Hemley, 1987).

Source Countries

The majority of wild birds documented in international trade are exported by countries located in tropical and subtropical regions (Figure 1).

On a regional basis, Africa is the largest recorded exporter of wild-caught birds. African countries provided over two-thirds (68%) of all CITES-listed species recorded in trade in 1988 (Inskipp, 1990). This region's two largest exporters, Senegal and Tanzania, are recorded as providing more CITES-listed birds to international markets than any other countries: 684,679 and 127,262 birds respectively in 1988 (Inskipp, 1990).[4] Together, Senegal and Tanzania accounted for an estimated 53% of all CITES-listed specimens reported in trade in 1988 (Inskipp, 1990). Guinea, Mali and Liberia are also important African exporters.

Africa is the major source of wild-caught songbirds in trade, as well as an important source of psittacines. African parrots popular in international trade include lovebirds (*Agapornis* spp.), African Grey Parrots (*Psittacus erithacus*) and members of the genus *Poicephalus* [e.g. Senegal Parrot (*Poicephalus senegalus*), Meyer's Parrot (*Poicephalus meyeri*)].

The combined region of Central and South America is the second largest supplier of wild-caught birds for international trade, accounting for 14% of CITES-reported exports in 1988 (Inskipp, 1990). Argentina, the largest Neotropical bird exporter, is reported to have supplied 106,278 CITES-listed birds to foreign markets during 1988 (Inskipp, 1990). Other major exporters include Uruguay, Guyana and until recently, Honduras. The latter country suspended exports of wild-caught birds in 1990 (Secretary of State for Natural Resources, *in litt.*, 1990).

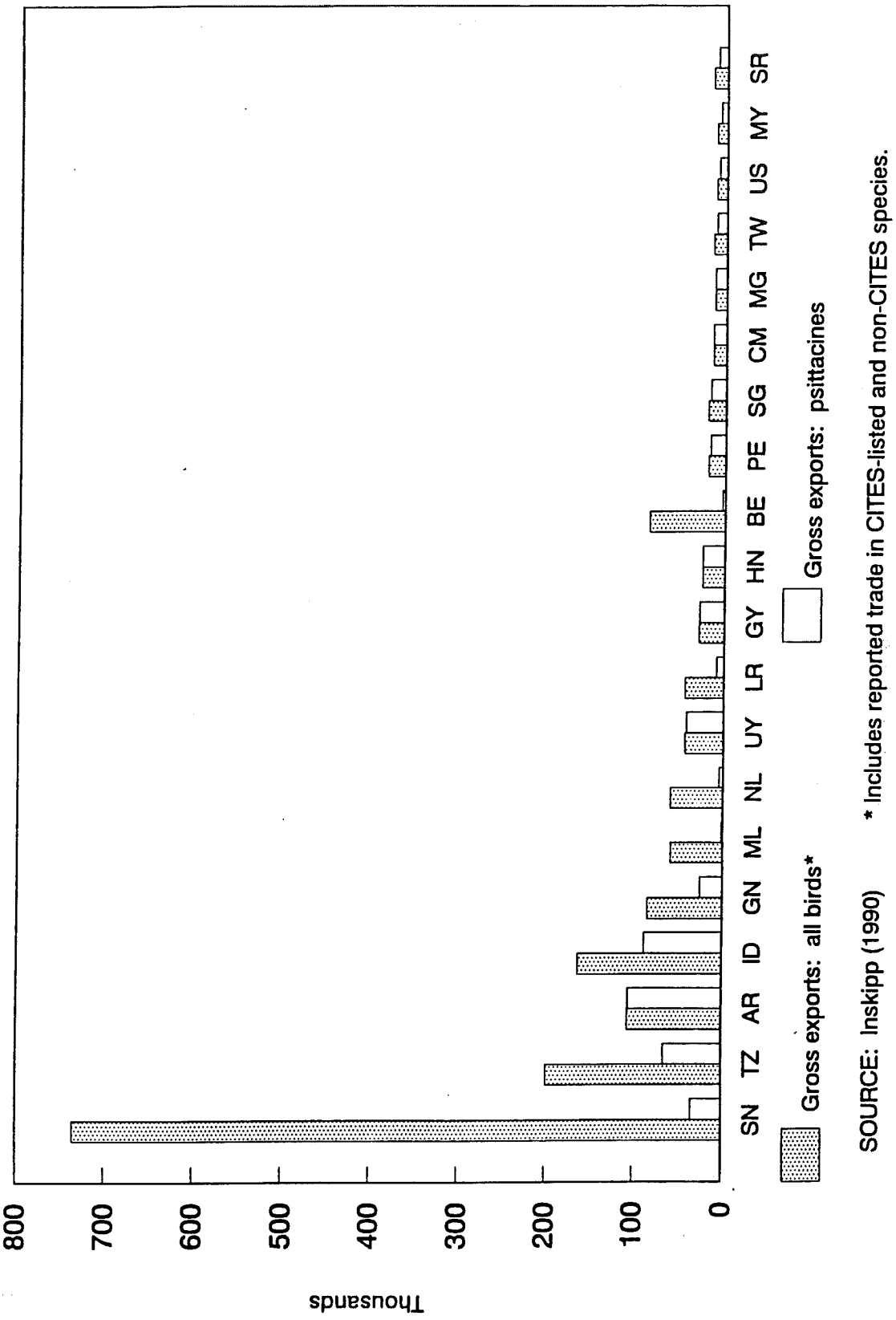
The vast majority of birds exported from Central and South America are psittacines. Parrots exported in large numbers include amazons (*Amazona* spp.), macaws of the genus *Ara* and a variety of conures and parakeets. Smaller numbers of birds of several avian families whose ranges are limited to the Americas, e.g. toucans (Ramphastidae) and hummingbirds (Trochilidae), are also exported. A wide variety of passerine species from this region have been recorded in trade, with the number of specimens of individual species exported appearing to be relatively low.

Reported exports of CITES-listed species from the combined region of Asia and Oceania during 1988 were only slightly lower than those reported for Central and South America, and accounted for 10% of 1988

[3] As of December 1991, 112 countries had acceded to the Convention.

[4] It is possible that the figure for Senegal reflects pairs rather than individual specimens, as Senegal traditionally records trade in pairs for all but psittacine species (see Edwards and Biteye, this volume).

Figure 1. Estimated gross exports of birds in 1988. Top 20 exporting countries.



AR Argentina, BE Belgium, CA Canada, CH Switzerland, CM Cameroon, DE Germany, DK Denmark, ES Spain, FR France, GN Guinea, GY Guyana, HK Hong Kong HN Honduras, ID Indonesia IT Italy, JO Jordan, JP Japan
LR Liberia, MG Madagascar, ML Mali, MY Malaysia, NL Netherlands, PE Peru, PT Portugal, SE Sweden, SG Singapore, SN Senegal, SR Suriname, TW Taiwan, TZ Tanzania, UK United Kingdom, US United States, UY Uruguay, ZA South Africa

reported exports (Inskipp, 1990). Indonesia is the largest reported source of wild-caught birds in this area, supplying 88,072 CITES-listed birds to other countries during 1988 (Inskipp, 1990). The majority of Indonesia's reported exports are psittacines, primarily cockatoos (Cacatuidae) and lories (Loriidae), both endemic to this region.

As noted above, China may supply a large but undocumented number of birds to other Asian countries. Although unconfirmed as of December 1991, the export figure of three million birds given by Melville (1989) may indicate that China is Asia's, and the world's, largest exporter of wild birds. Trade records show that China exports a small number of birds to Europe and the United States, and perhaps several hundred thousand birds (for sale as food) to Hong Kong (Melville, 1989).

Consumer Countries

The European Community, the United States and Singapore are the largest known importers of live birds (Inskipp, 1990; Figure 2). Trade records show that during the 1980s, the United States imported more birds than any other individual country, with imports averaging nearly 700,000 birds per year from 1984 to 1988 (Mulliken and Thomsen, 1990). US import volumes declined during this period, reflecting a decline in imports of non-CITES and Appendix III-listed birds. Annual imports of Appendix II-listed birds, especially parrots, were relatively stable however, remaining around 230,000 birds (Mulliken and Thomsen, 1990). An initial review of US trade data for 1989 and 1990 indicates that psittacine imports declined by as much as 40% during that year, and remained at reduced levels during 1990.

Data for EC imports are limited primarily to trade in CITES-listed birds: approximately one million CITES-listed birds were imported into the European Community during 1988, with this market consuming 65% of all CITES-listed birds reported in trade (Inskipp, 1990). Available trade data indicate that France is the largest importer within the European Community, importing approximately 234,000 CITES-listed birds in 1988 (Inskipp, 1990). Imports by the United Kingdom, the only EC country to compile data on all exotic bird imports, ranged between 150,000 and 250,000 birds per year from 1978 to 1989 (excluding 1984, when imports were temporarily suspended) (MAFF, 1979-1990). The proportion of psittacine to non-psittacine imports remained relatively stable throughout this period, with psittacines generally accounting for less than 25% of total imports. The United Kingdom imported approximately 180,000 birds in both 1988 and 1989. EC trade records do not show a significant decline in imports of CITES-listed birds during the late 1980s, despite increasing export restrictions in source countries and EC import restrictions for some CITES-listed species.

Singapore appears to be the third largest consumer of birds in international trade, importing approximately 31,000 CITES-listed birds in 1988 (Inskipp, 1990). Japan, a major importer of many types of wildlife, is less important in the international bird trade. CITES annual reports for 1984 to 1988 show that Japan's reported imports of CITES-listed birds decreased from over 40,000 birds in 1982 to approximately 21,000 in 1988. More recent data available from Indonesia indicate that exports to Japan and other Asian countries may be increasing (Edwards, pers. comm.).

Markets and Trends

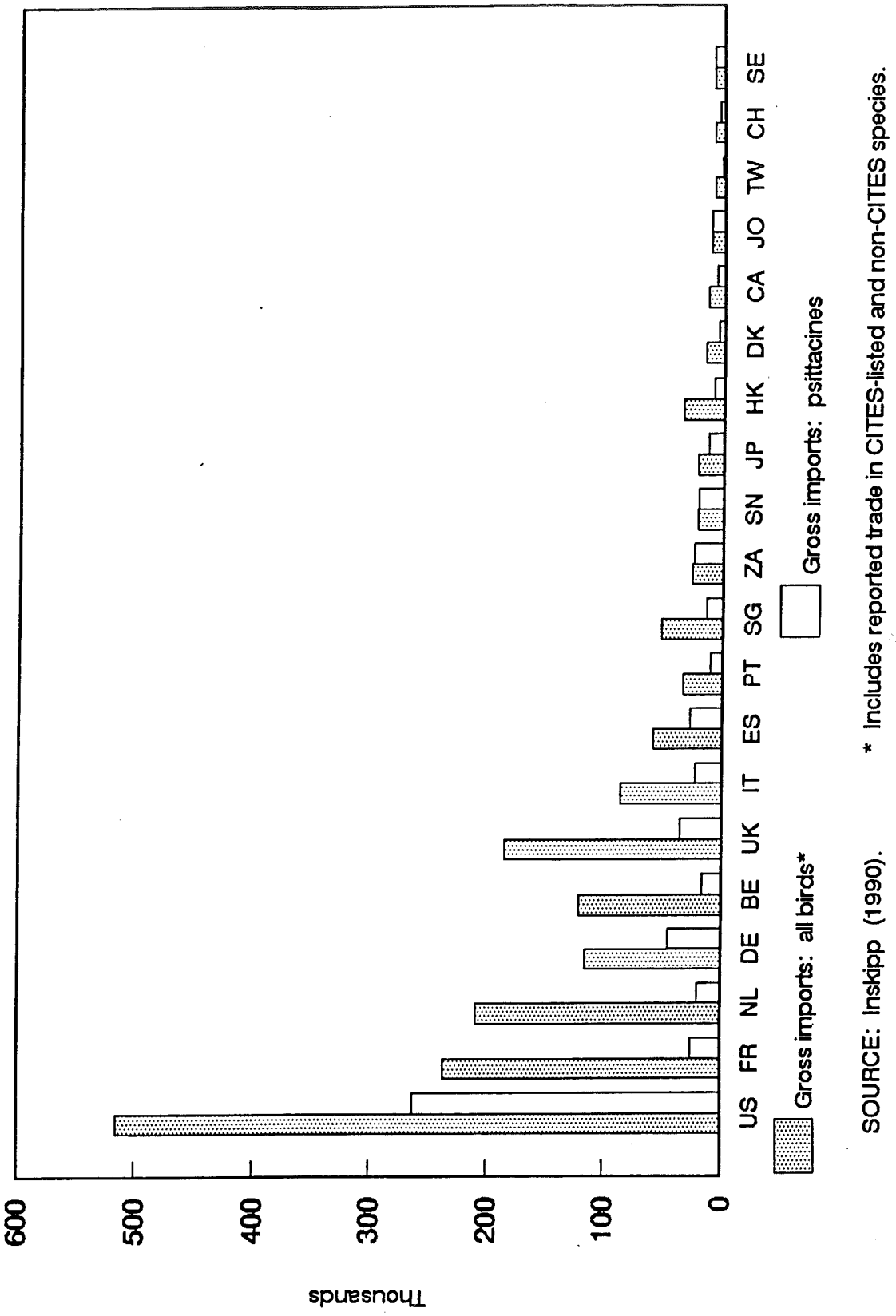
Although the vast majority of wild-caught birds in international trade are destined for sale as pets, the dynamics of the pet trade itself are not well-understood. The sale of millions of birds as pets could reflect a relatively cheap and abundant supply of this 'commodity'; alternatively, the volume of birds in trade could be a direct result of continuing consumer demand. The fact that hundreds of thousands of 'cage' birds have been traded internationally since at least the beginning of this century (Banks, 1976) indicates that demand for pet birds is not new. It seems likely, however, that economics, marketing by the pet industry, changes in fashion and changes in supplies have affected demand for certain types of birds, for example certain parrot species.

The great variety of species in international trade appears to be primarily due to demand from aviculturists, collectors and zoological facilities.[5] These consumers have specialised interests that create a limited but potentially lucrative market for less-commonly traded birds, such as some songbirds, lesser-known psittacines, birds with unusual characteristics, e.g. hummingbirds and larger birds such as hornbills, waterfowl and pheasants.

For a small but important minority of aviculturists and collectors, the rarer the species (either in the wild or in trade), the greater the incentive there is to procure one or more specimens, no matter what the means. As a result, species classified as endangered may still be trapped and sold on the international market, albeit

[5]Bird owners fall within a range of descriptions, and cannot accurately be separated into categories such as 'aviculturist' or 'collector'. Aviculture is often considered to be the keeping and breeding of birds, while collecting implies accumulating birds for the purposes of display, either personal or public. However, many aviculturists could also be considered collectors, and many collectors breed their stock.

Figure 2. Estimated gross imports of birds in 1988. Top 20 importing countries.



AR Argentina, BE Belgium, CA Canada, CH Switzerland, CM Cameroon, DE Germany, DK Denmark, ES Spain, FR France, GN Guinea, GY Guyana, HK Hong Kong, HN Honduras, ID Indonesia, IT Italy, JO Jordan, JP Japan
LR Liberia, MG Madagascar, ML Mali, MY Malaysia, NL Netherlands, PE Peru, PT Portugal, SE Sweden, SG Singapore, SN Senegal, SR Suriname, TW Taiwan, TZ Tanzania, UK United Kingdom, US United States, UY Uruguay, ZA South Africa

illegally, as has been demonstrated for a number of species.

The relative importance of the aviculturist and collector markets with respect to trade in a particular species appears to increase with the decreasing availability of that species in trade. Learning that a species is likely to become unavailable for import, breeders may try to secure as many specimens as possible until such time as trade is prohibited. This behaviour was in evidence with the recent listing of Salmon-crested Cockatoo (*Cacatua moluccensis*) in CITES Appendix I. Aviculturists began 'buying up' this species when it was proposed for listing in Appendix I, months before the CITES meeting where it was actually prohibited in international commercial trade.

Zoological facilities consume a relatively small number of birds compared to the pet trade and aviculturists. The zoological trade is nevertheless important, as zoos tend to concentrate primarily on rarer species, often those that are threatened or endangered. Because many national governments allow special trade exceptions for zoological and educational purposes, and CITES allows for exemptions for non-commercial trade, zoos can frequently acquire many species that are commercially or otherwise unavailable.

Increasing national trade restrictions and the implementation of CITES appear to have reduced the total world trade in wild birds since the early 1970s. These restrictions, and the inclusion of several commercially-traded species in CITES Appendix I, have limited the variety and volume of wild-caught specimens legally available for international trade. Changes in consumer demand and the increased availability of domestically-bred birds for the pet trade may also have influenced this decline.

Increasing trade restrictions during the early and mid-1980s did not appear to greatly reduce the reported trade in **CITES-listed birds** during that period. Increased trade reporting, a result of the accession to CITES of a number of important exporters of wild-caught birds (e.g. Argentina, Honduras and Tanzania), may have offset a decline in total reported exports resulting from export bans implemented by Bolivia, Mexico and other range countries.

Although the number of range countries exporting CITES-listed birds declined, the demand for CITES-listed species did not. Instead, it appears that while the governments of some range countries reduced the numbers of birds allowed in trade, other governments allowed increased exploitation of indigenous wildlife in response to continuing demand. Trade levels were also sustained to some extent by illegal trade; birds smuggled from countries with export bans were 'laundered' into trade through second countries, using export permits that misidentified the country of origin. Data available from the United States and several exporting countries indicate that trade in CITES-listed species may have declined during 1989 and 1990.

As indicated above, captive breeding appears to be meeting at least part of the continuing demand for caged birds. Based on data for 1982 and 1984, Broad (1985) found that more psittacines were bred in the United Kingdom than were imported — even excluding Budgerigars (*Melopsittacus undulatus*) and Cockatiels (*Nymphicus hollandicus*). The number of 'wild' birds[6] being produced by captive breeding is unknown, but appears to be increasing. Captive breeding supplies virtually all specimens of some otherwise unavailable species, for example endemic Australian parrots, [e.g. Budgerigars, Cockatiels, Rosellas (*Platycercus* spp.)] in legal trade.

While not approaching the number of wild-caught birds in international trade, captive-bred birds are nevertheless an important component of this trade: Mulliken and Thomsen (in prep.) estimate that approximately 15% of birds imported by the United States from 1986 to 1988 were captive-bred. Trade among EC countries similarly appears to involve a significant number of captive-bred birds.

Primarily located in consumer countries, captive breeding operations range from small 'hobby' aviaries producing a few birds, to large 'farms' producing thousands of birds each year. These operations play an important role in supplying domestic pet markets. In fact, it appears that the majority of birds sold as pets in the United States -- primarily Budgerigars, Cockatiels and Canaries -- are captive-bred in that country (Mulliken and Thomsen, in prep.). Allen and Johnson (1991) found that some of the more valuable Appendix II psittacines (e.g. cockatoos and macaws) popular in trade are being captive-bred in increasing numbers in the United States. According to some US aviculturists (Abramson, *in litt.* 1990; Clubb, pers. comm.), difficulties in obtaining US export permits have restricted the export of these captive-bred birds to other markets.

Captive breeding operations within the European Community not only supply local markets, but also produce significant numbers of birds for international trade. The Netherlands exported an average of 24,000 birds reported to be captive-bred between 1984 and

[6]For the purposes of this document, 'wild' birds are considered to include all birds of species for which non-domesticated populations still exist, i.e., all except domestic fowl.

1988 (van Kreveld, 1990). Belgium is also known to produce a relatively large number of captive-bred birds, exporting approximately 27,000 birds reported to be captive-bred to the United States in 1988 (Mulliken and Thomsen, in prep.). According to Belgium's 1989 CITES Annual Report, close to 9000 captive-bred CITES-listed birds were exported to non-EC member countries in 1989. Germany is also known to export significant numbers of captive-bred birds.

Two African countries -- South Africa and Zimbabwe -- are also reported to export captive-bred birds, primarily Cockatiels, in relatively large numbers. According to CITES trade records, Taiwan is also an important exporter of captive-bred birds.

TRADE CONTROLS

CITES Controls

CITES is arguably the single most important mechanism used to control international trade in wild animals and wildlife products.[7] CITES Parties are obliged to have domestic legislation adequate to fulfil their requirements under the Convention. Several countries have not met this obligation, however.

Parties are required to prohibit international trade for primarily commercial purposes of species considered by the Parties to be in danger of extinction, and threatened or potentially threatened by international trade. These species are listed in CITES Appendix I, which included 126 avian species and 20 subspecies as of this writing. In some cases an Appendix I listing is insufficient to protect species from continued exploitation: it appears that international trade in wild-caught Hyacinth Macaw (*Anodorhynchus hyacinthinus*) actually increased after the Appendix I listing of this species (Munn *et al.*, 1989).

Species for which trade might pose a threat if not adequately controlled are listed in CITES Appendix II, as are some 'look-alike' species included in the Appendix to facilitate enforcement of trade controls. A total of 1165 avian species and 49 subspecies are included in this Appendix. Parties are required to ensure that trade in Appendix II species is not detrimental to those species' wild populations. Exporting Parties are required to make 'non-detriment' findings in this regard (CITES Article IV); importing Parties may refuse imports if they are not satisfied that appropriate non-detriment findings have been made (Resolution Conf. 2.6). Parties do not appear to have been universally effective at preventing trade-related declines in wild populations, however: several species initially listed in Appendix II have been moved to Appendix I. For some species, e.g. Salmon-crested Cockatoo, harvest for international trade appears to have been the primary cause of declines in wild populations and subsequent listing in Appendix I.

The fact that international trade may continue despite trade prohibitions and without proper non-detriment findings having been made appears to reflect a lack of commitment and/or ability on the part of many exporting and importing countries to fully comply with the conditions of the Convention. Some Parties have yet to implement domestic legislation necessary to enforce CITES provisions. Many Parties that have the necessary legal infrastructure to implement CITES nevertheless lack sufficient personnel and other resources necessary for effective CITES implementation. As a result, export permits may be issued without determining whether trade will be detrimental to wild populations, and without inspection of birds being exported. Unauthorised or mis-reported trade may result. Imported shipments similarly may not be inspected by enforcement personnel, with illegal shipments therefore remaining undetected.

Existing enforcement personnel may lack the training and resources necessary to identify species in trade, and verify the legitimacy of accompanying export documents. The United States, one of the wealthiest Parties to CITES, and the largest documented importer of wild-caught birds, does not adequately perform these responsibilities even with its relatively extensive enforcement capacity (Cooperative Working Group on Bird Trade, 1990; Mulliken and Thomsen, in prep.).

CITES parties recognised that exporting countries might not be able to assess whether trade was detrimental to the survival of the species in trade as early as 1984 (Anon., 1991). The Parties agreed that trade in species that were likely to be impacted by that trade should be reviewed. The resulting study, commissioned by CITES, identified 46 'significantly-traded'[8] Appendix II species for which trade might pose a 'possible problem' (Inskipp *et al.*, 1988).

Action on the part of CITES Parties to control trade in response to the results of the initial study were limited. Until very recently, little if any effort was made to reduce export volumes of any 'possible problem' species. Two of these, Military Macaw (*Ara militaris*) and Tucuman Amazon (*Amazona tucumana*), as well as several 'problem' species have since been added to

[7]For detailed information regarding CITES requirements, see *CITES: A conservation tool* (Brautigam, 1989) and *The evolution of CITES* (Wijnstekers, 1990).

[8]Initially based upon an average of 100 or more wild-caught specimens entering trade each year. This criterion was later set aside, and all Appendix II animal species were included in subsequent assessments.

CITES Appendix I. Concern that additional species are threatened by trade and/or other factors has prompted proposals for the listing of several 'possible problem' species in Appendix I to be considered during the eighth meeting of the Conference of the Parties to CITES.

During the seventh meeting of the Conference of the Parties (Lausanne 1989), the Parties recommended that the 'significant trade' process be continued through a review of more recent trade data. The results of this review, carried out by the World Conservation Monitoring Centre and the IUCN/Species Survival Commission Trade Specialist Group, have been presented to the CITES Animals Committee.

The initial CITES significant trade review mentioned above (Inskipp *et al.*, 1988) determined that trade did not present a 'problem' for 27 Appendix II species, primarily psittacines, traded in significant numbers. The fact that the majority of species in trade are not listed in the CITES Appendices may be taken as an indication that CITES Parties have not determined that international trade is likely to be a threat to these species' survival at the present time.

CITES and the Pet Trade

Parties to CITES expressed their specific concern regarding the international trade in wild-caught specimens for the purposes of the pet trade at the first meeting of the Conference of the Parties. CITES Resolution Conf. 1.6, which was not specifically restricted to CITES-listed species, states:

"Many species of animals which are popular in the pet trade are becoming rare or even endangered due both to over-exploitation and diminishing habitats. Mortality in trade and captivity is high. This Conference urges exporting countries to endeavour to restrict gradually the collection of wild animals for the pet trade and that all contracting Parties encourage the breeding of animals for this purpose, with the objective of eventually limiting the keeping of pets to those species which can be bred in captivity."

Several CITES Parties have banned exports of live wild animals (and in some cases, all wildlife and wildlife products) since this Resolution was passed in 1976. These bans appear primarily to reflect larger trade control concerns, rather than a direct response to Resolution Conf. 1.6. Few if any range countries have 'gradually restricted' their exports of live birds for the purposes of the pet trade. And while there appears to be a growing number of birds bred in captivity for sale as pets, trade figures demonstrate that the keeping of pet birds is not limited to captive-bred specimens.

National Trade Controls

Many countries have adopted domestic legislation intended to protect their wildlife from over-exploitation. This legislation is often developed or revised following a country's accession to CITES. In addition to the trade requirements summarised above, CITES specifically provides for Parties to take stronger domestic measures to control trade in CITES-listed species.

Unfortunately, a number of national trade-control measures have been ineffective at preventing trade in protected species. The ongoing illegal export of parrots from Mexico, despite Mexico's ban on native wildlife exports since 1982, illustrates this problem. Estimates of the numbers of parrots smuggled from Mexico into the United States, which itself prohibits imports of illegally exported wildlife, have ranged from 25,000 to 150,000 birds per year (Thomsen and Hemley, 1987; Mulliken and Thomsen, 1990). Brazilian and Bolivian bans on wildlife exports have also been ineffective. Birds trapped in these countries have been smuggled to neighbouring countries and then re-exported with export permits falsely declaring the country of origin, as well as smuggled directly to their final destinations in importing countries. This type of illegal trade is especially problematic for species with ranges extending across several countries, such as African Grey Parrot and Yellow-crowned Amazon (*Amazona ochrocephala*).

Because the rate of detection and confiscation of illegal exports and imports is relatively low in most countries, and penalties for trade violations often small or non-existent, existing legislation and enforcement frequently do not provide a sufficient deterrent to illegal traders. While traders may be cautious in their handling of obviously illegal birds, such as Hyacinth Macaws, they are unlikely to worry about trading a few individuals of common but protected species, or species less likely to be recognised. Protected species, such as Black-capped Lory (*Lorius lory*), may be 'hidden' in a large load of a similar but unprotected species, such as Purple-naped Lory (*Lorius domicella*).

In all but a few instances, once a bird has arrived at its final destination, it is difficult to prove that it has been exported or imported illegally. This problem would continue to exist even if trade were limited to captive-bred birds and wild-caught specimens for captive breeding, unless strict internal controls, including marking systems, were introduced to identify individual specimens.

BIOLOGICAL CONSEQUENCES OF TRADE

The trade-control problems mentioned above highlight the potential for inadequately controlled trade to contribute to non-sustainable use of wild avian populations. If international trade is controlled in accordance with CITES, however, it is possible that it

could actually contribute to the protection of avian and other wildlife species, which generally are threatened first and foremost by habitat loss. Such a result would require that individuals within range countries derived sufficient value from wild bird exports to merit maintenance of existing habitat. At present, however, the economic benefits of the wild bird trade are not distributed in a manner encouraging protection of either habitat or wild populations (see Swanson, this volume).

Effects of Trade on Wild Populations

It is well-understood that most species can withstand at least some change in their natural environment, including increased predation by humans such as trapping for export, without suffering long-term declines. However, too little is known about the biological requirements, reproductive strategies and niches occupied by many species to determine whether current levels of human utilisation are detrimental to wild populations. To compound this problem, at present the number of birds removed from the wild for trade or other purposes is unknown: trade data are based on the number of birds exported, and do not reflect pre-export mortality; no records are kept of the number of birds harvested for food, feathers, etc. Lacking this basic information, it is difficult if not impossible to accurately determine sustainable harvest levels.

The problem of assessing whether current trade levels are sustainable is exacerbated by the lack of information regarding the age of birds in trade, a factor which may be critical with respect to the effects of trapping on wild populations. It appears that for most species, the majority of birds in trade have fledged prior to being trapped.

The removal of significant numbers of breeding-age adults from a population is likely to have a larger overall impact than the removal of a similar number of juveniles; a loss of breeding-age adults may result in an immediate decline in the reproductive capacity of the population as a whole. This problem may be especially acute for species with slow recruitment rates, such as larger species of psittacines and hornbills. Munn (1988a) found that only two out of twenty or more pairs of Blue and Yellow Macaw (*Ara ararauna*) observed daily in 1986 were nesting, suggesting that this species might breed only once every several years. From observations of three macaw species in undisturbed habitat, Munn (1988b) noted that less than one-fifth of all pairs of adult macaws were observed with young at the end of the breeding season. It therefore seems likely that removal of a significant portion of the breeding-age population of the larger macaws could result in irreversible declines in the total numbers of birds in the wild.

At least initially, removal of nestlings would almost certainly have a smaller impact on populations as a whole than would removal of a similar number of breeding-age adults. Owing to naturally higher juvenile mortality rates, many of the nestlings removed for trade would not have survived to maturity in the wild. As a management approach, collection of nestlings may therefore not be as detrimental to wild populations as indiscriminate harvest of all age groups.[9] However, if a significant (albeit unknown) number of nestlings were removed from the same population for a number of years, then the population as a whole could be expected to decline.

For a limited number of species, trapping for export is known to have contributed to the decline of wild populations, and in a few cases has threatened species with extinction. The 'blue macaws' are perhaps most frequently used to illustrate trade-induced population declines: the wild population of Hyacinth Macaw has declined dramatically owing to trapping for both domestic and international trade. The remaining population is severely threatened by the illegal trapping that continues despite trade controls (Munn *et al.*, 1989). Perhaps more dramatic is the case of the Spix Macaw (*Cyanopsitta spixii*), a species whose range and population size were very restricted even before human interference. The combination of habitat loss and trapping for supply to specialised collectors appears to have destroyed the last known wild population of this species, of which only one specimen is believed to remain in the wild (Juniper and Yamashita, 1991; Thomsen and Munn, 1988).

It is important to note by contrast, however, that trade may not be having a significant impact on the populations of some smaller and generally more prolific species, even though absolute trade volumes appear high. The failure of eradication schemes for Red-billed Quelea (*Quelea quelea*), an African passerine pest species in trade, illustrates this point: in 1985, approximately 120 million Red-billed Queleas were destroyed in conjunction with eradication schemes in Zimbabwe (La Grange, 1989).

Effects of Trade on Ecosystems and Agriculture

Concern over the effect of trapping on wild avian populations is heightened by the knowledge that many species are already declining in the wild as a result of habitat loss. In isolated cases, trapping for trade may even be contributing to disruption of habitat: several studies in Argentina and Mexico have documented that collection of amazon nestlings for trade destroyed large

[9]Providing that nesting habitat was not destroyed in the process.

numbers of suitable nesting sites across large areas of habitat (Bucher, 1990; Iñigo-Elias and Ramos, 1991).

There is also concern that declines in some species' wild populations could disrupt the ecosystems they inhabit. With little understanding of the role of birds in seed dispersal, pollination, predation and the food chain, it is impossible to foresee what the effect of a species' decline or disappearance will be on the surrounding habitat.

Trade-related concerns also extend to the potential impact of exotic birds on the ecosystems and agriculture of importing countries. Several species popular in the pet trade, such as Rose-ringed Parakeet (*Psittacula krameri*) and Monk Parakeet (*Myiopsitta monachus*), are considered agricultural pests in one or more of their countries of origin. Both species have established feral populations in North America and Europe. If these populations are not controlled, feral birds could potentially threaten crops in these regions. By contrast, if trade even temporarily reduces populations of 'pest' species' in areas where they have increased in response to habitat modification (e.g. irrigation, agriculture, etc.), then agriculture in those areas may benefit.

As has been shown in many areas of the world, introduced species may compete with native birds, and in some cases cause the decline and even extinction of native species' wild populations (Long, 1981). Just as the decline of wild populations owing to harvest for trade may have far reaching effects on surrounding ecosystems, so may the reduction of native bird populations owing to the introduction of exotic species.

Disease Threats Posed by Trade

Diseases associated with cage birds, both wild-caught and captive-bred, pose an additional threat to native species as well as to domestic birds, e.g. poultry. The most frequently cited avian disease associated with the international bird trade, and perhaps the most dreaded by government personnel and poultry farmers, is viscerotropic velogenic Newcastle disease (also known as VVND; exotic Newcastle disease). This viral disease is found most frequently in birds imported from tropical regions, especially those of Southeast Asia and South and Central America. VVND spreads rapidly in captive flocks, and results in high levels of mortality among captive bird populations.

A second disease, the bacterial infection chlamydiosis (also known as psittacosis; ornithosis), can spread rapidly through a captive bird population, often resulting in tremendous losses. Chlamydiosis can also be spread from birds (including domestic poultry and native birds) to humans. This disease is readily cured in humans through administration of antibiotics. It can prove fatal if not diagnosed, however, with the elderly, small children and others with weaker immune systems.

In addition to threatening domestic bird flocks, and in some cases humans, diseased cage birds have the potential to transmit exotic diseases to indigenous avian populations. While escaped birds are the most obvious vectors of disease, infection could spread from captive birds held in outdoor aviaries to wild 'visitors', for instance sparrows and pigeons. With no means to treat wild avian populations for introduced diseases if such an event were to occur, the potential for harm to indigenous avian wildlife from exotic birds could be significant.

TRADE ECONOMICS

Economics and Habitat Conservation

Rural people will do what is necessary and possible to fulfil their basic needs of food, clothing, shelter and health care. As demonstrated throughout the world, this includes clear-cutting and other types of habitat alteration to grow crops. Similarly, many lesser-developed countries, often burdened with mounting international debts, will seek to offset those debts by converting natural resources into hard currency. At present, the only options available often involve radical alterations in local ecosystems, such as farming of cash crops, logging and mining to produce materials for export.

The bird trade and other types of wildlife utilisation are believed by many to provide a mechanism for generating income, both at the rural and national level, without substantially altering natural habitat. Sustainable wildlife utilisation -- perhaps one of the most contentious junctures of conservation and economics -- has therefore become the focus of considerable study and debate.

The potential to derive income directly from relatively undisturbed areas could provide an incentive for maintaining existing habitat. Controlled harvests of native birds, in conjunction with more sophisticated wildlife management techniques, could form an important component of broader natural resource utilisation schemes. Such schemes could encompass consumptive, as well as non-consumptive (e.g. tourism) utilisation of wildlife.

Distribution of Revenues

Few studies have examined the economic importance of the international bird trade at various stages in the trade process. Thomsen and Brautigam (1991) estimate that trappers in Neotropical countries earned US$33 million (gross) for parrots exported from 1982 to 1986, with middlemen earning US$114 million (gross) from the sale of these same birds. The gross retail value of these birds in importing countries was estimated to be US$1.6 billion.

Table 1. Values of birds exported from Irian Jaya during various phases of the trade process.

SPECIES	SALES PRICE TRAPPER	SALES PRICE TRADER	US DECLARED VALUES* AVG.	LOW	HIGH	US WHOLESALE PRICE**	
	US DOLLARS						
Chalcopsitta atra	3.41	9.84	56	45	75	199	
C. duivenbodei	4.10	10.93	100	100	100	250	(AVES 1989)
Eos squamata	7.38	19.13	17	8	117	99	
E. cyanogenia	4.78	10.93	—	—	—	—	
Pseudeos fuscata	1.55	4.19	22	18	65	99	
Trichoglossus haematodus	1.16	3.35	18	10	150	99	
T. goldiei	0.96	2.73	32	18	40	99	
Charmosyna placentis	1.28	3.55	—	—	—	250	
C. pulchella	0.96	2.87	—	—	—	250	
C. josefinae	2.37	7.01	125	125	125	—	
C. papou	3.82	8.20	97	70	125	299	*(stellae)*
Neopsittacus musschenbroekii	0.41	2.46	30	20	40	175	
Cacatua pastinator	13.66	27.32	—	—	—	850	
Opopsitta diophthalma	1.09	4.10	—	—	—	350	(1989)
Psittaculirostris edwardsii	4.37	10.93	91	60	284	359	
P. salvadorii	4.10	9.56	—	—	—	359	
Psittacella picta	4.92	12.30	—	—	—	—	
Geoffroyus geoffroyi	1.64	5.46	—	—	—	—	
Tanygnathus megalorynchos	5.46	19.13	91	62	100	425	
Alisterus chloropterus	9.56	23.22	90	86	133	799	
Alisterus amboinensis	5.01	12.75	91	45	100	550	(1989)
Aprosmictus erythropterus	1.37	8.20	34	30	100	150	

— Data unavailable.

Sources: Nash (1990); TRAFFIC, compiled from US F&WS computerised import data (*); Pet Farm Price Lists unless otherwise noted**.

Additional information regarding the economic aspects of the bird trade is provided by Nash (1990), who studied the trade in Irian Jaya, Indonesia. Comparison of Nash's figures with data available from the US Fish and Wildlife Service (US F&WS) and US wildlife dealers' price lists provides a more comprehensive look at the economics of trade for species exported from that region (Table 1).

According to Nash (1990), Irian Jaya bird trappers sell birds to 'traders' who collect them for subsequent sale to exporters. Exporters, located in Jakarta, then sell the birds to importers in the United States and other countries.

As is obvious from Table 1, trappers receive only a small fraction of what wild-caught birds ultimately sell for in the United States. However, this does not mean that trappers receive no financial benefit from this trade. In 1988, the average annual per capita income in Indonesia was US$435, or approximately US$8.37 per week (Hoffman, 1990). The average income of the rural population may have been considerably less. It is immediately obvious, therefore, that the sale of even a few birds to a trader could provide significant income for rural trappers.[10]

Depending on the species, exporters paid traders from two to six times the amount traders had paid to trappers for the same birds. Traders' net revenues would have been reduced by the cost of caring for and transporting the birds and mortality. Nash (1990) estimates that from 5% to 40% of the birds purchased by traders died prior to being shipped to exporters. In addition, traders were not paid for any birds that died within 15 days of arrival at the exporters' facilities: traders may have been paid for as little as one-third to one-half of the birds shipped to exporters (traders speculate that exporters are claiming higher mortalities than actually occur) (Nash, 1990).

Information regarding the prices paid to Jakarta exporters for birds was not available. However, import data collected by the US F&WS gives some indication of the value of the birds. US importers are required to provide the US F&WS with the 'declared value' of the wildlife they import. 'Declared value' has not been defined by US F&WS, however, and therefore may be variously interpreted. Interviews with US F&WS personnel and others indicated that importers most often declared the price they paid for the birds as written on accompanying invoices (Meyers, pers. comm.; Mulliken and Thomsen, in prep.). Declared values may also include the cost of transport and insurance (Meyers, pers. comm.). A comparison of average declared values for birds imported from Guyana with minimum export values established by the Guyana Government showed declared values to be an average of 33% higher than minimum export values. It therefore appears that US F&WS declared values do provide a **very general** idea of the prices paid for birds by US importers.

Based on US F&WS declared values, and depending on the species traded, it appears that US importers paid from one to eighteen times the price exporters paid to traders for birds. Exporters charged an average of eight times their own purchase price for the birds they exported. This price may or may not have included shipping and insurance costs, depending on the arrangement between the exporter and the importer (Clubb, pers. comm.; Meyers, pers. comm.). In addition, exporters may only have been paid for those birds that survived transport and the minimum 30-day quarantine required by the US Government, again, depending on the arrangement between exporters and importers (Meyers, pers. comm.). Approximately 18% of the birds of the species listed in Table 1 died during transport to or quarantine in the United States.

Quarantine costs are paid by importers, who subsequently either act as wholesalers and/or retailers themselves, or sell birds to other entities for subsequent resale. Comparison of declared values with one importer's wholesale prices indicated that importers may receive from two and a half to nine times more than the declared value of the birds. On average, the wholesale price for birds was five times the declared value.

These data demonstrate that trappers may receive less than 1% of the gross wholesale value of the birds they trap. The tremendous increase in the value of wild birds between trapping and final sale occurs in the process of several intermediate sales, with exporters and importers appearing to realise the greatest increases in value (see Swanson, this volume). Without additional information, however, it is not possible to accurately determine the economic benefits realised at a particular stage in the trade.

Trade Economics and Exporting Countries

US F&WS declared value data also give a general indication of the potential monetary value of bird exports to range countries (Table 2). The total declared value of birds imported by the United States from Indonesia during 1986 and 1987 was approximately US$4.7 million, with an average of $78.75 per bird (Mulliken and Thomsen, in prep.). Other countries with relatively high declared values, and relatively high

[10]Similar situations are found in many other exporting countries, such as Guyana (1987 per capita income US$317); Honduras (1988 per capita income US$1000); and Senegal (1984 per capita income US$380) (Hoffman, 1990).

Table 2. Declared value of US bird imports in US dollars by country of export* (1986 and 1987).

COUNTRY	DECLARED VALUE 1986	DECLARED VALUE 1987	DECLARED VALUE TOTAL	AVERAGE VALUE/ BIRD EXPORTED
Indonesia	2,093,903	2,343,610	4,437,513	78.75
Argentina	1,185,085	1,350,597	2,535,682	13.99
Honduras	1,031,421	1,322,156	2,353,577	78.34
Guyana	1,435,357	451,064	1,886,421	96.06
Belgium	629,416	591,092	1,220,508	7.83
Cameroon	216,308	414,647	630,955	89.45
Tanzania	299,418	259,531	558,949	3.08
Senegal	317,464	197,742	515,206	1.37
Peru	233,817	147,945	381,762	14.17
South Africa	333,358	3,701	337,059	12.55
Togo	110,550	193,335	303,885	50.66
Germany	124,317	106,195	230,512	6.12
Liberia	110,075	98,482	208,557	2.39
Netherlands	96,764	92,099	188,863	15.98
Ivory Coast	132,858	51,285	184,143	19.05
United Kingdom	107,841	52,737	160,578	29.07
Singapore	40,031	114,547	154,578	35.84
Mali	84,173	53,728	137,901	9.13
Suriname	70,186	66,786	136,972	17.64
Thailand	65,800	46,385	112,185	46.88
Ghana	52,100	54,800	106,900	73.31
Malaysia	99,260	6,500	105,760	6.06
Australia	63,015	31,483	94,498	6.86
Guatemala	90,676	350	91,026	44.97
Philippines	46,787	38,996	85,783	66.91
Uruguay	40,065	39,225	79,290	2.21
Bangladesh	0	66,627	66,627	3.22
Italy	100	52,500	52,600	3,287.50
Soviet Union	26,250	26,250	52,500	3.50
Chile	48,925	350	49,275	46.75
Zimbabwe	4,420	43,946	48,366	7.73
Papua New Guinea	30,650	10,000	40,650	432.45
Equatorial Guinea	0	35,875	35,875	96.18
Taiwan	23,650	6,830	30,480	6.75
Fiji	30,000	0	30,000	5,000.00
France	24,100	4,430	28,530	34.88
Hong Kong	8,584	16,711	25,295	6.84
Panama	12,220	12,750	24,970	268.49
Guinea	16,530	8,181	24,711	2.83
Columbia	6,520	13,150	19,670	231.41
Mexico	14,505	4,815	19,320	41.02
Saudi Arabia	11,166	6,430	17,596	197.71
Japan	8,850	7,925	16,775	419.38
Brazil	3,925	11,900	15,825	608.65
China	10,132	1,409	11,541	2.06
India	9,644	760	10,404	12.66

*Includes only countries with a combined 1986 and 1987 declared value of over US$10,000.

Source: Mulliken and Thomsen (in prep.), compiled from US F&WS computerised import data.

values per bird, include Guyana, Honduras and Cameroon.

Not surprisingly, US declared values were highest for those countries exporting relatively large numbers of the more valuable species, such as larger psittacines. The total declared value of birds imported by the United States from Senegal, the largest supplier of birds to the US market, was only US$515,000 in the two-year period from 1986 to 1987, and averaged only US$1.37 per bird. The relatively low sums received reflect Senegal's exports of finches and primarily smaller, less valuable psittacines. Similarly, Tanzania, second only to Senegal in terms of the number of birds exported to the United States, had an average declared value of only US$3.08/bird for exports during 1986 and 1987.

It is difficult to judge the importance of foreign currency generated by the bird trade to these and other countries. For example, it would not appear that exotic bird exports are critical to the overall economy of Indonesia, whose total exports during 1988 had an estimated value of US$19.2 billion (Hoffman, 1990). The annual average declared value of US$2.2 million for birds exported to the United States in 1986 and 1987 represents only 0.01% of this figure.

Bird exports appear to be relatively more important to the economy of Guyana. According to US F&WS data, the total declared value of birds exported to the United States from Guyana in 1986 was US$1.4 million. This figure is equivalent to approximately 0.6% of the total value of Guyana's exports for that year, US$242 million (Hoffman, 1990).

It could be argued that while the trade is economically important to individuals, especially in rural areas, given current export values, the trade is not important to the national economies of most range countries. Some take the view that to address this situation, range countries should establish policies to maximise the economic potential of their wild bird exports. This latter approach has been taken by the Governments of Suriname and Guyana.

Following a review of data available on the status and distribution of native bird species, the Government of Suriname established what appear to be conservative export quotas for 27 of their 30 indigenous parrot species (Thomsen and Brautigam, 1991). Suriname's exporters are required to secure a minimum amount of foreign currency for each indigenous bird exported, for example, a minimum of US$140 (1989 figure) for each specimen of Blue and Yellow Macaw. Revenues acquired from exports are required to be paid in foreign currency into the Government's central bank. Assuming that demand remains steady or grows, this effectively ensures that the exporter has a reliable source of income and Suriname a steady source of foreign currency.

As in Suriname, the Government of Guyana has set minimum acceptable values for birds exported. In addition, the Government has established an export duty system to provide revenues for wildlife conservation (Edwards, this volume).

The Effects of Supply and Demand

In situations where wild bird resources are not being sustainably managed, it is clear that unless changes are made, exports of live birds will be neither economically nor biologically viable in the long term. Development of sustainable utilisation schemes may not be feasible, however, without a significant investment of financial and human resources. These resources may be lacking in many range countries. Even when appropriate trapping levels have been established, the goal of sustainable wildlife utilisation may be undermined by a lack of adequate trade controls in both exporting and importing countries.

The effectiveness of sustainable utilisation schemes could additionally be undermined by a decline in the demand for birds produced by such programmes.

An increase in commercial captive breeding of species popular in trade could decrease the demand for wild-caught birds -- assuming that captive-bred birds were not prohibitively expensive. As a result, much of the economic importance of the wild bird trade could be lost to range states. If, for example, non-range countries breed Blue and Yellow Macaw in sufficient numbers to meet demand, then this species will have lost nearly all value as an export commodity to the range countries of Guyana and Suriname (other range countries have prohibited commercial exports of this species). This in turn could reduce the potential of sustained use programmes in these countries, and, in the case of Guyana, would reduce an important source of funds for wildlife conservation. Supporters of range countries' right to maintain control of their resources, including their genetic resources, might contend that such a system is an example of developed countries exploiting the resources of lesser-developed countries, with little or no benefit to the latter.

It has been suggested that there has already been a reduction in the demand for wild-caught specimens of some species in the United States (Allen, pers. comm.). As noted earlier, US imports have fallen dramatically in the last several years. Based on a comparison of US wholesale pricelists from 1988 and 1991, this reduction in supply does not appear to have resulted in a corresponding increase in wholesale prices, as would be expected if demand had remained stable or increased.

Demand for wild-caught birds may also decline in response to increased import controls imposed by consumer countries, or trade controls established through international treaties. If current 'trade-ban' initiatives are successful in the United States or the European Community, then the market for wild-caught birds will either decline or shift to other consumer countries. It may be expected that export values for many of the more common species of wild-caught birds now in trade will decrease in conjunction with changes of this type, resulting in a decline in the economic value of the birds to range states. The values of these birds within importing countries would be likely to increase, with a corresponding increase in the incentive to smuggle them in.

Trade Economics and Importing Countries

Imports of wild-caught birds appear to be unimportant to the overall economies of the principal consumer countries. The total declared value of all birds imported into the United States from 1986 to 1987 was approximately US$18.4 million (Mulliken and Thomsen, in prep.). Based on the average mark-up of imported birds calculated for Irian Jaya species above, a **very rough** estimate of the wholesale value of these birds would be US$68 million, not accounting for losses due to mortality prior to sale. It is important to recognise, however, that a relatively small number of importers/wholesalers are responsible for the vast majority of birds imported and revenues earned from their subsequent sale. Although 150 importers were listed in US import data for 1986 and 1987, ten companies were responsible for 82% of all birds imported during those years (Mulliken and Thomsen, in prep.).

The annual retail value of the US exotic bird trade and related product market has been estimated at US$800 million (Dempsey, 1989). However, the bulk of this trade is comprised of birds captive-bred within the United States and products related to keeping and breeding birds, not to imported wild-caught birds (Mulliken and Thomsen, in prep.). It therefore does not appear that declining availability of wild-caught specimens would have a severe impact the pet industry as a whole, although individual importers would obviously be affected. It seems likely that a similar situation exists in Europe, where birds are also captive-bred in large numbers.

ANIMAL WELFARE AND TRADE-ASSOCIATED MORTALITY

Much of the current debate regarding the international trade in wild-caught birds revolves around the welfare and mortality of birds in trade. These related issues are a source of concern from both the perspectives of animal cruelty and conservation.

It is well-documented that native wild birds have historically been maintained in captivity as pets and for other purposes in many countries. More recently, exotic species have become readily available to those interested in keeping birds, at the same time that a number of countries have prohibited the use of native species for this purpose. The resulting international trade in live birds has drawn the criticism of what appears to be a growing number of people, especially in the United States and northern Europe: regardless of the typical 'quality of life' or lifespan of a species in the wild, the fact that birds die or are unduly stressed during or as a result of trade and captivity has caused great concern. This concern is often not well understood by people in countries exporting wild birds, who are aware that species used locally as pets and traded internationally are often also consumed as food, killed for their feathers or exterminated in agricultural protection programmes (Mundy, pers. comm.; Redford and Robinson, 1987; Yost and Kelly, 1983). To them, harvesting for export may not seem 'unethical', even if considerable mortality is involved.

Those concerned with conservation note that trade-associated mortality increases the number of birds removed from the wild to meet demand. As a result, this mortality may itself be considered a factor contributing to the decline of wild bird populations.

Trade-associated mortality has been linked to inadequate provision of food and water, exposure to extreme temperatures, lack of adequate ventilation, disease, aggression and other causes. While it should be possible to alleviate many of the conditions leading to mortality given the current knowledge of avian husbandry, the material resources and/or incentives necessary to facilitate such changes are lacking in both exporting and importing countries.

Requirements regarding the care and health of birds trapped for export are, for all practical purposes, limited to those imposed by exporting countries.[11] Similarly, the welfare of birds following import is the responsibility of the governments of importing countries. Only during international transport are conditions for ensuring the welfare of birds and other animals specified by CITES.

[11]Importing countries may impose certain requirements, e.g. that birds be demonstrated to be free of certain diseases. In addition, CITES requires that animals to be exported are "so prepared" that the risk of damaging their health or subjecting them to "cruel treatment" is minimised (Articles III, IV, V), implying that birds be healthy enough prior to export to withstand the normal rigours of transport.

Unfortunately, there is very little information available regarding mortality during the various stages of the trade process, conditions contributing to mortality or species-sensitivity to trade-associated stress. As a result, much of the discussion regarding trade-associated mortality has been based on anecdotal information. Information regarding pre-export mortality is especially scarce: those data that are available appear to be based primarily on conversations with traders and isolated observations of birds during the trapping, transport and/or holding process.

Pre-export Mortality

As noted above, establishing acceptable levels of care and mortality for birds intended for export is the responsibility of the governments of exporting countries. Importing countries may be able to influence the standards applied immediately prior to export, by requiring birds to be held for a set amount of time prior to export; by requiring them to pass a veterinary inspection prior to export; and by reacting to instances where animals arriving from another country are not shipped in compliance with domestic and/or CITES transport requirements.

Estimates of pre-export mortality rates have varied from study to study and country to country. A study of exports from India (Inskipp, 1983) estimated that 5% of the birds trapped for international trade died prior to export. Based on an analysis of 1978 trade data, Bruggers (1982) estimated that between 45% and 62% of the birds trapped for export from Senegal died prior to export. Panagis and Stutterheim (1984) found that an average of 7% of the birds trapped for export from South-West Africa/Namibia died prior to export. Iñigo-Elias and Ramos (1991) estimated that 55% of Mexican parrots trapped for trade died prior to being sold in that country (Mexico banned exports of live birds in 1982). More recently, Nash (1990) estimated that 30% to 40% of some species trapped for trade in Irian Jaya died between the time they were trapped and the time they were shipped to Jakarta for export.

Unless previously estimated pre-export mortality figures for India and South-West Africa/Namibia are exemplary of the trade in general, the pressure on wild populations from international trade is much higher than indicated by trade figures collected by exporting countries, the TRAFFIC Network and others. As most national trade control mechanisms are related to the number of birds exported, rather than the number removed from the wild, those birds dying prior to export may not figure in overall management schemes, if such schemes exist at all.

Strictly speaking, once a specimen has been removed from the wild, whether it lives or dies is not important with respect to the remaining wild population.[12] Pre-export mortality and other trade-associated mortality is therefore not important from a biological perspective unless it causes harvests for trade to exceed sustainable levels.

Some species, such as the more prolific and widespread African passerines, have reproductive strategies that can readily compensate for the loss of large numbers of individuals. It could be argued, therefore, that trade-associated mortality for these species is of little biological importance. This is especially true for species subject to eradication campaigns in their countries of origin. For these species, reducing trade-associated mortality could simultaneously reduce the number of specimens trapped to meet existing demand, but would not be likely to significantly influence wild population levels. However, the cost of reducing mortality (e.g. treating for infectious disease) might be outweighed by the ease (and low cost) of collecting sufficient birds to compensate for losses.

The situation is quite different for some of the rarer, larger or otherwise more valuable species, including many psittacines. For these, demand may be equal to or greater than the number of birds currently available in international trade. Pre-export mortality for these species therefore appears to be economically as well as biologically much more significant. Reduction of pre-export mortality could increase the number of birds available for export and/or reduce the number of birds taken from the wild to maintain existing supply levels.

Because financial incentives exist to reduce mortality of more highly valued species, greater attention may be paid to their welfare prior to export. The relatively lower transport mortality rates for many psittacine vs. passerine species may partially reflect better care received prior to export (Mulliken and Thomsen, in prep.).

Animal Welfare and Mortality During International Transport

As noted above, conditions of international transport are subject to CITES controls. The Articles of the Convention require exporting Management Authorities to be "...satisfied that any living specimen will be so prepared and shipped so as to minimise the risk of injury, damage to health or cruel treatment."[13] CITES transport guidelines were accepted at the second meeting of the Conference of the Parties. The *Live Animals Regulations* of the International Air Transport

[12]Notable exceptions are those cases where individual birds are used for the purposes of species conservation, for example in species survival programmes.

[13]CITES Articles III, IV and V.

Association (IATA) were accepted as meeting CITES requirements for air transport at the fifth meeting of the Conference of the Parties (Conf. Resolution 5.18).

CITES Parties recognised that many countries were not fully implementing CITES transport requirements. A Resolution calling for the institution of a checklist to monitor the welfare of live animals prior to and following shipment was adopted at the fourth meeting of the Conference of the Parties (Resolution Conf. 4.21). However, the Parties failed to implement this checklist, which was subsequently amended during both the sixth (Resolution Conf. 6.24) and seventh (Resolution Conf. 7.13) meetings of the Conference of the Parties. At the time of this writing, very few Parties, including some of those that were the checklist's strongest proponents, are known to have implemented the checklist requirement.

A number of countries have adopted national 'animal welfare' legislation to protect the welfare of animals in captivity. In some cases, domestic animal welfare legislation also covers international transport of animals being imported, exported or trans-shipped through the country in question. In addition, some countries have developed domestic rules specific to the transport of wildlife and/or domestic animals. The European Community is currently considering live animal transport regulations for implementation by member countries, and the United States has recently revised its humane transport regulations for wildlife imported into the country.

The most comprehensive data regarding transport-associated mortality have been compiled for imports into the United States and the United Kingdom. Approximately 4.6% of all birds shipped to the United States from 1980 to 1985[14] were dead on arrival (DOA) according to information provided by the US Department of Agriculture (USDA) (Nilsson, 1989). After reaching a peak of 7.2% in 1982, DOA rates declined to 3.8% in 1986 and 3.4% in 1988 (Mulliken and Thomsen, in prep.; Nilsson, 1989). Data available from the UK Ministry of Agriculture, Fisheries and Food (MAFF) show that 3% of all birds imported into the United Kingdom from 1976 to 1989 were DOA. Mortality upon arrival reached its highest point in 1976, when 4.9% of imported birds were DOA, then fluctuated around 3% in the following years. The 1989 DOA rate of 2.2% was lower than that of any other year.

Although there are a number of exceptions, in general, mortality rates for large, long-lived and expensive birds, such as some parrot species, are lower than for smaller, inexpensive birds, such as some passerine species. Based on a preliminary review of mortality data for exotic bird imports into the United States, there appears to be a relationship between mortality during transport and the conditions of transport, the birds' physiology and behaviour, and the economic value of birds in trade.

It seems likely that the relatively lower mortality rates for many of the larger species during transport reflect differences in physiology. Larger birds generally have more efficient thermoregulatory capabilities and greater energy reserves, which increase their ability to survive stresses such as temperature variation and/or a lack of food. The relatively longer lifespan, and therefore lower natural mortality rates, of larger birds are probably also reflected in the lower mortality rates during transport of many of the larger species.

By contrast, smaller species, which lack such reserves and whose average lifespan in the wild may only be one or two years, exhibit relatively higher mortality rates. In addition, species with highly specialised feeding needs, such as nectar feeders, more commonly suffer relatively high mortality.

Transport mortality rates are also almost certainly linked to the value of the birds being shipped, which again is related to the species in trade. Because air freight charges are generally based on the volume rather than the weight of a shipment, there is an incentive to pack smaller, less valuable species in greater densities (Mulliken and Thomsen, in prep.). This increases the potential for smothering or trampling during shipment, and appears to be a factor in relatively higher mortality rates for some passerines and smaller psittacines. For very valuable species, it appears that much greater care is taken to reduce the potential for mortality during transport.

Mortality Following Import

As noted above, the welfare of birds following arrival in the country of import is the responsibility of national governments rather than CITES. Very little information is available regarding the welfare and mortality rates of birds once they have been imported. Data collected during quarantine required by the United States and the United Kingdom provides some of the only quantitative information available on this subject.

Similar to mortality during transport, variation in the mortality rates for species during quarantine probably reflects the physiology and value of the species in trade. Infectious disease also appears to be a significant cause of mortality during quarantine.

[14]Annual mortality data are calculated for fiscal rather than calendar years, to conform to data compiled by USDA and Nilsson (1989). Mortality rates given below for individual species are based on calendar years.

According to information provided by USDA, 12.8% of all birds imported into the United States from 1986 to 1988 died during the 30-day quarantine period required by US law (Mulliken and Thomsen, in prep.). The percentage of birds dying during quarantine (DDQ) declined from 14.7% in 1986 to 10.9% in 1988. According to MAFF statistics, 11.2% of all birds imported into the United Kingdom during 1988 and 10.6% of those imported during 1989 died during the 35-day quarantine period required in that country.

Mortality and the Source of Birds in Trade

As noted above, the physiology and value of a species in trade appear to be important factors in determining survival rates, and may outweigh other factors, such as whether birds are captive-bred or wild-collected. According to USDA data, only 0.13% of the approximately 62,000 cockatoos of the genus *Cacatua* imported into the United States from 1986 to 1988 were DOA. By comparison, 0.41% of the approximately 64,000 Cockatiels, an inexpensive species exclusively captive-bred for trade, imported during that period were DOA. Cockatoos had an overall quarantine mortality rate of 3.23%, less than one-half that for captive-bred Cockatiels, which had an average DDQ rate of 7.94%. The average DOA rate for imported amazons, 1.05%, was similar to that for captive-bred rosellas, 1.02%. While the DDQ rate for imported amazons was 10.77%, it was 20.41% for imported captive-bred rosellas.

Unfortunately, there are insufficient data available to compare the mortality rates of wild-caught and captive-bred specimens of the same species. It seems likely that captive-bred specimens would survive the stress of transport and quarantine in greater percentages than would wild-caught specimens of the same species, due to their generally higher values and acclimation to captivity. However, the effects of artifical diets, inbreeding and other conditions often associated with captive production may be shown to reduce hardiness of captive-bred birds. Furthermore, with competition for food and other environmental stresses all but eliminated, captive production will allow weaker birds that would have died in the wild to survive, and therefore to pass along their weaknesses to subsequent generations.

Post-quarantine Mortality

Although few if any data have been collected on post-quarantine mortality in imported birds, information available from the United States indicates that mortality may be significant, at least for some species (Mulliken and Thomsen, in prep.). Data collected for several bird shipments imported into the United States showed that for a few species, as many birds died in the two months following release from quarantine as died during the one-month quarantine period (Mulliken and Thomsen, in prep.).

There are similarly few data available to determine mortality of wild-caught birds following purchase by an end-user. No comprehensive studies have been performed to determine the lifespan of wild-caught birds in captivity (similarly, there have been few studies which quantify the average lifespan of birds in the wild). Because bird owners may be unfamiliar with avian care and behaviour, it seems likely that a certain percentage of birds die in captivity from preventable causes. At the same time, many captive birds are relieved of many of the pressures they would face in the wild, including competition for food resources and predation, and may therefore have longer individual lifespans.

CAPTIVE BREEDING

Captive breeding is being promoted by some as a viable and even preferable alternative to removing birds from the wild to supply the pet trade, with a number of NGOs in the United States and the European Community advocating that international trade in birds for the pet market be limited to captive-bred specimens. Such an approach would almost certainly have the initial effect of reducing the harvest of wild birds for international trade, and thereby alleviate the pressure on certain wild populations detrimentally affected by that trade.

Captive breeding could potentially provide an important source of income to range countries. However at present, captive breeding operations are located almost exclusively in consumer countries. The difficulties of obtaining the material resources and expertise necessary to establish successful breeding programmes are likely to limit captive breeding operations in lesser-developed countries for some time to come. As a result, it seems likely that captive breeding will offer little if any economic benefit to those countries with wild populations of species in trade, despite the fact that the 'raw material' for such breeding originated within their borders. Such a situation might be alleviated somewhat if trade in wild-caught birds for the avicultural market were to continue, in conjunction with a strong demand from that market. Range countries could theoretically capitalise on the avicultural demand for birds by severely restricting exports and greatly increasing the export price of individual birds.

However, whether in range states or consumer countries, captive breeding does not address the more fundamental problem posed to wild bird populations: habitat loss through conversion of wild lands for agriculture and other income-producing purposes. Captive breeding offers little incentive to maintain bird populations in their natural habitat. Instead, captive breeding operations, especially those in consumer countries, effectively reduce the potential for individuals in range countries to produce revenues from

their wildlife resources, and therefore remove what could be an important incentive to protect remaining habitat.

Captive breeding would address many of the current animal welfare concerns associated with trapping, trading and keeping wild animals as pets. Advocates of captive breeding assume that captive breeding facilities and transport of captive-bred birds would involve more humane conditions than those presently associated with the wild-bird trade. As noted above, US trade data show that some species of wild-caught birds in trade exhibit lower mortality during transport and quarantine than do some species supplied solely by captive breeding.

Many advocates of limiting the pet trade to captive-bred birds assert that because these animals are accustomed to humans, they will not be prone to the same level of stress found in wild-caught birds. It is important to note that habituation to humans, whether of wild-caught or captive-bred birds, depends to a large extent on the age of the birds and regularity with which they are handled. Wild-caught birds removed from the wild as chicks are likely to respond to humans in a manner similar to that of captive-bred birds handled by humans at the same age.

Finally, even if the knowledge, resources and technology necessary for captive breeding were readily available, it would be some time before aviculture could meet the current demand for many bird species.

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Annex I. Net reported imports of CITES — listed bird species (1983-1989).

1983-1989 — Birds Net Imports

TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Struthio camelus	bodies						1			0.1
Struthio camelus	eggs		1		1	58	2		2	9.1
Struthio camelus	feathers			2000				2		286.0
Struthio camelus	feathers	kg					1			0.1
Struthio camelus	feathers	kg		40						5.7
Struthio camelus	live			4	7	35	3	26	10	12.1
Struthio camelus	skins			724	1					103.6
Struthio camelus	skins	kg		526						75.1
Struthio camelus	skulls				1					0.1
Struthio camelus	trophies		4	2	3	1				1.4
Struthio camelus syriacus	eggs					1				0.1
Rheidae spp.	eggs				2					0.3
Pterocnemia pennata	bodies						2		1	0.4
Pterocnemia pennata	live			6	3		11		6	3.7
Pterocnemia pennata pennata	live							7		1.0
Rhea americana	bodies		1			1			2	0.6
Rhea americana	feathers		135	20			1	328		69.1
Rhea americana	feathers	sets						328		46.9
Rhea americana	feathers	kg				10				1.4
Rhea americana	feathers	kg		70						10.0
Rhea americana	feathers	kg	625							89.3
Rhea americana	feathers	kg	200	200		120				74.3
Rhea americana	feathers	kg	70	82	273	35				65.7
Rhea americana	feathers	kg	60	20	75	60	140	230	180	109.3
Rhea americana	live		10		25	57	41	51	38	31.7
Rhea americana	skin pieces				295		12	189		70.9
Rhea americana	skin pieces	g			25					3.6
Rhea americana	skin pieces	kg		1	300					43.0
Rhea americana	skin pieces	kg	133	1	250					54.9
Rhea americana	skins		5879	17207	15366	22599	4167	4699	1351	10181.1
Rhea americana	skins	kg						425		60.7
Rhea americana	skins	sq.cm				9290				1327.1
Rhea americana	skins	sq.m		69		242		28	24	51.9
Rhea americana	skins	kg	586							83.7
Rhea americana	skin scraps				2					0.3
Rhea americana albescens	bodies						4	5		1.3
Rhea americana albescens	bodies	sq.cm					929			132.7
Rhea americana albescens	eggs			21						3.0
Rhea americana albescens	feathers	kg	98							14.0
Rhea americana albescens	leather	pieces	10							1.4
Rhea americana albescens	live			16	6	4				3.7
Rhea americana albescens	skin pieces							32		4.6
Rhea americana albescens	skins		2637	715	19586	38480	1513	5890	68	9841.3
Rhea americana albescens	skins	sq.m						3		0.4
Rhea americana albescens	skins	sq.m					155			22.1
Rhea americana albescens	skins	sq.cm				8361				1194.4
Rhea americana albescens	skins	sq.m				91				13.0
Rhea americana albescens	skins	sq.m			205					29.3
Rhea americana albescens	skins	sq.m			55	452	399	51	12	138.4
Rhea americana albescens	skins	kg		11000	396					1628.0
Rhea americana albescens	skins	sq.m		6						0.9
Rhea americana albescens	skins	kg	7							1.0
Rhea americana albescens	skins	kg	11026	7658	9081					3966.4
Rhea americana albescens	skins	sq.cm	3716	7432						1592.6
Rhea americana albescens	skins	sq.m	1							0.1
Rhea americana albescens	skins	sq.m	4	20						3.4
Rhynchotus rufescens pallescens	bodies					1				0.1
Rhynchotus rufescens pallescens	live		4							0.6
Rhynchotus rufescens pallescens	specimens								2	0.3
Rhynchotus rufescens rufescens	live		3							0.4
Tinamus solitarius	live		2			1	5	2		1.4
Spheniscus demersus	bodies		5					1		0.9
Spheniscus demersus	live		48	24	11	21	22	40	34	28.6
Spheniscus demersus	skeletons		2	2	4					1.1
Spheniscus demersus	skins		1							0.1
Spheniscus demersus	specimens		4							0.6
Spheniscus humboldti	bodies								1	0.1
Spheniscus humboldti	live		17	10	18	22	12	38	14	18.7
Spheniscus humboldti	skins		1							0.1
Spheniscus humboldti	specimens								2	0.3
Diomedea albatrus	bodies			1						0.1
Pelecanus crispus	bodies			1						0.1
Pelecanus crispus	eggs			5						0.7
Pelecanus crispus	live		2	5	2	3	7	3	4	3.7
Sula abbotti	specimens	ml						3		0.4
Ardea goliath	live				4		1	8	14	3.9
Ardea goliath	skins						3			0.4
Ardea goliath	trophies					1				0.1
Bubulcus ibis	bodies							1	1	0.3
Bubulcus ibis	live			10	46	59		6		17.3
Bubulcus ibis	specimens					29				4.1
Casmerodius albus	bodies						2		1	0.4
Casmerodius albus	live					10				1.4
Egretta garzetta	feathers				4					0.6
Egretta garzetta	feathers	g						900		128.6
Egretta garzetta	live							6		0.9
Balaeniceps rex	live					1	5	10	11	3.9
Ciconia ciconia	bodies					1		1		0.3
Ciconia ciconia	live		2		6		7	12	14	5.9
Ciconia ciconia boyciana	bodies			5						0.7
Ciconia ciconia boyciana	live		4	4	17	2	5	7	9	6.9
Ciconia ciconia boyciana	skeletons				1					0.1
Ciconia nigra	bodies			2		1		5		1.1
Ciconia nigra	live		2		5	1	2	13	17	5.7
Ciconia nigra	skins					1				0.1
Ephippiorhynchus senegalensis	live				4	52	54	65	83	36.9
Ephippiorhynchus senegalensis	trophies					1				0.1
Jabiru mycteria	live					4		2		0.9
Leptoptilos crumeniferus	bodies					1				0.1
Leptoptilos crumeniferus	feathers		8							1.1
Leptoptilos crumeniferus	live			22	19	82	192	117	119	78.7
Leptoptilos crumeniferus	skin pieces		1							0.1
Eudocimus ruber	bodies						1		1	0.3
Eudocimus ruber	live					4	74	42	54	24.9
Geronticus calvus	live								4	0.6
Geronticus eremita	bodies		2					3		0.7

Annex I. Net reported imports of CITES — listed bird species (1983-1989).

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Geronticus eremita	live		25	43	22	66	52	40	32	40.0
Hagedashia hagedash	bodies							1	1	0.3
Hagedashia hagedash	live						124	18	5	21.0
Nipponia nippon	bodies			1		2		2		0.7
Nipponia nippon	live				1			2	1	0.6
Platalea leucorodia	bodies			1				1		0.3
Platalea leucorodia	live		49	112	2	83	28	4	16	42.0
Threskiornis aethiopicus	live		2		18	46	244	165	92	81.0
Phoenicopteridae spp.	live		4	324	20	84	25		46	71.9
Phoeniconaias minor	bodies			40	1	6	3	3	1	7.7
Phoeniconaias minor	feathers						196			28.0
Phoeniconaias minor	feathers	kg					2	26		4.0
Phoeniconaias minor	feathers	items				56				8.0
Phoeniconaias minor	live		7	1108	834	3138	2922	2876	694	1654.1
Phoeniconaias minor	trophies							9		1.3
Phoenicoparrus andinus	bodies								1	0.1
Phoenicoparrus andinus	specimens				3					0.4
Phoenicopterus chilensis	bodies			16					7	3.3
Phoenicopterus chilensis	live		436	306	367	69	1059	930	48	459.3
Phoenicopterus chilensis	specimens				1				1	0.3
Phoenicopterus roseus	bodies							1		0.1
Phoenicopterus roseus	feathers						4			0.6
Phoenicopterus roseus	live		14	98	706	474	162	214	61	247.0
Phoenicopterus ruber	bodies				2					0.3
Phoenicopterus ruber	eggs						1		7	1.1
Phoenicopterus ruber	feathers	items		2						0.3
Phoenicopterus ruber	live		213	291	231	1107	1830	1282	292	749.4
Phoenicopterus ruber	skeletons		1							0.1
Phoenicopterus ruber	skins					2				0.3
Phoenicopterus ruber	specimens								1	0.1
Anatidae spp.	bodies							15		2.1
Alopochen aegyptiacus	bodies				1	2	3	3	10	2.7
Alopochen aegyptiacus	live				2	30	16	12	8	9.7
Alopochen aegyptiacus	skins						7	3		1.4
Alopochen aegyptiacus	trophies				5				6	1.6
Anas acuta	bodies							2	3	0.7
Anas acuta	live					710	479	52	234	210.7
Anas acuta	meat								2	0.3
Anas acuta	specimens							20		2.9
Anas aucklandica aucklandica	specimens							1		0.1
Anas aucklandica chlorotis	live								8	1.1
Anas capensis	live					18		27	7	7.4
Anas clypeata	bodies								2	0.3
Anas clypeata	live				1	67	67	32	104	38.7
Anas clypeata	specimens							16		2.3
Anas crecca	bodies				3	604	1649	790	56	443.1
Anas crecca	eggs						10	15		3.6
Anas crecca	feathers					950	50		600	228.6
Anas crecca	feathers	kg							1	0.1
Anas crecca	feathers	kg					20			2.9
Anas crecca	live				6	117	88	185	355	107.3
Anas crecca	meat							55		7.9
Anas laysanensis	bodies			1		2				0.4
Anas laysanensis	live		22	12	12	5	2	16	9	11.1
Anas penelope	bodies				1	641	304	2578	2	503.7
Anas penelope	eggs							10		1.4
Anas penelope	live					207	278	145	521	164.4
Anas penelope	skins						1		1	0.3
Anas penelope	trophies				1					0.1
Anas querquedula	bodies			3	3		1	5		1.7
Anas querquedula	eggs				2					0.3
Anas querquedula	live				2	15	16	21	25	11.3
Anas querquedula	skins						2		3	0.7
Anser albifrons gambelli	live				12					1.7
Aythya nyroca	bodies						1			0.1
Aythya nyroca	live				1	4	4	10	9	4.0
Branta canadensis leucopareia	live		15						4	2.7
Branta ruficollis	bodies			6			1			1.0
Branta ruficollis	live		194	196	287	78	217	142	143	179.6
Branta ruficollis	skins						4			0.6
Branta sandvicensis	bodies								1	0.1
Branta sandvicensis	live		19	37	35	15	61	39	59	37.9
Cairina moschata	bodies							2		0.3
Cairina moschata	feathers	kg							10	1.4
Cairina scutulata	live				2	54	9		5	10.0
Cairina scutulata	skins					9				1.3
Coscoroba coscoroba	bodies						1	1		0.3
Coscoroba coscoroba	live		4	10	71	8	6	13	16	18.3
Coscoroba coscoroba	specimens						2			0.3
Cygnus columbianus jankowskii	bodies			1						0.1
Cygnus columbianus jankowskii	live			3		3	1	10	6	3.3
Cygnus melanocoryphus	bodies				1				3	0.6
Cygnus melanocoryphus	live		19	52	40	62	94	117	110	70.6
Cygnus melanocoryphus	skulls						1			0.1
Cygnus melanocoryphus	specimens						1			0.1
Dendrocygna arborea	live			7	6	1	19	17	54	14.9
Dendrocygna autumnalis	live						2	4	19	3.6
Dendrocygna bicolor	live				6	40	2	16	13	11.0
Dendrocygna viduata	bodies								2	0.3
Dendrocygna viduata	live				6	86	10	21	105	32.6
Dendrocygna viduata	skins						1			0.1
Dendrocygna viduata	trophies						1		1	0.3
Nettapus auritus	bodies				2					0.3
Nettapus auritus	live				171	421	182	580	216	224.3
Nettapus auritus	skins							2		0.3
Oxyura leucocephala	live		3	1	2		2	25	33	9.4
Plectropterus gambensis	bodies							3		0.4
Plectropterus gambensis	live					6	12	20		5.4
Plectropterus gambensis	trophies						1			0.1
Pteronetta hartlaubii	live				8		10			2.6
Pteronetta hartlaubii	trophies							1		0.1
Sarkidiornis melanotos	bodies						1	1	3	0.7
Sarkidiornis melanotos	live		10		16	10	10	18	8	10.3
Sarkidiornis melanotos	skins		1				5			0.9
Sarkidiornis melanotos	specimens						1			0.1
Sarkidiornis melanotos	trophies				1		3		5	1.3

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
FALCONIFORMES spp.	bodies		2	4			1			1.0
FALCONIFORMES spp.	claws			1				1		0.3
FALCONIFORMES spp.	feathers			22			7			4.1
FALCONIFORMES spp.	feathers	sets					5			0.7
FALCONIFORMES spp.	feathers	kg	39							5.6
FALCONIFORMES spp.	feet							2		0.3
FALCONIFORMES spp.	live		596	234			2		3	119.3
FALCONIFORMES spp.	skins						1			0.1
FALCONIFORMES spp.	trophies								7	1.0
Sarcoramphus papa	live						11	4		2.1
Vultur gryphus	bodies					1	2	1	1	0.7
Vultur gryphus	live			4	6	2	7	9	13	5.9
Pandion haliaetus	bodies			2		2		3	2	1.3
Pandion haliaetus	eggs				2					0.3
Pandion haliaetus	feathers					4				0.6
Pandion haliaetus	feet					2				0.3
Pandion haliaetus	live			1	1	5	7			2.0
Pandion haliaetus	skins						1			0.1
Pandion haliaetus	specimens					3				0.4
Accipitridae spp.	bodies		2		2	1	4	1		1.4
Accipitridae spp.	feathers			1		20			1	3.1
Accipitridae spp.	feet					6	1	2		1.3
Accipitridae spp.	live		8	8		4	2			3.1
Accipitridae spp.	skins						2	2	1	0.7
Accipitridae spp.	specimens					2	2		1	0.7
Accipitridae spp.	trophies					2				0.3
Accipiter spp.	bodies						1	2	3	0.9
Accipiter spp.	feet								5	0.7
Accipiter spp.	live		2		13					2.1
Accipiter spp.	skins						1			0.1
Accipiter spp.	specimens				1		3			0.6
Accipiter spp.	trophies							1		0.1
Accipiter badius	live						36		2	5.4
Accipiter bicolor	bodies								6	0.9
Accipiter bicolor	skeletons					4				0.6
Accipiter brevipes	bodies								1	0.1
Accipiter brevipes	specimens		1							0.1
Accipiter brevipes	trophies							1		0.1
Accipiter cooperii	bodies		2	3	3	1	3	7	2	3.0
Accipiter cooperii	eggs					6				0.9
Accipiter cooperii	feet			2						0.3
Accipiter cooperii	live							3	11	2.0
Accipiter cooperii	skins					2				0.3
Accipiter cooperii	specimens					2				0.3
Accipiter fasciatus	specimens				2					0.3
Accipiter gentilis	bodies		152	11	2	2	4	17	3	27.3
Accipiter gentilis	feathers	kg						48	18	9.4
Accipiter gentilis	live		39	55	106	69	68	209	209	107.9
Accipiter gentilis	skeletons				1	1				0.3
Accipiter gentilis	skins		11	20		1			1	4.7
Accipiter gentilis	skulls						1		1	0.3
Accipiter gentilis	specimens			2						0.3
Accipiter gularis	bodies		2						2	0.6
Accipiter gularis	skins								1	0.1
Accipiter haplochrous	bodies								1	0.1
Accipiter haplochrous	feet								1	0.1
Accipiter haplochrous	specimens					8				1.1
Accipiter melanoleucus	live						1		1	0.3
Accipiter minullus	bodies							1		0.1
Accipiter nisus	bodies		143	9	3	4	4	23	10	28.0
Accipiter nisus	eggs			1			2			0.4
Accipiter nisus	live		3		3	4	10	6	5	4.4
Accipiter nisus	skeletons			1						0.1
Accipiter nisus	skins		1						2	0.4
Accipiter novaehollandiae	live						1			0.1
Accipiter novaehollandiae	specimens					2				0.3
Accipiter poliocephalus	bodies							1		0.1
Accipiter poliocephalus	live						2			0.3
Accipiter poliogaster	live					12				1.7
Accipiter rufiventris	live		1							0.1
Accipiter soloensis	bodies			1				1	1	0.4
Accipiter soloensis	specimens		2							0.3
Accipiter striatus	bodies			2	2	4			1	1.3
Accipiter striatus	skins					4				0.6
Accipiter striatus	skulls								1	0.1
Accipiter striatus	specimens		1			5				0.9
Accipiter superciliosus	bodies			1						0.1
Accipiter tachiro	bodies							2		0.3
Accipiter tachiro	live						1			0.1
Accipiter trivirgatus	bodies		1							0.1
Accipiter trivirgatus	live					4		10		2.0
Accipiter virgatus	specimens		1							0.1
Aegypius monachus	bodies							1	1	0.3
Aegypius monachus	feathers	kg						43	52	13.6
Aegypius monachus	live		2	3	15	11	3	13	6	7.6
Aquila spp.	live				12	2	3	3		2.9
Aquila spp.	specimens								2	0.3
Aquila audax	bodies			1			1			0.3
Aquila audax	live		2	1	1		1	5		1.4
Aquila chrysaetos	bodies		3	8	1	3	2	6	1	3.4
Aquila chrysaetos	claws							1		0.1
Aquila chrysaetos	feathers		2			92	4		11	15.6
Aquila chrysaetos	feathers	kg						147	176	46.1
Aquila chrysaetos	feet						1		1	0.3
Aquila chrysaetos	live		14	10	7	11	16	21	18	13.9
Aquila chrysaetos	skins		1							0.1
Aquila chrysaetos	skulls								4	0.6
Aquila clanga	bodies							1		0.1
Aquila clanga	feathers	kg							7	1.0
Aquila clanga	live			2	2		1	4		1.3
Aquila heliaca	bodies			2				1		0.4
Aquila heliaca	live		2	4	1		2	4	1	2.0
Aquila heliaca	specimens					1				0.1
Aquila pomarina	bodies							2		0.3
Aquila rapax	bodies		1			1	2			0.6
Aquila rapax	eggs			5						0.7

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Aquila rapax	feathers	kg							35	5.0
Aquila rapax	live		26	31	52	12	22	29	10	26.0
Aquila rapax	specimens					1				0.1
Aquila rapax nipalensis	live		10	3	2	1			4	2.9
Aquila verreauxii	bodies					1				0.1
Aquila verreauxii	live		1					1	5	1.0
Aquila wahlbergi	live		13		1					2.0
Aquila wahlbergi	trophies			1						0.1
Busarellus nigricollis	skins					3				0.4
Butastur rufipennis	skins						1			0.1
Butastur teesa	bodies		1	1		1				0.4
Buteo spp.	bodies						1	2	8	1.6
Buteo spp.	feathers								16	2.3
Buteo spp.	feet							5	11	2.3
Buteo spp.	live					2				0.3
Buteo spp.	specimens				1					0.1
Buteo spp.	trophies							1	2	0.4
Buteo albicaudatus	bodies						1			0.1
Buteo albicaudatus	live		1					3		0.6
Buteo albicaudatus	specimens				1					0.1
Buteo albonotatus	bodies		1					2		0.4
Buteo brachyurus	bodies								1	0.1
Buteo buteo	bodies		1281	19	3	7	6	527	12	265.0
Buteo buteo	bones		1	4						0.7
Buteo buteo	bones	sets	5							0.7
Buteo buteo	feathers	kg						57	89	20.9
Buteo buteo	live			3	5	1	1	4	2	2.3
Buteo buteo	skeletons		2	1						0.4
Buteo buteo	skins								4	0.6
Buteo buteo	skulls		1				1			0.3
Buteo buteo	specimens		2		1	1				0.6
Buteo buteo	trophies		2			2		1		0.7
Buteo galapagoensis	bones				1					0.1
Buteo galapagoensis	live								2	0.3
Buteo galapagoensis	specimens				4	5				1.3
Buteo hemilasius	bodies						1			0.1
Buteo hemilasius	feathers	kg							256	36.6
Buteo jamaicensis	bodies		7	7	7	12	26	12	16	12.4
Buteo jamaicensis	claws				1		3			0.6
Buteo jamaicensis	feathers				48	6	1	55	25	19.3
Buteo jamaicensis	feet						3	2		0.7
Buteo jamaicensis	live		8	5	10	12	5	3	7	7.1
Buteo jamaicensis	skins							1		0.1
Buteo jamaicensis	skulls					1			5	0.9
Buteo jamaicensis	specimens				4					0.6
Buteo lagopus	bodies		28	2			2	3	2	5.3
Buteo lagopus	eggs						1			0.1
Buteo lagopus	live			2	1		1			0.6
Buteo lagopus	skins								1	0.1
Buteo lagopus	specimens							1		0.1
Buteo lineatus	bodies					3		3	1	1.0
Buteo lineatus	live								1	0.1
Buteo magnirostris	bodies							5	3	1.1
Buteo magnirostris	live		2	1	1			1		0.7
Buteo magnirostris	skins			1		3				0.6
Buteo magnirostris	specimens			2	1			2		0.7
Buteo nitidus	bodies		1	1		2	2	4	3	1.9
Buteo nitidus	feet		4							0.6
Buteo nitidus	live			1						0.1
Buteo nitidus	skins			1						0.1
Buteo nitidus	trophies				1					0.1
Buteo platypterus	bodies			1				1		0.3
Buteo platypterus	feathers						8			1.1
Buteo poecilochrous	bodies		1							0.1
Buteo polyosoma	bodies		1						8	1.3
Buteo polyosoma	live		16	4	9	6	2	4		5.9
Buteo polyosoma	skeletons					2				0.3
Buteo polyosoma	skins					2				0.3
Buteo polyosoma	specimens				2				9	1.6
Buteo regalis	bodies				1	1	1			0.4
Buteo regalis	live				4	3	6	1	9	3.3
Buteo regalis	skulls								1	0.1
Buteo rufinus	live					21				3.0
Buteo rufofuscus	live		1			4		1	2	1.1
Buteo rufofuscus	trophies								1	0.1
Buteo rufofuscus augur	live		1				1			0.3
Buteo swainsonii	bodies			2	2	2	3	1	2	1.7
Buteo swainsonii	live		1	3			1		1	0.9
Buteo swainsonii	skeletons			1	2	2				0.7
Buteo swainsonii	skulls								4	0.6
Buteo swainsonii	specimens							1		0.1
Buteo ventralis	skeletons					2				0.3
Buteogallus aequinoctialis	feathers							8		1.1
Buteogallus aequinoctialis	live		1							0.1
Buteogallus anthracinus	bodies						1	4		0.7
Buteogallus urubitinga	live				1	1				0.3
Buteogallus urubitinga	skins					3				0.4
Chondrohierax uncinatus	bodies							1		0.1
Circaetus spp.	specimens					1				0.1
Circaetus spp.	trophies		3							0.4
Circaetus cinereus	live								1	0.1
Circaetus gallicus	bodies		1					3	1	0.7
Circaetus gallicus	live					1				0.1
Circus spp.	bodies				1					0.1
Circus spp.	claws			2						0.3
Circus spp.	specimens		2						7	1.3
Circus aeruginosus	bodies		19		2	1	2	1	1	3.7
Circus aeruginosus	live		2				1	2		0.7
Circus aeruginosus	specimens					1				0.1
Circus buffoni	skeletons					2				0.3
Circus buffoni	skins					2				0.3
Circus cinereus	bodies								7	1.0
Circus cinereus	skeletons					2				0.3
Circus cyaneus	bodies		6	2			1	2		1.6
Circus cyaneus	live		1							0.1
Circus cyaneus	skulls								4	0.6

Annex I. Net reported imports of CITES — listed bird species (1983-1989).

1983-1989 — Birds Net Imports

TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Circus macrourus	bodies							1		0.1
Circus maurus	specimens		1							0.1
Circus pygargus	bodies							1	1	0.3
Elanoides forficatus	bodies			1						0.1
Elanus caeruleus	bodies		1			1	1	7	5	2.1
Elanus caeruleus	live			3	24		170		13	30.0
Elanus caeruleus	skeletons			1						0.1
Elanus caeruleus	specimens		3							0.4
Elanus caeruleus	trophies					1	1			0.3
Elanus spp.	live							4		0.6
Elanus leucurus	bodies		1	4	4	11	10	3	3	5.1
Elanus leucurus	specimens				1					0.1
Geranoaetus melanoleucus	bodies								2	0.3
Geranoaetus melanoleucus	live			8	1			2	2	1.9
Geranoaetus melanoleucus	skeletons					2				0.3
Geranospiza caerulescens	live			1						0.1
Gypaetus barbatus	bodies		3	1			1			0.7
Gypaetus barbatus	eggs			4	2	5		2	6	2.7
Gypaetus barbatus	feathers	kg						21	17	5.4
Gypaetus barbatus	live		5	6	16	13	19	18	23	14.3
Gypaetus barbatus	specimens								1	0.1
Gypohierax angolensis	bodies				1					0.1
Gypohierax angolensis	feathers	kg					1			0.1
Gypohierax angolensis	live						1			0.1
Gypohierax angolensis	skins						1			0.1
Gyps africanus	bodies							1		0.1
Gyps africanus	live			28	16	14	7	23		12.6
Gyps bengalensis	live			1					1	0.3
Gyps coprotheres	bones	boxes		1						0.1
Gyps coprotheres	feet				4					0.6
Gyps coprotheres	live			5				1	1	1.0
Gyps coprotheres	skeletons					1	2			0.4
Gyps fulvus	bodies			1			2	3		0.9
Gyps fulvus	feathers	kg							29	4.1
Gyps fulvus	live		3	9	11	8	2	25	19	11.0
Gyps himalayensis	live			1	4			6	3	2.0
Gyps indicus	live			2						0.3
Gyps rueppellii	live		22	2	14	15	2	8		9.0
Gyps rueppellii	skins						1			0.1
Gyps rueppellii	trophies					2				0.3
Haliaeetus spp.	bodies					1				0.1
Haliaeetus spp.	live					1				0.1
Haliaeetus spp.	trophies				1				2	0.4
Haliaeetus albicilla	bodies		1	1	2	4	3	5	2	2.6
Haliaeetus albicilla	eggs			2			7			1.3
Haliaeetus albicilla	live		18	13	13		2	9	7	8.9
Haliaeetus albicilla	meat					2				0.3
Haliaeetus albicilla	trophies							1		0.1
Haliaeetus leucocephalus	bodies					1			2	0.4
Haliaeetus leucocephalus	feathers			2		91	4	4	70	24.4
Haliaeetus leucocephalus	feathers	flasks							21	3.0
Haliaeetus leucocephalus	feathers	g							500	71.4
Haliaeetus leucocephalus	live		32	32	50	67	45	45	39	44.3
Haliaeetus leucocephalus	specimens		10			1			46	8.1
Haliaeetus leucocephalus	specimens	flasks							42	6.0
Haliaeetus leucocephalus	specimens	ml							18	2.6
Haliaeetus leucogaster	live		4			2	2	11	1	2.9
Haliaeetus leucoryphus	live					1	3			0.6
Haliaeetus pelagicus	bodies			1						0.1
Haliaeetus pelagicus	live		6		2			2	2	1.7
Haliaeetus vocifer	bodies							1	1	0.3
Haliaeetus vocifer	live		12		2	35	25	18	2	13.4
Haliaeetus vocifer	trophies					2				0.3
Haliastur indus	bodies		1					2		0.4
Haliastur indus	live		2	6				2		1.4
Haliastur indus	specimens		4							0.6
Haliastur indus	trophies				1					0.1
Harpagus bidentatus	bodies							2	1	0.4
Harpagus diodon	live					2				0.3
Harpia harpyja	eggs				4	4				1.1
Harpia harpyja	live			1	3		1			0.7
Harpyopsis novaeguineae	specimens					1				0.1
Heterospizias meridionalis	bodies		1				1			0.3
Heterospizias meridionalis	skins					3				0.4
Hieraaetus spp.	live				1					0.1
Hieraaetus fasciatus	bodies			1						0.1
Hieraaetus fasciatus	live		1	6	3		1	9	2	3.1
Hieraaetus pennatus	bodies							1		0.1
Hieraaetus pennatus	live					4	1	8	2	2.1
Hieraaetus spilogaster	live		1	1		10	1	1		2.0
Ichthyophaga ichthyaetus	live				1					0.1
Ichthyophaga ichthyaetus	specimens		1							0.1
Ictinaetus malayensis	live						1			0.1
Ictinia plumbea	specimens			2	1					0.4
Kaupifalco monogrammicus	bodies		3				4			1.0
Kaupifalco monogrammicus	live			2		1		5	1	1.3
Kaupifalco monogrammicus	skins						18			2.6
Leucopternis albicollis	bodies							1		0.1
Leucopternis albicollis	live			2	1	1				0.6
Leucopternis melanops	live			2						0.3
Lophoaetus occipitalis	bodies		1					1		0.3
Lophoaetus occipitalis	live		1			3				0.6
Lophoaetus occipitalis	skins						1			0.1
Lophoaetus occipitalis	specimens						1			0.1
Lophoaetus occipitalis	trophies								1	0.1
Melierax canorus	live						1			0.1
Melierax gabar	live			2			1		2	0.7
Melierax metabates	bodies						1	1		0.3
Melierax metabates	live		1							0.1
Melierax metabates	skins						2			0.3
Milvus migrans	bodies		1			1		1	2	0.7
Milvus migrans	feathers	kg							14	2.0
Milvus migrans	live			2	14		2	18	10	6.6
Milvus migrans	specimens					2				0.3
Milvus migrans	trophies					1			1	0.3
Milvus milvus	bodies		1	1				3		0.7

Annex I. Net reported imports of CITES — listed bird species (1983-1989).

1983-1989 — Birds Net Imports

TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Milvus milvus	live							3	22	3.6
Morphnus guianensis	live			1			1			0.3
Necrosyrtes monachus	bodies								1	0.1
Necrosyrtes monachus	live		13		16	10	7	25	3	10.6
Necrosyrtes monachus	skins						1			0.1
Necrosyrtes monachus	trophies					2				0.3
Neophron percnopterus	bodies		1							0.1
Neophron percnopterus	live		7	1	6	13	4	14	1	6.6
Parabuteo unicinctus	bodies		2	3	1	1	2	1	21	4.4
Parabuteo unicinctus	feet								1	0.1
Parabuteo unicinctus	live		16	6	4	25	32	52	91	32.3
Parabuteo unicinctus	specimens				1			70	15	12.3
Parabuteo unicinctus	trophies								1	0.1
Pernis apivorus	bodies		4	1		1		3		1.3
Pernis apivorus	live			2	4		3	2		1.6
Pernis ptilorhyncus	feathers	kg						67	80	21.0
Pernis ptilorhyncus	live						2			0.3
Pithecophaga jefferyi	bodies				1					0.1
Pithecophaga jefferyi	eggs		1							0.1
Pithecophaga jefferyi	live		1							0.1
Pithecophaga jefferyi	specimens				1					0.1
Polemaetus bellicosus	live		5		7		1	2	1	2.3
Polemaetus bellicosus	trophies					1				0.1
Polyboroides radiatus	bodies						4			0.6
Polyboroides radiatus	skins						3			0.4
Polyboroides typus	live		1	2	1					0.6
Polyboroides typus	trophies								2	0.3
Rostrhamus sociabilis	skins					4				0.6
Sarcogyps calvus	live		6				2			1.1
Spilornis cheela	bodies		1			4				0.7
Spilornis cheela	feathers	g							400	57.1
Spilornis cheela	live		2	1		2	19	2		3.7
Spilornis cheela	skins				2					0.3
Spilornis cheela	specimens		2							0.3
Spilornis cheela	trophies		4	1	1					0.9
Spilornis holospilus	bodies							1		0.1
Spizaetus alboniger	live						11	1	1	1.9
Spizaetus cirrhatus	bodies					6				0.9
Spizaetus cirrhatus	live						8	4		1.7
Spizaetus cirrhatus	trophies		6							0.9
Spizaetus lanceolatus	live		1							0.1
Spizaetus lanceolatus	skins						1			0.1
Spizaetus nanus	trophies			1						0.1
Spizaetus nipalensis	bodies					6				0.9
Spizaetus nipalensis	live						68	55		17.6
Spizaetus ornatus	claws								2	0.3
Spizaetus ornatus	live		6	4	2	2	4			2.6
Spizaetus tyrannus	live		1	3				2		0.9
Spizastur melanoleucus	bodies							1		0.1
Spizastur melanoleucus	live		1							0.1
Stephanoaetus coronatus	live		1			600				85.9
Stephanoaetus coronatus	trophies					1				0.1
Terathopius ecaudatus	live		18	47	34	49	32	18	6	29.1
Terathopius ecaudatus	trophies					1			1	0.3
Torgos tracheliotus	bodies						2			0.3
Torgos tracheliotus	live		7	1	2	12	5	11	1	5.6
Torgos tracheliotus	trophies					1				0.1
Trigonoceps occipitalis	bodies		1							0.1
Trigonoceps occipitalis	live		6	8	2	1	7	12		5.1
Trigonoceps occipitalis	shells	kg	3000	414						487.7
Sagittarius serpentarius	live		3	39	96	122	65	7	2	47.7
Falconidae spp.	bodies				4	6	3	1	2	2.3
Falconidae spp.	claws				14		1	1		2.3
Falconidae spp.	feet				1					0.1
Falconidae spp.	live			15	19	2	13	1	6	8.0
Falconidae spp.	specimens				9				23	4.6
Falconidae spp.	trophies				1					0.1
Falco spp.	live		25							3.6
Falco hybrid	eggs							29		4.1
Falco hybrid	eggs	items							43	6.1
Falco hybrid	live		7	11	22	19	31	84	50	32.0
Falco hybrid	live	items							34	4.9
Falco ardosiaceus	bodies		1				2			0.4
Falco ardosiaceus	skins						4			0.6
Falco berigora	bodies		4							0.6
Falco biarmicus	live		15	20	240	17	15	61	22	55.7
Falco biarmicus	live	items							34	4.9
Falco biarmicus	specimens								1	0.1
Falco biarmicus biarmicus	live		2							0.3
Falco biarmicus erlangeri	bodies		1							0.1
Falco biarmicus erlangeri	live		11	1						1.7
Falco cenchroides	specimens	ml						3		0.4
Falco cherrug	live		10	22	23	22	26	31	45	25.6
Falco cherrug	live	items							46	6.6
Falco chicquera	live		1	2		5	2			1.4
Falco columbarius	bodies		7		1			2	2	1.7
Falco columbarius	eggs			11				1		1.7
Falco columbarius	live			2		4	2	3	6	2.4
Falco columbarius	skulls								1	0.1
Falco columbarius	specimens							1		0.1
Falco concolor	live				2		3			0.7
Falco deiroleucus	live		9							1.3
Falco dickinsoni	live						1			0.1
Falco eleonorae	skins		3							0.4
Falco fasciinucha	live			1				2		0.4
Falco femoralis	live				1		7	10		2.6
Falco femoralis	skins					2				0.3
Falco femoralis	specimens			1					1	0.3
Falco jugger	bodies							1		0.1
Falco jugger	live			13	107	152	242	296	12	117.4
Falco jugger	live	items							5	0.7
Falco mexicanus	eggs			7						1.0
Falco mexicanus	live		3	9	5	11	8	5	12	7.6
Falco mexicanus	specimens						1			0.1
Falco naumanni	bodies			2				2		0.6
Falco novaezeelandiae	live				2		2	10		2.0

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Falco novaezeelandiae	specimens		1							0.1
Falco peregrinus	bodies			5		10	7	4	8	4.9
Falco peregrinus	eggs		116	53	35	51	132	25	14	60.9
Falco peregrinus	eggs	sets							1	0.1
Falco peregrinus	eggs (live)			137						19.6
Falco peregrinus	feathers		22	82		20	1	5	10	20.0
Falco peregrinus	live		147	151	95	151	142	252	123	151.6
Falco peregrinus	live	items							86	12.3
Falco peregrinus	skins						1			0.1
Falco peregrinus	specimens			20	62	18	77	1	139	45.3
Falco peregrinus	specimens	kg							150	21.4
Falco peregrinus anatum	bodies		1							0.1
Falco peregrinus anatum	live		16	17	18	23	8	14	29	17.9
Falco peregrinus babylonicus	live		9	1						1.4
Falco peregrinus brookei	live		16		1	4		4	4	4.1
Falco peregrinus calidus	live		1							0.1
Falco peregrinus pealei	feathers								19	2.7
Falco peregrinus pealei	live		10	7	23	3	4	5	9	8.7
Falco peregrinus pealei	skins		4							0.6
Falco peregrinus pelegrinoides	live				10	4	13	1	3	4.4
Falco peregrinus pelegrinoides	specimens								5	0.7
Falco peregrinus peregrinus	bodies						4			0.6
Falco peregrinus peregrinus	eggs				61		61			17.4
Falco peregrinus peregrinus	live		4	15	35	25	42			17.3
Falco peregrinus tundrius	live		4	2	1	7				2.0
Falco peregrinus tundrius	specimens					80				11.4
Falco punctatus	bodies			1						0.1
Falco punctatus	eggs		5	15	40					8.6
Falco punctatus	live					6		5	11	3.1
Falco punctatus	shells			20						2.9
Falco punctatus	specimens							25		3.6
Falco rufigularis	bodies								1	0.1
Falco rufigularis	live		9						4	1.9
Falco rufigularis	specimens								2	0.3
Falco rupicoloides	bodies						1			0.1
Falco rupicoloides	live					1			2	0.4
Falco rusticolus	bodies		5	2		5	1	2		2.1
Falco rusticolus	bones		23							3.3
Falco rusticolus	eggs			6				2		1.1
Falco rusticolus	eggs	items							1	0.1
Falco rusticolus	feathers			20		24			3	6.7
Falco rusticolus	live		45	13	15	19	14	24	50	25.7
Falco rusticolus	live	items							19	2.7
Falco rusticolus	skins					1				0.1
Falco rusticolus	specimens							8	194	28.9
Falco rusticolus	specimens	flasks							45	6.4
Falco sparverius	bodies		4		8	17	14	9	10	8.9
Falco sparverius	eggs						330			47.1
Falco sparverius	live		36	37	19	10	101	19	30	36.0
Falco sparverius	skeletons			1						0.1
Falco sparverius	skins		1						2	0.4
Falco sparverius	skulls								2	0.3
Falco sparverius	specimens		6		69	2		1	6	12.0
Falco sparverius	specimens	g		21						3.0
Falco sparverius	trophies						1			0.1
Falco subbuteo	bodies		6	1	2		1	1		1.6
Falco subbuteo	eggs			2						0.3
Falco subbuteo	live								1	0.1
Falco subbuteo	live	items							1	0.1
Falco tinnunculus	bodies		168	5	33		4	4	4	31.1
Falco tinnunculus	eggs						2			0.3
Falco tinnunculus	live		34	4		5	10	6	10	9.9
Falco tinnunculus	skins		1				2			0.4
Falco tinnunculus	skulls						1			0.1
Falco tinnunculus	specimens		1			1	1		1	0.6
Falco tinnunculus	trophies							1		0.1
Falco vespertinus	bodies							3		0.4
Falco vespertinus	live		3	2			1			0.9
Herpetotheres cachinnans	bodies								1	0.1
Herpetotheres cachinnans	specimens	g		21						3.0
Micrastur ruficollis	specimens			1					2	0.4
Microhierax caerulescens	live			2	2		122	4		18.6
Microhierax caerulescens	skulls						1			0.1
Microhierax fringillarius	bodies		1	1				1		0.4
Microhierax fringillarius	live						50			7.1
Milvago chimachima	live			1						0.1
Milvago chimachima	skins					4				0.6
Milvago chimachima	specimens	g		42						6.0
Milvago chimango	bodies		1						14	2.1
Milvago chimango	skeletons					28				4.0
Milvago chimango	skins					4				0.6
Phalcoboenus albogularis	live				6				1	1.0
Phalcoboenus albogularis	skeletons					2				0.3
Phalcoboenus albogularis	specimens	g		21						3.0
Phalcoboenus australis	live		28				2	6	5	5.9
Phalcoboenus megalopterus	live			7						1.0
Polihierax semitorquatus	live						29	2	5	5.1
Polyborus plancus	bodies								3	0.4
Polyborus plancus	live		33	15	18	10		4	7	12.4
Polyborus plancus	skeletons					6				0.9
Polyborus plancus	skins					3				0.4
Polyborus plancus	specimens	g		21						3.0
Spiziapteryx circumcinctus	specimens	g		21						3.0
Crax blumenbachii	live								6	0.9
Crax daubentoni	live								5	0.7
Crax globulosa	live								1	0.1
Crax mitu	live		2				2	5		1.3
Crax mitu	skulls						1			0.1
Crax mitu mitu	feathers		131							18.7
Crax pauxi	live								3	0.4
Crax rubra	feathers			3						0.4
Crax rubra	live				2	7	11	15	12	6.7
Crax rubra	skins						2			0.3
Ortalis vetula	bodies		1							0.1
Ortalis vetula	live					3		3		0.9
Penelope purpurascens	live							1	3	0.6

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1983-1989			Birds Net Imports							
TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Phasianidae spp.	live					26				3.7
Agelastes meleagrides	live								20	2.9
Agelastes meleagrides	trophies				2				2	0.6
Agriocharis ocellata	live						2	4	3	1.3
Agriocharis ocellata	trophies					1				0.1
Argusianus argus	live		8	2	7	8	18	17	32	13.1
Argusianus argus argus	live		1				7			1.1
Argusianus argus grayi	live		1							0.1
Catreus wallichi	bodies								1	0.1
Catreus wallichi	eggs					567	680	900	809	422.3
Catreus wallichi	eggs (live)				100				323	60.4
Catreus wallichi	live		9	32	2	10	474	81	11	88.4
Colinus virginianus ridgwayi	bodies		55							7.9
Colinus virginianus ridgwayi	live		4							0.6
Crossoptilon crossoptilon	bodies		1			2		2		0.7
Crossoptilon crossoptilon	live		33	40	22	25	31	38	45	33.4
Crossoptilon mantchuricum	bodies					2		3		0.7
Crossoptilon mantchuricum	live		20	44	20	16	58	28	46	33.1
Cyrtonyx montezumae montezumae	bodies							1		0.1
Cyrtonyx montezumae montezumae	meat	kg	26	25						7.3
Gallus sonneratii	bodies				1					0.1
Gallus sonneratii	feathers			1106		3000		2022	21000	3875.4
Gallus sonneratii	feathers	g	100							14.3
Gallus sonneratii	live		16	5	11	8	34	29	2	15.0
Gallus sonneratii	skin pieces						2650			378.6
Gallus sonneratii	skins				80					11.4
Gallus sonneratii	specimens				1200					171.4
Ithaginis cruentus	live			4	9	2	18	9	3	6.4
Lophophorus impejanus	bodies					30			2	4.6
Lophophorus impejanus	eggs					6				0.9
Lophophorus impejanus	live		16	76	89	81	67	74	45	64.0
Lophophorus impejanus	specimens					2				0.3
Lophophorus lhuysii	live		4		2					0.9
Lophura edwardsi	bodies		1							0.1
Lophura edwardsi	live			29	10	22	14	30	6	15.9
Lophura erythrophthalma	live						2	3	10	2.1
Lophura ignita	live					15	35	95	10	22.1
Lophura imperialis	live					4	2	2		1.1
Lophura swinhoii	live		20	120	52	47	74	47	68	61.1
Lophura swinhoii	skulls						1			0.1
Lophura swinhoii	trophies				1					0.1
Pavo muticus	feathers				1018					145.4
Pavo muticus	feathers	kg						15		2.1
Pavo muticus	live		13	2	4	14	14	19	18	12.0
Polyplectron bicalcaratum	bodies		2	1	1	2				0.9
Polyplectron bicalcaratum	feathers		3							0.4
Polyplectron bicalcaratum	live		41	47	38	34	29	32	26	35.3
Polyplectron emphanum	live		40	30	9	5	11	16	9	17.1
Polyplectron germaini	live		5	10	3	4	4	12	5	6.1
Polyplectron malacense	live		2	2	2	3	9	4	6	4.0
Rollulus rouloul	live						9	8	32	7.0
Syrmaticus ellioti	bodies					2	1	5		1.1
Syrmaticus ellioti	eggs					50				7.1
Syrmaticus ellioti	live		2319	109	70	47	79	49	87	394.3
Syrmaticus humiae	bodies							1		0.1
Syrmaticus humiae	eggs					91				13.0
Syrmaticus humiae	live		23	57	16	11	43	45	34	32.7
Syrmaticus mikado	bodies							1		0.1
Syrmaticus mikado	feathers		1							0.1
Syrmaticus mikado	live		38	151	69	106	16	106	43	75.6
Tragopan blythii	live				3		4	6	7	2.9
Tragopan blythii	specimens								2	0.3
Tragopan caboti	live		24	17	40	44	34	29	33	31.6
Tragopan satyra	live		3	7	17	14	16	35	42	19.1
Tragopan satyra	specimens								13	1.9
Turnix melanogaster	eggs								3000	428.6
Turnix melanogaster	skeletons						1			0.1
Gruidae spp.	bodies								1	0.1
Anthropoides paradisea	bodies					2				0.3
Anthropoides paradisea	eggs				2					0.3
Anthropoides paradisea	live				2	12	5	17	28	9.1
Anthropoides virgo	bodies			12				2		2.0
Anthropoides virgo	live		12	200	308	215	257	324	221	219.6
Anthropoides virgo	skeletons				1					0.1
Balearica pavonina	bodies				1				3	0.6
Balearica pavonina	live			22	155	1166	809	203	184	362.7
Balearica pavonina	skulls						1			0.1
Balearica regulorum	bodies			62			1	1		9.1
Balearica regulorum	live		53	676	439	790	417	360	288	431.9
Balearica regulorum	skeletons				1					0.1
Bugeranus carunculatus	live				6	7	5		2	2.9
Grus spp.	specimens							100		14.3
Grus americana	bodies					4			15	2.7
Grus americana	eggs			30		25	24	39	15	19.0
Grus americana	feathers						96			13.7
Grus americana	live						26	27	33	12.3
Grus americana	specimens				40	12	24			10.9
Grus antigone	bodies							2		0.3
Grus antigone	live				1	10	13	4	5	4.7
Grus canadensis	bodies			1	2				3	0.9
Grus canadensis	eggs				4					0.6
Grus canadensis	live							2	16	2.6
Grus canadensis	meat								15	2.1
Grus canadensis pratensis	live		2		2			6		1.4
Grus canadensis pulla	bodies						1			0.1
Grus grus	bodies							4		0.6
Grus grus	feathers	kg						16		2.3
Grus grus	live				2	5	2	24	15	6.9
Grus japonensis	bodies			1		2		2		0.7
Grus japonensis	live		16	11	18	6	5	6	11	10.4
Grus leucogeranus	bodies			1			1			0.3
Grus leucogeranus	eggs		4		6					1.4
Grus leucogeranus	live		1		3		2	2		1.1
Grus monacha	bodies			1						0.1
Grus monacha	live			4	2	8	21	6	5	6.6
Grus nigricollis	live				2	2		1		0.7

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Grus rubicunda	live					2				0.3
Grus rubicunda	skulls						1			0.1
Grus vipio	bodies			1			1			0.3
Grus vipio	live		7	4	14	10	9	28	15	12.4
Grus vipio	skulls						1			0.1
Gallirallus australis hectori	bodies								7	1.0
Rhynochetos jubatus	live								1	0.1
Otididae spp.	bodies								1	0.1
Chlamydotis undulata	bodies						2		3	0.7
Chlamydotis undulata	eggs						40	50		12.9
Chlamydotis undulata	live					9	70	50		18.4
Choriotis kori	bodies								1	0.1
Choriotis kori	live						1			0.1
Houbaropsis bengalensis	bodies								3	0.4
Lissotis melanogaster	bodies								1	0.1
Neotis cafra	live								22	3.1
Otis tarda	bodies			1				2	1	0.6
Otis tarda	feathers	kg							17	2.4
Otis tarda	live		7	9		5			11	4.6
Otis tarda	trophies			3	1	3				1.0
Tetrax tetrax	bodies							2		0.3
Tetrax tetrax	live								2	0.3
Numenius minutus	bodies			1						0.1
Tringa guttifer	bodies		2							0.3
Columbidae spp.	bodies		1		240					34.4
Columbidae spp.	live		181			20		7472	2	1096.4
Columbidae spp.	meat								56	8.0
Caloenas nicobarica	bodies			1				2		0.4
Caloenas nicobarica	live		4	16	54	58	26	27	12	28.1
Columba guinea	live				26		19	20	154	31.3
Columba iriditorques	live				45					6.4
Columba livia	bodies					1		1		0.3
Columba livia	live				144	84	6	51	324	87.0
Columba livia	meat								67	9.6
Columba livia	meat	kg							8	1.1
Columba unicincta	live							1		0.1
Ducula mindorensis	live								6	0.9
Ducula mindorensis	skins			1						0.1
Gallicolumba luzonica	bodies					2	2			0.6
Gallicolumba luzonica	live		58	32	10	6	90	89	68	50.4
Gallicolumba luzonica criniger	live		48	2			20			10.0
Goura spp.	eggs				40					5.7
Goura spp.	live					3				0.4
Goura cristata	bodies					4				0.6
Goura cristata	live		116	17		18	326	87	136	100.0
Goura scheepmakeri	live				2	33	16	6	10	9.6
Goura scheepmakeri	skulls						1			0.1
Goura scheepmakeri sclateri	live		1	1					1	0.4
Goura victoria	live			6	2	18	3	35	7	10.1
Nesoenas mayeri	bodies			19						2.7
Nesoenas mayeri	eggs		8	7						2.1
Nesoenas mayeri	live		6	2	2	6	18		6	5.7
Oena capensis	live			100	800	1000	4063	4026	2113	1728.9
Oena capensis	live	kg							100	14.3
Streptopelia decipiens	live							50		7.1
Streptopelia roseogrisea	live								13	1.9
Streptopelia semitorquata	live							250	770	145.7
Streptopelia senegalensis	bodies				2					0.3
Streptopelia senegalensis	live					140	490	190	334	164.9
Streptopelia senegalensis	skins						1			0.1
Streptopelia turtur	bodies				1					0.1
Streptopelia turtur	live						2	50		7.4
Treron spp.	live							1		0.1
Treron calva	bodies								9	1.3
Treron calva	live					10	16		39	9.3
Treron calva	trophies								5	0.7
Treron waalia	live						10	4		2.0
Turtur afer	bodies					1		7		1.1
Turtur afer	live				40		375	268	515	171.1
Turtur brehmeri	bodies							1		0.1
Turtur tympanistria	bodies					1		1		0.3
Turtur tympanistria	live			200	469	1363	248	721	470	495.9
PSITTACIFORMES spp.	bodies				3	1	5			1.3
PSITTACIFORMES spp.	feathers					12			17	4.1
PSITTACIFORMES spp.	feathers	g					49			7.0
PSITTACIFORMES spp.	live		23330	2122	1023	1104	657	224	2	4066.0
Psittacidae spp.	bodies			10	1			143		22.0
Psittacidae spp.	feathers				29	1	1	19		7.1
Psittacidae spp.	live		35	200	1147	1005	64	271	4	389.4
Psittacidae spp.	live	shipments		2						0.3
Psittacidae spp.	skins							14		2.0
Psittacidae spp.	specimens						19			2.7
Agapornis spp.	live		3708	8143	997	477	307	269	170	2010.1
Agapornis cana	bodies			3		2				0.7
Agapornis cana	live		3167	4456	10965	9483	7088	12373	2638	7167.1
Agapornis fischeri	live		53335	45100	60764	83519	108702	74905	26132	64636.7
Agapornis fischeri	skulls						1			0.1
Agapornis lilianae	bodies				49					7.0
Agapornis lilianae	live		132	4188	278	774	989	1350	751	1208.9
Agapornis nigrigenis	bodies					2				0.3
Agapornis nigrigenis	live		28	18	50	125	18	10	19	38.3
Agapornis personata	bodies			1	7	2				1.4
Agapornis personata	live		6065	2994	6700	3416	7936	10580	4347	6005.4
Agapornis personata	skulls						1			0.1
Agapornis pullaria	bodies			1						0.1
Agapornis pullaria	live		1160	457	208	1502	1928	2950	708	1273.3
Agapornis pullaria	live	kg							134	19.1
Agapornis pullaria	skeletons				1					0.1
Agapornis roseicollis	bodies		2		238	2				34.6
Agapornis roseicollis	live		6549	31698	25900	19308	22329	25644	14713	20877.3
Agapornis roseicollis	skeletons				1					0.1
Agapornis roseicollis	skulls						1			0.1
Agapornis swinderniana	live						75	121		28.0
Agapornis taranta	bodies			1			2			0.4
Agapornis taranta	live						4	6	10	2.9
Alisterus spp.	live		586	14	2				2	86.3

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Alisterus amboinensis	bodies			9	21				1	4.4
Alisterus amboinensis	live		264	1831	452	392	921	1336	816	858.9
Alisterus chloropterus	bodies			2	6			19		3.9
Alisterus chloropterus	live		267	308	87	139	420	806	164	313.0
Alisterus chloropterus	skins				1					0.1
Alisterus chloropterus	specimens					1				0.1
Alisterus scapularis	live		3	66	535	47	37	76	74	119.7
Amazona spp.	bodies				1		3			0.6
Amazona spp.	feathers		1	4			12			2.4
Amazona spp.	feathers	g				300				42.9
Amazona spp.	live		510	1392	241	532	3	17	3	385.4
Amazona aestiva	bodies		351	1350	428	8	420	1		365.4
Amazona aestiva	live		33523	37354	48722	44919	35583	58464	21752	40045.3
Amazona aestiva	skins					1				0.1
Amazona aestiva	skulls						1			0.1
Amazona agilis	live			1	1	1	153			22.3
Amazona agilis	specimens		4							0.6
Amazona albifrons	bodies			14	2	8			2	3.7
Amazona albifrons	live		1203	2490	4591	4366	3551	6327	3677	3743.6
Amazona albifrons	live	kg							40	5.7
Amazona albifrons	skins		5							0.7
Amazona albifrons	specimens			4						0.6
Amazona amazonica	bodies				34	14			1	7.0
Amazona amazonica	live		15993	22495	15271	15671	5981	13262	10092	14109.3
Amazona amazonica	skins		7							1.0
Amazona arausiaca	live		1			3	3	2		1.3
Amazona autumnalis	bodies		4	20	294			3	1	46.0
Amazona autumnalis	live		3279	7594	5914	5616	4620	5752	6554	5618.4
Amazona barbadensis	live		10	80	7	14	3	5	6	17.9
Amazona collaria	live				1	4	3		2	1.4
Amazona collaria	specimens		1							0.1
Amazona dufresniana	live		112	65	135	129	49	126	43	94.1
Amazona dufresniana rhodocoryt	live		2	2		6				1.4
Amazona farinosa	bodies		6	76	48			1		18.7
Amazona farinosa	feathers			2						0.3
Amazona farinosa	live		2367	5369	5017	3705	1230	2838	2330	3265.1
Amazona festiva	bodies								1	0.1
Amazona festiva	live		53	743	20	569	98	1052	7	363.1
Amazona festiva	skulls						1			0.1
Amazona finschi	bodies		3							0.4
Amazona finschi	live		2	11	3	8	53	39	3	17.0
Amazona guildingii	live		1	1	1	4	4			1.6
Amazona leucocephala	bodies						3	2		0.7
Amazona leucocephala	live		41	19	38	22	21	9	64	30.6
Amazona leucocephala	skeletons							1		0.1
Amazona leucocephala	specimens							1		0.1
Amazona mercenaria	live		20		4	20				6.3
Amazona ochrocephala	bodies		119	133	212				1	66.4
Amazona ochrocephala	feathers						1	2		0.4
Amazona ochrocephala	live		6020	11696	15593	10447	7827	10078	6849	9787.1
Amazona ochrocephala	specimens		1		1					0.3
Amazona ochrocephala auropall	live		1		2	205	236	160	519	160.4
Amazona ochrocephala oratrix	live					6	47	64	1	16.9
Amazona ochrocephala tresmaria	live							1		0.1
Amazona pretrei	live			34					1	5.0
Amazona tucumana	live		384	1813	2990	2742	2882	6302	1210	2617.6
Amazona ventralis	live		50	8	43	46	10	14	9	25.7
Amazona ventralis	specimens							42	33	10.7
Amazona versicolor	bodies			3	2					0.7
Amazona versicolor	live					1				0.1
Amazona vinacea	live			2	5	2	1	1	2	1.9
Amazona viridigenalis	bodies		2	2		2				0.9
Amazona viridigenalis	live		99	3	3	18	115	85	5	46.9
Amazona viridigenalis	skins		3							0.4
Amazona vittata	specimens							47	19	9.4
Amazona xantholora	live		1	2	6	27	3	4		6.1
Amazona xanthops	live		39	56	2		2	1	27	18.1
Anodorhynchus spp.	live				1				3	0.6
Anodorhynchus hyacinthinus	bodies		3				1			0.6
Anodorhynchus hyacinthinus	feathers				81					11.6
Anodorhynchus hyacinthinus	live		287	132	27	66	50	14	7	83.3
Anodorhynchus leari	live				1		1			0.3
Aprosmictus spp.	live				3					0.4
Aprosmictus erythropterus	bodies			13	48	2	38	3		14.9
Aprosmictus erythropterus	live		408	635	618	485	582	1060	418	600.9
Aprosmictus jonquillaceus	live		46	454	149	109	291	175	4	175.4
Ara spp.	feathers			2				1		0.4
Ara spp.	live		418	2	660	9		13	6	158.3
Ara ambigua	bodies				1					0.1
Ara ambigua	feathers			8						1.1
Ara ambigua	live		6	10	11	17	4	2		7.1
Ara ambigua	skins				1					0.1
Ara ararauna	bodies		69		1	4	1	1	1	11.0
Ara ararauna	feathers		30	5	183					31.1
Ara ararauna	live		8635	3541	2976	3628	1477	2146	2137	3505.7
Ara ararauna	skeletons						1			0.1
Ara auricollis	bodies		8							1.1
Ara auricollis	feathers			5						0.7
Ara auricollis	live		2730	404	322	9		3	2	495.7
Ara chloroptera	bodies		10		1			3		2.0
Ara chloroptera	feathers				131					18.7
Ara chloroptera	live		2736	2375	1719	2411	1162	1855	1494	1964.6
Ara chloroptera	skulls						1			0.1
Ara chloroptera	specimens				2					0.3
Ara couloni	live		2							0.3
Ara glaucogularis	live		167		2	5	4	9	11	28.3
Ara macao	bodies		3	3	1					1.0
Ara macao	feathers		6			14				2.9
Ara macao	live		1165	607	538	116	97	44	24	370.1
Ara macao	skulls						1			0.1
Ara manilata	bodies				8					1.1
Ara manilata	feathers			3						0.4
Ara manilata	live		1054	969	602	846	338	9106	759	1953.4
Ara maracana	live			11	23		7	7	6	7.7
Ara militaris	feathers		2		2					0.6
Ara militaris	live		144	53	39	21	161	20	13	64.4

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Ara nobilis	live		1237	865	621	1052	186	675	398	719.1
Ara rubrogenys	bodies		4							0.6
Ara rubrogenys	live		136	6	8	12	8	14	16	28.6
Ara rubrogenys	live	kg							1	0.1
Ara severa	bodies		12							1.7
Ara severa	live		2696	465	26	59	30	62	89	489.6
Aratinga spp.	feathers			3						0.4
Aratinga spp.	live		19	249	1401	917	131	1133	642	641.7
Aratinga spp.	specimens							1		0.1
Aratinga acuticaudata	bodies		47	655	132					119.1
Aratinga acuticaudata	live		18652	15041	17890	14378	16258	18803	5797	15259.9
Aratinga aurea	bodies				5					0.7
Aratinga aurea	live		2562	1901	6917	13440	11237	5554	2692	6329.0
Aratinga aurea	specimens								2	0.3
Aratinga auricapilla	live			4	35	26	2503	611		454.1
Aratinga auricapilla	specimens								1	0.1
Aratinga cactorum	live				2			2	1	0.7
Aratinga cactorum	specimens								1	0.1
Aratinga canicularis	bodies			29				1	1	4.4
Aratinga canicularis	live		108	1264	1126	1240	2149	1550	1934	1338.7
Aratinga canicularis	live	kg							200	28.6
Aratinga canicularis	skins			2						0.3
Aratinga chloroptera	live		2					3	8	1.9
Aratinga erythrogenys	bodies				110					15.7
Aratinga erythrogenys	live		4657	14519	16019	8643	2770	5245	6850	8386.1
Aratinga euops	live					2	1	1	2	0.9
Aratinga finschi	bodies								1	0.1
Aratinga finschi	live			3	1	101	235	291	493	160.6
Aratinga guarouba	live		17	11	21	50	10	10	1	17.1
Aratinga holochlora	bodies		1							0.1
Aratinga holochlora	live		255	67	395	1211	525	766	216	490.7
Aratinga jandaya	live		1211	169	3245	105	3620	38	32	1202.9
Aratinga jandaya	specimens								2	0.3
Aratinga leucophthalma	bodies				7					1.0
Aratinga leucophthalma	live		3080	4642	4859	7655	4829	7615	2132	4973.1
Aratinga mitrata	bodies			1	46					6.7
Aratinga mitrata	live		12557	3977	19993	25454	17283	29108	6880	16464.6
Aratinga nana	live		481	245	27	113	275	371	20	218.9
Aratinga nana	specimens		15							2.1
Aratinga nana astec	bodies								1	0.1
Aratinga nana astec	live			80	158	6	1	76	110	61.6
Aratinga pertinax	bodies				2					0.3
Aratinga pertinax	live		1865	2093	1019	1360	2115	1579	1041	1581.7
Aratinga solstitialis	bodies				1				23	3.4
Aratinga solstitialis	live		361	102	279	95	42	90	150	159.9
Aratinga wagleri	live		9129	12309	2943	562	3	426	143	3645.0
Aratinga weddellii	bodies								1	0.1
Aratinga weddellii	live		4659	860	30	28		1	7	797.9
Barnardius spp.	live				8			47		7.9
Barnardius barnardi	bodies						1			0.1
Barnardius barnardi	feathers							4		0.6
Barnardius barnardi	live		22	141	162	258	78	111	187	137.0
Barnardius zonarius	bodies			2						0.3
Barnardius zonarius	live		46	230	73	125	96	82	285	133.9
Barnardius zonarius	skin pieces					13				1.9
Bolbopsittacus lunulatus	live				100		86			26.6
Bolbopsittacus lunulatus	specimens		1						6	1.0
Bolborhynchus spp.	live		18	68	138					32.0
Bolborhynchus aurifrons	live		667	1775	1132	410	30	288	4	615.1
Bolborhynchus aymara	live		110		600	2309	1130	1520	134	829.0
Bolborhynchus lineola	live		4	55	100			44	46	35.6
Bolborhynchus orbygnesius	live		950	990	715	110	8			396.1
Brotogeris spp.	live		110	2	257	55		3		61.0
Brotogeris chrysopterus	live		65	85	309	413	709	686	488	393.6
Brotogeris chrysopterus	specimens								2	0.3
Brotogeris cyanoptera	live		393	2	4		27	3	1	61.4
Brotogeris jugularis	bodies			4						0.6
Brotogeris jugularis	live		20	86	809	245	850	1853	399	608.9
Brotogeris jugularis	live	kg							5	0.7
Brotogeris jugularis	skins			1						0.1
Brotogeris jugularis	skulls						1			0.1
Brotogeris pyrrhopterus	live		1427	20476	11665	7899	6868	10985	6584	9414.9
Brotogeris sanctithomae	live		39	5				1		6.4
Brotogeris tirica	live							3		0.4
Brotogeris tirica	specimens								4	0.6
Brotogeris versicolorus	bodies				17					2.4
Brotogeris versicolorus	live		6584	1182	7146	10726	12681	9691	3137	7306.7
Cacatua spp.	live		1311	192	571	1515	2	6		513.9
Cacatua alba	bodies		10	26	11	3	4	3		8.1
Cacatua alba	live		13287	12258	7393	10212	13119	8167	5613	10007.0
Cacatua ducorpsii	live			20		10	1	1		4.6
Cacatua galerita	bodies		6	2	1		2	1	5	2.4
Cacatua galerita	feathers		37						6	6.1
Cacatua galerita	live		502	299	272	272	1430	5507	1946	1461.1
Cacatua galerita	skulls						1			0.1
Cacatua galerita	specimens			1						0.1
Cacatua goffini	bodies		2	8	2	3	8	19		6.0
Cacatua goffini	live		14234	10993	8651	10335	10230	12410	6695	10506.9
Cacatua haematuropygia	bodies		2							0.3
Cacatua haematuropygia	live		424	46	280	58	259	283	108	208.3
Cacatua haematuropygia	skulls						1			0.1
Cacatua haematuropygia	specimens		1					2		0.4
Cacatua leadbeateri	bodies			3				1		0.6
Cacatua leadbeateri	live		8	9	28	20	4	21	25	16.4
Cacatua moluccensis	bodies		6	14	2	5	1	1	2	4.4
Cacatua moluccensis	live		9738	9722	[illegible]	9575	11680	8934	6914	9346.0
Cacatua moluccensis	live	kg	1							0.1
Cacatua moluccensis	skulls						1			0.1
Cacatua ophthalmica	live		1		9	6	2	40	22	11.4
Cacatua sanguinea	bodies			2	7					1.3
Cacatua sanguinea	live		67	203	509	105	227	392	76	225.6
Cacatua sulphurea	bodies		14	53	23	11	17	4		17.4
Cacatua sulphurea	feathers								1	0.1
Cacatua sulphurea	live		6445	8000	5898	7045	9757	11014	8268	8061.0
Cacatua tenuirostris	live		3	8	12	1	19	8	17	9.7
Callocephalon fimbriatum	bodies			1		1				0.3

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Callocephalon fimbriatum	live		7	2	36	9	5	3	2	9.1
Calyptorhynchus spp.	live			1						0.1
Calyptorhynchus funereus	bodies			1						0.1
Calyptorhynchus funereus	live		2	6		3		6		2.4
Calyptorhynchus lathami	bodies			1						0.1
Calyptorhynchus lathami	specimens			1						0.1
Calyptorhynchus magnificus	live		1			2		3		0.9
Chalcopsitta spp.	bodies				14					2.0
Chalcopsitta spp.	feathers								1	0.1
Chalcopsitta spp.	live			52	47	6	6			15.9
Chalcopsitta atra	bodies				22			2		3.4
Chalcopsitta atra	live		714	348	91	206	407	1175	770	530.1
Chalcopsitta cardinalis	live			8						1.1
Chalcopsitta duivenbodei	bodies			1						0.1
Chalcopsitta duivenbodei	live		36	186	191	271	362	662	148	265.1
Chalcopsitta sintillata	live			337	99	171	207	634	183	233.0
Charmosyna spp.	live						16		46	8.9
Charmosyna josefinae	live		4		6	697	459	60	25	178.7
Charmosyna josefinae	specimens					3				0.4
Charmosyna multistriata	live			1			20	40	118	25.6
Charmosyna papou	bodies						3		1	0.6
Charmosyna papou	live		107	219	75	206	1050	1113	624	484.9
Charmosyna papou	skeletons							1		0.1
Charmosyna papou	skins				1					0.1
Charmosyna papou	specimens						1	1		0.3
Charmosyna placentis	bodies			1				19		2.9
Charmosyna placentis	live		10	346	70	172	611	1376	811	485.1
Charmosyna pulchella	bodies				6			12		2.6
Charmosyna pulchella	live		76	348	90	183	449	1462	220	404.0
Charmosyna pulchella	skins				1					0.1
Charmosyna rubronotata	live			15			220	298	35	81.1
Charmosyna wilhelminae	live							134		19.1
Coracopsis spp.	live					20	80			14.3
Coracopsis nigra	live		296	840	382	400	243	356	20	362.4
Coracopsis nigra barklyi	live		4	40						6.3
Coracopsis vasa	live		251	754	506	706	325	322	41	415.0
Cyanoliseus patagonus	bodies			1					3	0.6
Cyanoliseus patagonus	live		5065	3777	4189	3071	6390	5244	4023	4537.0
Cyanoliseus patagonus	specimens								6	0.9
Cyanoliseus patagonus byroni	live			2					5	1.0
Cyanopsitta spixii	feathers								11	1.6
Cyanopsitta spixii	live						2	1		0.4
Cyanoramphus auriceps	bodies			2						0.3
Cyanoramphus auriceps	live		443	818	487	104	281	201	203	362.4
Cyanoramphus auriceps	specimens		2							0.3
Cyanoramphus auriceps	specimens	ml				1				0.1
Cyanoramphus auriceps forbesi	live				4		5			1.3
Cyanoramphus malherbi	live				44					6.3
Cyanoramphus novaezelandiae	bodies					2				0.3
Cyanoramphus novaezelandiae	live		555	482	404	326	820	1605	1562	822.0
Cyanoramphus novaezelandiae	specimens		1							0.1
Cyanoramphus novaezelandiae	specimens	ml				1				0.1
Cyanoramphus unicolor	specimens	ml				1				0.1
Deroptyus accipitrinus	bodies				8				1	1.3
Deroptyus accipitrinus	live		364	407	343	749	333	326	240	394.6
Eclectus spp.	live				1			8	2	1.6
Eclectus roratus	bodies							13	8	3.0
Eclectus roratus	live		423	70	3048	140	142	421	131	625.0
Eclectus roratus	skulls						1			0.1
Eclectus roratus	specimens					1				0.1
Enicognathus spp.	live		3		29	30				8.9
Enicognathus ferrugineus	bodies								4	0.6
Enicognathus ferrugineus	live		10	51	414	282	1048	468	303	368.0
Enicognathus ferrugineus	skeletons					5				0.7
Enicognathus ferrugineus	specimens								8	1.1
Enicognathus leptorhynchus	bodies								4	0.6
Enicognathus leptorhynchus	live		45	86	496	1130	474	355	20	372.3
Enicognathus leptorhynchus	specimens								4	0.6
Eolophus roseicapillus	bodies			1						0.1
Eolophus roseicapillus	live		319	94	133	121	80	84	96	132.4
Eolophus roseicapillus	skin pieces					13				1.9
Eos spp.	live		205							29.3
Eos bornea	bodies				5	20		6	2	4.7
Eos bornea	live		6123	11873	5443	6159	6994	6124	5322	6862.6
Eos bornea	skulls						1			0.1
Eos cyanogenia	live			1			10	837	561	201.3
Eos reticulata	bodies								1	0.1
Eos reticulata	live		7703	4730	1483	1452	2377	2753	713	3030.1
Eos squamata	bodies				3			7		1.4
Eos squamata	live		805	726	693	1000	1150	1671	944	998.4
Eunymphicus spp.	live					40	20		60	17.1
Eunymphicus cornutus	live		2	4	4	7	19	18	15	9.9
Eunymphicus cornutus	specimens					8				1.1
Forpus spp.	live		100	2	55	2				22.7
Forpus coelestis	bodies			1	1		1	1		0.6
Forpus coelestis	live		2874	8204	1678	60	13	122	1178	2018.4
Forpus coelestis	live	items							150	21.4
Forpus conspicillatus	live		128			7	4			19.9
Forpus cyanopygius	bodies							2		0.3
Forpus passerinus	bodies				5					0.7
Forpus passerinus	live		251	416	1109	3210	2336	2857	1948	1732.4
Forpus passerinus	live	items							230	32.9
Forpus sclateri	skins								1	0.1
Forpus xanthops	live		236		22		64	5		46.7
Forpus xanthopterygius	live				17		520	460	214	173.0
Forpus xanthopterygius	specimens								1	0.1
Geoffroyus geoffroyi	bodies							1		0.1
Geoffroyus geoffroyi	live						26			3.7
Geoffroyus simplex	live		2					1		0.4
Glossopsitta concinna	live					4	8	10		3.1
Glossopsitta concinna	skulls						1			0.1
Graydidascalus spp.	live			7						1.0
Graydidascalus brachyurus	live		1		8			1		1.4
Gypopsitta vulturina	live					6				0.9
Hapalopsittaca melanotis	live		4							0.6
Lathamus discolor	live		26	10	16	13	32	34	58	27.0

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Loriculus spp.	live		9	23	70			310		58.9
Loriculus spp.	skulls						3			0.4
Loriculus amabilis	live					12		1		1.9
Loriculus aurantiifrons	live							10		1.4
Loriculus flosculus	live		70	70						20.0
Loriculus galgulus	bodies		1		5				55	8.7
Loriculus galgulus	live		912	763	4520	9363	8861	4636	9425	5497.1
Loriculus galgulus	skins						1			0.1
Loriculus philippensis	live		469	40	253		1187	301	608	408.3
Loriculus philippensis	specimens								5	0.7
Loriculus pusillus	live		445			40	20	15		74.3
Loriculus stigmatus	live		75	70	40	65	285	185	50	110.0
Loriculus vernalis	live		528		164	1926	336	20	152	446.6
Lorius spp.	live		1		10					1.6
Lorius amabilis	live							10	1	1.6
Lorius chlorocercus	live		6	37				2		6.4
Lorius domicellus	live					12	2	2		2.3
Lorius garrulus	bodies				1	9	1		1	1.7
Lorius garrulus	live		7968	5101	2946	3373	5389	7379	2580	4962.3
Lorius hypoinochrous	bodies							5		0.7
Lorius lory	live			11	7	65	3	2	2	12.9
Lorius lory	specimens					5	1			0.9
Micropsitta bruijnii	bodies			1						0.1
Micropsitta bruijnii	live							2		0.3
Micropsitta bruijnii	skins				2					0.3
Micropsitta pusio	live						2			0.3
Myiopsitta monachus	bodies				192					27.4
Myiopsitta monachus	live		46125	56989	37116	53867	50800	53857	9253	44001.0
Myiopsitta monachus	skins					4				0.6
Myiopsitta monachus	specimens								4	0.6
Nandayus nenday	bodies		416		9					60.7
Nandayus nenday	live		39607	23365	21989	17917	21991	16889	11981	21962.7
Nannopsittaca panychlora	live		1							0.1
Neophema spp.	live		9							1.3
Neophema bourkii	bodies				1	2				0.4
Neophema bourkii	live		674	1527	1116	802	957	1241	1211	1075.4
Neophema chrysostoma	live		10	35	30	16	75	102	65	47.6
Neophema chrysostoma	skulls						1			0.1
Neophema elegans	bodies					4				0.6
Neophema elegans	live		407	763	323	219	264	307	1712	570.7
Neophema elegans	skulls						1			0.1
Neophema pulchella	bodies					13				1.9
Neophema pulchella	live		846	1066	1263	716	678	929	1002	928.6
Neophema pulchella	skulls						1			0.1
Neophema splendida	bodies				11	2		1		2.0
Neophema splendida	live		284	443	456	352	448	570	759	473.1
Neopsittacus musschenbroekii	bodies						2			0.3
Neopsittacus musschenbroekii	live		62	23		712	721	274	118	272.9
Neopsittacus pullicauda	live		3				5	30	10	6.9
Nestor meridionalis	live			1						0.1
Nestor meridionalis	specimens	ml				1				0.1
Nestor notabilis	bodies				1					0.1
Nestor notabilis	live		3	2	14	10	5	2	5	5.9
Nestor notabilis	specimens	ml				1				0.1
Opopsitta spp.	live				8					1.1
Opopsitta diophthalma	live		1	24	24	126	85	855	247	194.6
Opopsitta gulielmitertii	bodies				5					0.7
Opopsitta gulielmitertii	live				5	46	20	143		30.6
Oreopsittacus arfaki	live		1							0.1
Phigys solitarius	live		1						1	0.3
Pionites spp.	live		30	12		11				7.6
Pionites leucogaster	feathers			4						0.6
Pionites leucogaster	live		34	5			2	4	1	6.6
Pionites melanocephala	bodies			1	19					2.9
Pionites melanocephala	live		575	1045	1024	1565	600	973	626	915.4
Pionites melanocephala	specimens								2	0.3
Pionopsitta barrabandi	live		50							7.1
Pionopsitta barrabandi	specimens								4	0.6
Pionopsitta caica	live							6		0.9
Pionopsitta haematotis	bodies								1	0.1
Pionopsitta haematotis	live		17	25	63	10	30	7		21.7
Pionopsitta pileata	live					6		40		6.6
Pionopsitta pulchra	bodies			2						0.3
Pionopsitta pyrilia	live		1	2						0.4
Pionus spp.	live		166	21	4	10				28.7
Pionus chalcopterus	live		57	164	127	30		1		54.1
Pionus fuscus	bodies				2					0.3
Pionus fuscus	live		259	288	268	346	102	341	351	279.3
Pionus maximiliani	bodies		60		79					19.9
Pionus maximiliani	live		1922	3220	25698	14704	6574	4211	1982	8330.1
Pionus maximiliani	skins					1				0.1
Pionus maximiliani	specimens								1	0.1
Pionus menstruus	bodies			1		2			3	0.9
Pionus menstruus	live		2532	1472	880	1168	824	1185	619	1240.0
Pionus menstruus	skins		2						1	0.4
Pionus senilis	bodies			1	102				1	14.9
Pionus senilis	live		738	1186	941	1214	1817	2478	847	1317.3
Pionus senilis	live	kg							50	7.1
Pionus senilis	specimens			2						0.3
Pionus seniloides	live			3	5					1.1
Pionus sordidus	bodies			2						0.3
Pionus sordidus	live		10		2					1.7
Pionus tumultuosus	live		26		2			8		5.1
Platycercus spp.	live		75	84	30	17	10	10	80	43.7
Platycercus adelaidae	live		31	548	1226	157	106	135	124	332.4
Platycercus adscitus	bodies				1					0.1
Platycercus adscitus	live		312	1146	623	561	595	656	458	621.6
Platycercus caledonicus	live		5	129	179	42	31	7	97	70.0
Platycercus elegans	bodies							1		0.1
Platycercus elegans	feathers							1		0.1
Platycercus elegans	live		959	2443	1435	1226	991	1053	1443	1364.3
Platycercus eximius	bodies			3		6			2	1.6
Platycercus eximius	live		2751	9343	5734	3967	3839	4389	3549	4796.0
Platycercus eximius	skulls						1			0.1
Platycercus eximius	specimens		4							0.6
Platycercus flaveolus	bodies				1				1	0.3

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Platycercus flaveolus	live		24	203	74	67	92	66	94	88.6
Platycercus icterotis	bodies			2					1	0.4
Platycercus icterotis	live		459	1609	487	374	359	505	1902	813.6
Platycercus icterotis	skin pieces					13				1.9
Platycercus venustus	live		7	105	12		10	4	12	21.4
Poicephalus spp.	bodies		1		1					0.3
Poicephalus spp.	live		104	251	572	1245	36	88	111	343.9
Poicephalus cryptoxanthus	live		2	198	295	702	1567	1702	540	715.1
Poicephalus flavifrons	bodies						1			0.1
Poicephalus flavifrons	live		1		6				10	2.4
Poicephalus flavifrons	skulls						1			0.1
Poicephalus gulielmi	bodies		21				1			3.1
Poicephalus gulielmi	live		161	1221	1134	1224	627	1410	714	927.3
Poicephalus gulielmi	live	kg							30	4.3
Poicephalus meyeri	live		3348	3175	8425	7247	11803	5659	3215	6124.6
Poicephalus meyeri	skulls						1			0.1
Poicephalus robustus	live		46	134	118	211	207	745	239	242.9
Poicephalus robustus	skeletons				2					0.3
Poicephalus rueppellii	live		2							0.3
Poicephalus rueppellii	skeletons				2					0.3
Poicephalus rufiventris	bodies					1				0.1
Poicephalus rufiventris	live		244	1980	2532	4699	3948	2001	391	2256.4
Poicephalus senegalus	bodies			270	90					51.4
Poicephalus senegalus	live		15142	16871	15186	30076	28478	25586	24077	22202.3
Poicephalus senegalus	live	kg							150	21.4
Poicephalus senegalus	skins						2			0.3
Poicephalus senegalus	skulls						1			0.1
Polytelis spp.	live		2				4			0.9
Polytelis alexandrae	bodies				2					0.3
Polytelis alexandrae	live		376	1016	560	399	624	604	866	635.0
Polytelis anthopeplus	bodies				2					0.3
Polytelis anthopeplus	live		143	900	1434	446	425	432	325	586.4
Polytelis swainsonii	live		65	609	4505	226	412	361	426	943.4
Prioniturus spp.	live			5	25					4.3
Prioniturus spp.	specimens								1	0.1
Prioniturus discurus	live		2		25	78	12	29		20.9
Prioniturus discurus	trophies				1					0.1
Prioniturus flavicans	live			15	6					3.0
Prioniturus luconensis	live		24	4	103		30		6	23.9
Prioniturus mada	live							10		1.4
Prioniturus platurus	bodies				4					0.6
Prioniturus platurus	live		46	22	5	40	56		56	32.1
Probosciger aterrimus	bodies							1		0.1
Probosciger aterrimus	live		361	36	55	35	74	22	9	84.6
Probosciger aterrimus	specimens					1			2	0.4
Prosopeia personata	live							1		0.1
Prosopeia tabuensis	live		2				1	1		0.6
Psephotus chrysopterygius	live		40	4	20	14	20	22	19	19.9
Psephotus chrysopterygius dissi	live		31	44	24	6	6	25	14	21.4
Psephotus haematogaster	bodies			1						0.1
Psephotus haematogaster	live		29	258	74	91	178	69	86	112.1
Psephotus haematonotus	bodies			1	16					2.4
Psephotus haematonotus	live		3506	8087	5904	4128	3498	3170	3312	4515.0
Psephotus pulcherrimus	bodies								2	0.3
Psephotus pulcherrimus	feathers					23	23			6.6
Psephotus varius	live		359	669	190	137	110	166	235	266.6
Pseudeos fuscata	bodies						3	1		0.6
Pseudeos fuscata	live		37	575	552	558	1087	2183	663	807.9
Psittacella brehmii	bodies			1						0.1
Psittacella brehmii	live						2	4		0.9
Psittacella madaraszi	live						1			0.1
Psittacella picta	live						1			0.1
Psittacula spp.	bodies			2	8					1.4
Psittacula spp.	feathers								5	0.7
Psittacula spp.	live		138	3304	76	721	3	6	2	607.1
Psittacula spp.	skulls						21			3.0
Psittacula alexandri	bodies			2	4			16	1	3.3
Psittacula alexandri	live		8197	7025	9752	9119	22162	9016	7885	10450.9
Psittacula alexandri	live	flasks							2	0.3
Psittacula calthorpae	live		4		4	3	2	4	2	2.7
Psittacula calthorpae	skulls							1		0.1
Psittacula caniceps	live					1				0.1
Psittacula columboides	live					2				0.3
Psittacula cyanocephala	bodies				1	2				0.4
Psittacula cyanocephala	live		7018	2646	7622	7251	6531	3097	4453	5516.9
Psittacula cyanocephala	skulls						1			0.1
Psittacula cyanocephala	specimens		1							0.1
Psittacula derbiana	live		566	821	169	501	156	32	107	336.0
Psittacula echo	live		256							36.6
Psittacula eupatria	live		13644	6414	6563	4821	4750	3809	5345	6478.0
Psittacula eupatria	live	kg							150	21.4
Psittacula eupatria	skins		30							4.3
Psittacula himalayana	live		324	504	618	89	110	129	169	277.6
Psittacula himalayana finschii	live					66	180	30	383	94.1
Psittacula krameri	bodies			2			2	5		1.3
Psittacula krameri	live		549	1523	6960	27679	50199	21673	36705	20755.4
Psittacula krameri	live	kg							100	14.3
Psittacula krameri	skins						1			0.1
Psittacula longicauda	bodies			4						0.6
Psittacula longicauda	live		200	386	402	2890	1347	2340	2661	1460.9
Psittacula roseata	live			150	31	104	3815	859	1338	899.6
Psittaculirostris desmarestii	bodies				7		2	1		1.4
Psittaculirostris desmarestii	live		367	423	145	436	691	1371	579	573.1
Psittaculirostris edwardsii	bodies			2	1	3		7		1.9
Psittaculirostris edwardsii	live		186	501	221	262	683	677	387	416.7
Psittaculirostris salvadorii	live				70	129	33	473	85	112.9
Psittacus spp.	live					156			2	22.6
Psittacus erithacus	bodies		111	152	463	14	1			105.9
Psittacus erithacus	feathers	kg					1			0.1
Psittacus erithacus	live		48382	47554	46737	47679	50205	60904	30042	47357.6
Psittacus erithacus	live	shipments		1						0.1
Psittacus erithacus	skins		10							1.4
Psittacus erithacus	skulls						1		12	1.9
Psittacus erithacus princeps	live		4	900		13	1	20	1	134.1
Psittacus erithacus timneh	live		150			8769	9722	8238	15312	6027.3
Psittinus spp.	live								814	116.3

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Psittinus cyanurus	live		20	85	67	789	1257	956	132	472.3
Psittrichas fulgidus	bodies				1					0.1
Psittrichas fulgidus	live		8			3	2		1	2.0
Psittrichas fulgidus	specimens					3				0.4
Purpureicephalus spurius	bodies								1	0.1
Purpureicephalus spurius	live		48	153	87	81	45	35	45	70.6
Pyrrhura spp.	live		32	11	108	5	24	27		29.6
Pyrrhura albipectus	bodies				1					0.1
Pyrrhura albipectus	skins				1					0.1
Pyrrhura calliptera	live							2		0.3
Pyrrhura cruentata	live		7		1	1		2	15	3.7
Pyrrhura egregia	live					50	25	12	3	12.9
Pyrrhura frontalis	bodies					1				0.1
Pyrrhura frontalis	live		6003	3170	5245	5662	5993	6047	2302	4917.4
Pyrrhura frontalis	specimens								2	0.3
Pyrrhura hypoxantha	live		2							0.3
Pyrrhura leucotis	bodies			1						0.1
Pyrrhura leucotis	live					4	2	8		2.0
Pyrrhura melanura	bodies				1					0.1
Pyrrhura melanura	live			4						0.6
Pyrrhura melanura	skins				2					0.3
Pyrrhura melanura	specimens				1					0.1
Pyrrhura molinae	live		370	49		103		439		137.3
Pyrrhura perlata	live				4		10	18	3	5.0
Pyrrhura picta	live		148	194	66	263	562	393	275	271.6
Pyrrhura picta	skins				2					0.3
Pyrrhura picta	specimens				4				3	1.0
Pyrrhura rhodocephala	live							1		0.1
Pyrrhura rhodocephala	skulls						1			0.1
Pyrrhura rhodogaster	live				202		2	2	4	30.0
Pyrrhura rhodogaster	specimens								4	0.6
Pyrrhura rupicola	bodies				1					0.1
Pyrrhura rupicola	live		7				14			3.0
Pyrrhura rupicola	skins				1					0.1
Rhynchopsitta pachyrhyncha	live					2	8			1.4
Strigops habroptilus	bodies			1					1	0.3
Strigops habroptilus	specimens							1		0.1
Strigops habroptilus	specimens	ml				1				0.1
Tanygnathus spp.	live		14	18				22		7.7
Tanygnathus gramineus	live							22		3.1
Tanygnathus heterurus	bodies			2						0.3
Tanygnathus heterurus	live		145	76	40					37.3
Tanygnathus lucionensis	live		195	8	536	251	362	375	69	256.6
Tanygnathus megalorynchos	bodies			4	4		7		1	2.3
Tanygnathus megalorynchos	live		436	566	341	509	493	3386	647	911.1
Tanygnathus sumatranus	live		19	2	8	5	45	73	30	26.0
Touit spp.	live					111				15.9
Touit huetii	live							2		0.3
Trichoglossus spp.	live					180		10		27.1
Trichoglossus chlorolepidotus	live							2		0.3
Trichoglossus chlorolepidotus	skulls						1			0.1
Trichoglossus euteles	live		53	327	63	70	847	176		219.4
Trichoglossus flavoviridis	bodies				11					1.6
Trichoglossus flavoviridis	live		239	515	231	291	161	352	144	276.1
Trichoglossus goldiei	bodies			8			2			1.4
Trichoglossus goldiei	live		12	1176	274	328	571	503	106	424.3
Trichoglossus haematodus	bodies		3	3	23	70				14.1
Trichoglossus haematodus	live		7747	6940	3629	4779	6206	5156	3821	5468.3
Trichoglossus haematodus	skulls						2			0.3
Trichoglossus haematodus	specimens			1		4				0.7
Trichoglossus iris	live		685	124	11		251	257	4	190.3
Trichoglossus ornatus	live		2		3		2	8		2.1
Trichoglossus rubiginosus	live					6				0.9
Trichoglossus versicolor	skulls						1			0.1
Triclaria malachitacea	live			6		27			23	8.0
Vini peruviana	live		6	2						1.1
Musophagidae spp.	live				4					0.6
Corythaeola cristata	live							2		0.3
Corythaeola cristata	trophies							3		0.4
Crinifer piscator	bodies						2			0.3
Crinifer piscator	live				14	4	26	10	10	9.1
Musophaga violacea	bodies						7			1.0
Musophaga violacea	live			22	162	230	441	246	280	197.3
Musophaga violacea	skins						2			0.3
Tauraco spp.	live				48	12	418			68.3
Tauraco corythaix	bodies		1						1	0.3
Tauraco corythaix	live		2				6	20		4.0
Tauraco corythaix fischeri	live						15			2.1
Tauraco corythaix livingstonii	live		2							0.3
Tauraco corythaix persa	live			236	175	115	402	258	411	228.1
Tauraco corythaix schalowi	live		5	32	4					5.9
Tauraco macrorhynchus	live				10				20	4.3
Tauraco porphyreolophus	live					27	52	53	2	19.1
Tauraco porphyreolophus	trophies								12	1.7
STRIGIFORMES spp.	bodies		1	1		1			1	0.6
STRIGIFORMES spp.	feet							9	2	1.6
STRIGIFORMES spp.	live		25	21			3	1		7.1
STRIGIFORMES spp.	skins		1							0.1
Phodilus badius	bodies							2		0.3
Phodilus badius	live							2		0.3
Tyto spp.	live							2		0.3
Tyto alba	bodies		23	7	16	11	9	9	23	14.0
Tyto alba	claws				1					0.1
Tyto alba	feathers				24	2		14	7	6.7
Tyto alba	feet		2					6		1.1
Tyto alba	live		10	4	64	38	124	43	28	44.4
Tyto alba	skins						2			0.3
Tyto alba	skulls								1	0.1
Tyto alba	specimens		2		5				2	1.3
Tyto aurantia	live						1			0.1
Tyto capensis	bodies						1			0.1
Tyto capensis	skeletons				2					0.3
Tyto longimembris	specimens								1	0.1
Strigidae spp.	bodies						1		1	0.3
Strigidae spp.	claws								2	0.3
Strigidae spp.	feathers						6		8	2.0

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TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Strigidae spp.	feet					1		1	9	1.6
Strigidae spp.	specimens					2				0.3
Aegolius acadicus	bodies		1	3						0.6
Aegolius acadicus	live					1				0.1
Aegolius acadicus	skulls								1	0.1
Aegolius acadicus	specimens		1			2			2	0.7
Aegolius funereus	bodies					1		4		0.7
Aegolius funereus	live		4	12	10	5	8	7	11	8.1
Aegolius funereus	skeletons				1	1				0.3
Aegolius harrisii	specimens				2					0.3
Asio capensis	live			1						0.1
Asio flammeus	bodies		199	3	2	1	2	6	9	31.7
Asio flammeus	live			2		1	5	2	2	1.7
Asio flammeus	skeletons				2	2				0.6
Asio flammeus	skulls						1		7	1.1
Asio flammeus	specimens				9		2		5	2.3
Asio otus	bodies		120		2	2	3	8	8	20.4
Asio otus	eggs					1				0.1
Asio otus	feathers		5							0.7
Asio otus	live			2	3	2		3		1.4
Asio otus	skulls								2	0.3
Athene brama	bodies		7							1.0
Athene noctua	bodies		6	1				2	2	1.6
Athene noctua	live		2	13		4	18	16	2	7.9
Athene noctua	skins					1			1	0.3
Athene noctua	specimens		2						1	0.4
Bubo spp.	live				2					0.3
Bubo africanus	bodies			1		1	1	1		0.6
Bubo africanus	feathers								2	0.3
Bubo africanus	live		13	2		6	13	44	13	13.0
Bubo africanus	skeletons				4		1			0.7
Bubo africanus	specimens		1				1			0.3
Bubo bubo	bodies		8	4	2		2	6	2	3.4
Bubo bubo	feathers	kg						49		7.0
Bubo bubo	feathers	kg						49	66	16.4
Bubo bubo	live		73	52	6	53	62	57	77	54.3
Bubo bubo	skeletons				1					0.1
Bubo bubo	skin pieces				6					0.9
Bubo bubo	skins			7056	52	1			1	1015.7
Bubo bubo	specimens		1			2				0.4
Bubo bubo ascalaphus	bodies							1		0.1
Bubo bubo ascalaphus	live				1					0.1
Bubo bubo bubo	live							3		0.4
Bubo bubo turcomanus	live		4							0.6
Bubo capensis	bodies					1				0.1
Bubo capensis	live						1	1		0.3
Bubo capensis	skeletons				1					0.1
Bubo coromandus	live						1			0.1
Bubo lacteus	bodies							1		0.1
Bubo lacteus	live			2	1	1	6	6	2	2.6
Bubo nipalensis	live						5			0.7
Bubo sumatrana	live					1	1			0.3
Bubo virginianus	bodies		1	6	5	8	2	3	6	4.4
Bubo virginianus	claws			2	3	11		1	2	2.7
Bubo virginianus	feathers					7		6	3	2.3
Bubo virginianus	feet		2		2	2	14	13	1	4.9
Bubo virginianus	live		6	5	6	12	7	9	6	7.3
Bubo virginianus	skeletons			1	20	74				13.6
Bubo virginianus	skins								1	0.1
Bubo virginianus	skulls								22	3.1
Bubo virginianus	specimens				2	23				3.6
Ciccaba virgata	bodies				1					0.1
Ciccaba virgata	live							6		0.9
Ciccaba virgata	specimens								1	0.1
Ciccaba woodfordii	bodies		1							0.1
Ciccaba woodfordii	live					8			4	1.7
Glaucidium brasilianum	bodies		1							0.1
Glaucidium brasilianum	live			12	87	7	8	10	4	18.3
Glaucidium brasilianum	specimens		1	4						0.7
Glaucidium brodiei	bodies		1					1		0.3
Glaucidium cuculoides	bodies		100	1				2	1	14.9
Glaucidium gnoma	skeletons					5				0.7
Glaucidium gnoma	specimens					5				0.7
Glaucidium jardinii	bodies								1	0.1
Glaucidium jardinii	live		1							0.1
Glaucidium minutissimum	live		1							0.1
Glaucidium minutissimum	specimens			1					2	0.4
Glaucidium passerinum	bodies							10		1.4
Glaucidium passerinum	eggs			1						0.1
Glaucidium passerinum	live		2	1	1	5	7	2	8	3.7
Glaucidium perlatum	bodies			1						0.1
Glaucidium perlatum	live					6	2			1.1
Glaucidium perlatum	specimens		2							0.3
Ketupa spp.	bodies		1							0.1
Ketupa blakistoni	bodies			1						0.1
Ketupa ketupu	live			6			6	2		2.0
Ketupa zeylonensis	live						9			1.3
Lophostrix cristata	live							7		1.0
Micrathene whitneyi	bodies				1					0.1
Ninox novaeseelandiae	live		4				4	3		1.6
Ninox philippensis	specimens		1						3	0.6
Ninox scutulata	live		1							0.1
Ninox squamipila natalis	live		1							0.1
Ninox squamipila natalis	specimens	ml						3		0.4
Ninox theomacha	live						2		1	0.4
Ninox theomacha	specimens						2			0.3
Nyctea scandiaca	bodies		4		2	1	2	2	9	2.9
Nyctea scandiaca	eggs								1	0.1
Nyctea scandiaca	live		46	23	48	18	25	52	38	35.7
Nyctea scandiaca	skeletons				2	2				0.6
Nyctea scandiaca	skins				1	1	1		1	0.6
Nyctea scandiaca	skulls								7	1.0
Nyctea scandiaca	specimens							10		1.4
Nyctea scandiaca	trophies					1				0.1
Otus spp.	bodies			1						0.1
Otus spp.	live		1							0.1

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1983-1989			Birds Net Imports							
TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Otus asio	bodies			1	1				1	0.4
Otus asio	live		12	4		1		4		3.0
Otus asio	skins			1						0.1
Otus bakkamoena	bodies							2		0.3
Otus bakkamoena	live		1			1	2	1		0.7
Otus barbarus	live		1							0.1
Otus choliba	live			1						0.1
Otus choliba	specimens				2					0.3
Otus cooperi	skins			2						0.3
Otus cooperi	specimens					3				0.4
Otus flammeolus	live							2		0.3
Otus flammeolus	skins				1					0.1
Otus guatemalae	live								76	10.9
Otus guatemalae	specimens			1	1					0.3
Otus leucotis	bodies			1						0.1
Otus leucotis	live			3						0.4
Otus scops	bodies		6	11	1		3	16		5.3
Otus scops	live				9	3	5	5	6	4.0
Otus scops	specimens					1			3	0.6
Otus spilocephalus	bodies							1		0.1
Otus sunia	specimens							8		1.1
Otus trichopsis	bodies								2	0.3
Pseudoscops grammicus	live			1						0.1
Pseudoscops grammicus	specimens		3							0.4
Pulsatrix perspicillata	live		2	1	2		2	10	1	2.6
Rhinoptynx clamator	live							2		0.3
Speotyto cunicularia	bodies		1			2	1	1	4	1.3
Speotyto cunicularia	live		63	144	119	27	62	158	109	97.4
Strix spp.	bodies								1	0.1
Strix aluco	bodies		43	8	1		4	4	7	9.6
Strix aluco	bones			3						0.4
Strix aluco	bones	sets	1							0.1
Strix aluco	eggs			1			1			0.3
Strix aluco	feathers		2							0.3
Strix aluco	feet		1							0.1
Strix aluco	live		6	5		2	7	11	3	4.9
Strix aluco	skeletons			1	1					0.3
Strix aluco	skins								1	0.1
Strix aluco	skulls		1							0.1
Strix aluco	specimens								1	0.1
Strix hylophila	live							1		0.1
Strix leptogrammica	live						2	2		0.6
Strix nebulosa	live		9	10	19	13	16	25	24	16.6
Strix nebulosa	skeletons					2				0.3
Strix nebulosa	skins								1	0.1
Strix occidentalis	bodies		1			2				0.4
Strix occidentalis	live		1			1				0.3
Strix occidentalis	skins				2					0.3
Strix occidentalis	specimens				1					0.1
Strix rufipes	bodies								4	0.6
Strix rufipes	live								3	0.4
Strix rufipes	specimens			1						0.1
Strix seloputo	live						5			0.7
Strix uralensis	bodies							1		0.1
Strix uralensis	live		6	8	9	9	21	28	18	14.1
Strix uralensis	skeletons				1					0.1
Strix varia	bodies						3			0.4
Strix varia	skeletons				2	17				2.7
Surnia ulula	bodies							1		0.1
Surnia ulula	live			3	2	4	4	5	11	4.1
Trochilidae spp.	bodies							19	2	3.0
Trochilidae spp.	eggs						6			0.9
Trochilidae spp.	live						106	30	14	21.4
Trochilidae spp.	skins						11	165		25.1
Amazilia amabilis	bodies							8	5	1.9
Amazilia amazilia	live						215	292	210	102.4
Amazilia beryllina	bodies							3		0.4
Amazilia decora	live								3	0.4
Amazilia fimbriata	specimens								2	0.3
Amazilia franciae	live								70	10.0
Amazilia tzacatl	bodies							25	27	7.4
Amazilia tzacatl	live							10		1.4
Amazilia versicolor	specimens								1	0.1
Amazilia viridigaster	specimens								2	0.3
Anthracothorax nigricollis	bodies							3		0.4
Anthracothorax prevostii	bodies								5	0.7
Aphantochroa cirrochloris	specimens								5	0.7
Archilochus alexandri	bodies								2	0.3
Calypte anna	bodies						8			1.1
Calypte anna	live							24		3.4
Campylopterus hemileucurus	live							8	8	2.3
Clytolaema rubricauda	specimens								1	0.1
Coeligena coeligena	live								20	2.9
Coeligena violifer	skins							4		0.6
Colibri coruscans	live							205	85	41.4
Colibri thalassinus	live							1		0.1
Doryfera ludovicae	live								3	0.4
Ensifera ensifera	bodies								1	0.1
Eugenes fulgens	bodies								2	0.3
Eupetomena macroura	specimens								1	0.1
Eupherusa eximia	live							2		0.3
Florisuga mellivora	bodies							8	4	1.7
Florisuga mellivora	live								1	0.1
Florisuga mellivora	specimens								2	0.3
Glaucis aenea	bodies							5	25	4.3
Glaucis hirsuta	specimens								4	0.6
Heliangelus viola	live								50	7.1
Heliodoxa schreibersii	live							20		2.9
Heliomaster squamosus	specimens								1	0.1
Heliothryx barroti	bodies								2	0.3
Hylocharis chrysura	bodies							2		0.3
Hylocharis chrysura	specimens								1	0.1
Hylocharis cyanus	specimens								4	0.6
Hylocharis eliciae	bodies								1	0.1
Hylocharis leucotis	bodies								1	0.1
Klais guimeti	live								1	0.1

Annex I. Net reported imports of CITES — listed bird species (1983-1989).

1983-1989 Birds Net Imports

TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Lampornis hemileucus	live								4	0.6
Leucippus baeri	live						40		70	15.7
Leucippus taczanowskii	live							80	20	14.3
Lophornis chalybea	specimens								1	0.1
Lophornis ornata	specimens								1	0.1
Mellisuga minima	live							6		0.9
Metallura phoebe	live							8		1.1
Metallura tyrianthina	live							6		0.9
Myrtis fanny	live						10	180	90	40.0
Patagona gigas	bodies								1	0.1
Patagona gigas	live							8		1.1
Phaethornis eurynome	specimens								7	1.0
Phaethornis guy	live								4	0.6
Phaethornis longuemareus	bodies								7	1.0
Phaethornis longuemareus	feathers							6		0.9
Phaethornis maranhaoensis	specimens								2	0.3
Phaethornis nattereri	specimens								3	0.4
Phaethornis pretrei	specimens								1	0.1
Phaethornis ruber	specimens								3	0.4
Phaethornis superciliosus	bodies								18	2.6
Phaethornis superciliosus	feathers							15		2.1
Phaethornis superciliosus	live								9	1.3
Phaethornis superciliosus	specimens								3	0.4
Polyonymus caroli	live							155	95	35.7
Ramphodon naevius	specimens								5	0.7
Rhodopis vesper	live						30	100	95	32.1
Sephanoides spp.	live						25			3.6
Sephanoides sephaniodes	live						50			7.1
Stellula calliope	bodies								1	0.1
Thalurania furcata	bodies							32	17	7.0
Thalurania furcata	live							2	4	0.9
Thalurania furcata	specimens								8	1.1
Thalurania glaucopis	specimens								7	1.0
Thaumastura cora	live						10	120	25	22.1
Threnetes ruckeri	bodies							37	24	8.7
Threnetes ruckeri	live								6	0.9
Topaza pella	specimens								2	0.3
Trochilus polytmus	live								4	0.6
Pharomachrus mocinno	bodies			1				2		0.4
Pharomachrus mocinno	feathers			1						0.1
Pharomachrus mocinno mocinno	bodies		1							0.1
Aceros spp.	live					12				1.7
Buceros bicornis	bodies							1		0.1
Buceros bicornis	live		18	2	10	6	94	34	51	30.7
Buceros bicornis	skulls							1	3	0.6
Buceros bicornis homrai	live		6				3			1.3
Buceros hydrocorax	bodies						1	1		0.3
Buceros hydrocorax	live		32		23	12	2	6		10.7
Buceros hydrocorax hydrocorax	live				1			20		3.0
Buceros hydrocorax hydrocorax	specimens								1	0.1
Buceros rhinoceros	live		2			4	19	17	52	13.4
Buceros rhinoceros rhinoceros	bodies							2		0.3
Buceros rhinoceros rhinoceros	live		8			1	2	5		2.3
Rhinoplax vigil	skulls		8							1.1
Rhinoplax vigil	trophies						2	1		0.4
Ramphastos sulfuratus	live				21	1053	33	48	2	165.3
Dryocopus javensis	bodies			1						0.1
Rupicola spp.	live					2				0.3
Rupicola peruviana	bodies			2					2	0.6
Rupicola peruviana	live		13	50	16					11.3
Rupicola rupicola	bodies		34		1					5.0
Rupicola rupicola	specimens				5					0.7
Pitta brachyura	live					70				10.0
Pitta guajana	live								10	1.4
Picathartes gymnocephalus	live			3			1			0.6
Meliphaga cassidix	live					20				2.9
Gubernatrix cristata	live				1	5	35			5.9
Gubernatrix cristata	specimens								1	0.1
Paroaria capitata	live							10		1.4
Paroaria coronata	live							13		1.9
Paroaria coronata	specimens								5	0.7
Fringillidae spp.	live		5979		401		427	180		998.1
Fringillidae spp.	specimens				1					0.1
Carduelis cucullata	live		4	29	78	6	27	22	20	26.6
Serinus spp.	live					480	88	338	221	161.0
Serinus gularis	live					525	140	1263	80	286.9
Serinus leucopygius	live				5240	9627	26107	39235	28092	15471.6
Serinus mozambicus	live			880	24257	94853	91530	166702	105984	69172.3
Estrildidae spp.	live					160	244	450	200	150.6
Amadina fasciata	live				3105	20680	25798	108544	41908	28576.4
Amandava subflava	live				6030	21240	29977	33313	23069	16232.7
Estrilda spp.	live				2000			450	700	450.0
Estrilda astrild	bodies				10					1.4
Estrilda astrild	live				4313	16463	27217	24830	20508	13333.0
Estrilda astrild	live	items							4570	652.9
Estrilda caerulescens	live				2265	4495	8562	25300	11051	7381.9
Estrilda caerulescens	live	items							2723	389.0
Estrilda melpoda	bodies					3		1		0.6
Estrilda melpoda	live				4535	31295	43348	61607	29106	24270.1
Estrilda melpoda	live	items							5525	789.3
Estrilda troglodytes	live				4100	25969	30100	81480	34585	25176.3
Estrilda troglodytes	live	items							5350	764.3
Lagonosticta spp.	live					100		5837	700	948.1
Lagonosticta larvata	live				420	986	410	550	542	415.4
Lagonosticta rara	live						360	50	400	115.7
Lagonosticta rubricata	bodies				8					1.1
Lagonosticta rubricata	live					1182	4515	9088	21672	5208.1
Lagonosticta rufopicta	live				20		460			68.6
Lagonosticta senegala	live				1820	11478	12355	10765	12294	6958.9
Lonchura spp.	live							136	190	46.6
Lonchura bicolor	bodies					2		6		1.1
Lonchura bicolor	live				2160	2623	3561	7741	2435	2645.7
Lonchura cucullata	live				1088	5310	11686	21880	10796	7251.4
Lonchura fringilloides	bodies					2		1		0.4
Lonchura fringilloides	live				250	850	1138	1073	470	540.1
Lonchura malabarica	live				500	2930	10589	39956	17231	10172.3

Annex I. Net reported imports of CITES — listed bird species (1983-1989).

1983-1989 — Birds Net Imports

TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Mandingoa nitidula	live				3702	5430	6090	7661	3553	3776.6
Nesocharis capistrata	live				68	75	109	247	59	79.7
Nigrita spp.	live							2		0.3
Nigrita bicolor	bodies					1		2		0.4
Nigrita bicolor	live				30	70	12	452	619	169.0
Nigrita canicapilla	live				1	40	25	2	10	11.1
Nigrita fusconota	live							50		7.1
Nigrita luteifrons	live							5		0.7
Ortygospiza atricollis	live				1055	2727	1340	1290	200	944.6
Poephila cincta	live						20	58	10	12.6
Poephila cincta cincta	live			80		12	2		20	16.3
Pyrenestes ostrinus	bodies					1		8		1.3
Pyrenestes ostrinus	live				615	1487	2788	1935	380	1029.3
Pytilia spp.	live						50	2005		293.6
Pytilia hypogrammica	live				1320	696	3854	657	1010	1076.7
Pytilia phoenicoptera	live				596	1668	5940	2049	2965	1888.3
Spermophaga haematina	bodies					2		9		1.6
Spermophaga haematina	live				423	1370	1257	1475	818	763.3
Uraeginthus bengalus	live				2580	15599	18918	84171	62340	26229.7
Ploceidae spp.	bodies							3		0.4
Ploceidae spp.	live				518	400	1006	154		296.9
Amblyospiza albifrons	live							20		2.9
Bubalornis albirostris	live							10		1.4
Euplectes spp.	live								50	7.1
Euplectes afer	live				830	1390	3893	11630	2725	2924.0
Euplectes afer	live	items							1050	150.0
Euplectes ardens	bodies				5					0.7
Euplectes ardens	live				75	327	1826	387	130	392.1
Euplectes hordeaceus	live				300	810	1668	1959	675	773.1
Euplectes hordeaceus	live	items							80	11.4
Euplectes macrourus	live				675	410	1120	374	291	410.0
Euplectes macrourus	live	items							80	11.4
Euplectes orix	live				6040	6980	16020	32846	13676	10794.6
Euplectes orix	live	items							4757	679.6
Malimbus malimbicus	live							200		28.6
Malimbus nitens	bodies				4			5		1.3
Malimbus rubriceps	live						200			28.6
Malimbus rubricollis	bodies							1		0.1
Passer griseus	bodies							4		0.6
Passer griseus	live				50	410		310	400	167.1
Plocepasser superciliosus	live							100		14.3
Ploceus spp.	live							1450	700	307.1
Ploceus aurantius	bodies					2		4		0.9
Ploceus aurantius	live						600	190	1215	286.4
Ploceus cucullatus	bodies					4		10		2.0
Ploceus cucullatus	live				1070	1970	750	5256	2175	1603.0
Ploceus heuglini	live							150		21.4
Ploceus luteolus	live					1150	690	370	1175	483.6
Ploceus melanocephalus	live				140	120	925	17370	1156	2815.9
Ploceus nigerrimus	bodies							6		0.9
Ploceus nigerrimus	live					5			13	2.6
Ploceus nigricollis	bodies							6		0.9
Ploceus nigricollis	live						200	100	2	43.1
Ploceus pelzelni	live					200				28.6
Ploceus preussi	live						200			28.6
Ploceus superciliosus	live						232			33.1
Ploceus tricolor	live					200	142	24	134	71.4
Ploceus velatus	live				140			536	700	196.6
Quelea erythrops	bodies							1		0.1
Quelea erythrops	live						170	5	350	75.0
Sporopipes frontalis	live						300	535	453	184.0
Vidua spp.	live				250		200	1118		224.0
Vidua chalybeata	live			100	610	4217	5151	13555	6213	4263.7
Vidua interjecta	live							228		32.6
Vidua macroura	live				1195	5600	6933	13342	8958	5146.9
Vidua paradisaea	bodies							1		0.1
Vidua paradisaea	live			10	180	2040	2711	12444	6556	3420.1
Vidua raricola	live							205		29.3
Vidua togoensis	live								50	7.1
Leucopsar rothschildi	live		8	9	11	15	27	19	8	13.9
Paradisaeidae spp.	bodies		1					1	161	23.3
Paradisaeidae spp.	feathers				85		71	48		29.1
Paradisaeidae spp.	live		17						2	2.7
Paradisaeidae spp.	specimens					21	5			3.7
Astrapia mayeri	live		1	6		3				1.4
Astrapia splendidissima	live						2			0.3
Astrapia stephaniae	bodies			1						0.1
Astrapia stephaniae	feathers			62						8.9
Astrapia stephaniae	live						1			0.1
Astrapia stephaniae	skins							1		0.1
Astrapia stephaniae	specimens						16			2.3
Cicinnurus regius	bodies			2					2	0.6
Cicinnurus regius	live					11	8	3	2	3.4
Cicinnurus regius	specimens						1	5		0.9
Cnemophilus macgregorii	bodies					2				0.3
Cnemophilus macgregorii	live		3	9		2				2.0
Diphyllodes magnificus	bodies			2					1	0.4
Diphyllodes magnificus	live		2				20			3.1
Diphyllodes magnificus	skins							2		0.3
Diphyllodes magnificus	specimens						8			1.1
Diphyllodes respublica	live			4						0.6
Drepanornis albertisi	live						1			0.1
Drepanornis albertisi	specimens						12			1.7
Epimachus fastuosus	bodies				2					0.3
Epimachus fastuosus	feathers			14						2.0
Epimachus fastuosus	specimens					2				0.3
Epimachus meyeri	bodies			1						0.1
Epimachus meyeri	live		2	2		2	2			1.1
Epimachus meyeri	skins							3		0.4
Epimachus meyeri	specimens						12			1.7
Loboparadisea sericea	live		3	14			200			31.0
Lophorina superba	bodies			2					2	0.6
Lophorina superba	feathers			5						0.7
Lophorina superba	live			7			6			1.9
Lophorina superba	skins							1		0.1
Lophorina superba	specimens						24			3.4

Annex I. Net reported imports of CITES — listed bird species (1983-1989).

1983-1989 Birds Net Imports

TAXON	TERMS	UNITS	1983	1984	1985	1986	1987	1988	1989	AVERAGE
Loria loriae	live			8			1			1.3
Loria loriae	skins							1		0.1
Loria loriae	specimens						8			1.1
Macgregoria pulchra	live						2			0.3
Manucodia ater	bodies								1	0.1
Manucodia chalybatus	live						2			0.3
Manucodia chalybatus	skins							1		0.1
Manucodia comrii	bodies							3		0.4
Manucodia comrii	live						1			0.1
Paradigalla carunculata	bodies								1	0.1
Paradisaea apoda	bodies			1			2	1	1	0.7
Paradisaea apoda	live			2			5			1.0
Paradisaea minor	bodies			3					4	1.0
Paradisaea minor	feathers			10				2		1.7
Paradisaea minor	live						5	4	1	1.4
Paradisaea minor	specimens						1			0.1
Paradisaea raggiana	bodies			36						5.1
Paradisaea raggiana	feathers			45			1	5		7.3
Paradisaea raggiana	live		2		2	1	9	4	4	3.1
Paradisaea raggiana	skins							2		0.3
Paradisaea raggiana	specimens				13					1.9
Paradisaea rubra	bodies								2	0.3
Paradisaea rubra	live			2	2			2		0.9
Paradisaea rudolphi	feathers			2				2		0.6
Paradisaea rudolphi	specimens						4			0.6
Parotia carolae	bodies								2	0.3
Parotia carolae	live		1	5						0.9
Parotia lawesii	bodies			1						0.1
Parotia lawesii	live			2			3			0.7
Parotia lawesii	skeletons							2		0.3
Parotia lawesii	skins							1		0.1
Parotia lawesii	specimens						220	2		31.7
Phonygammus keraudrenii	skins							1		0.1
Pteridophora alberti	bodies					2				0.3
Pteridophora alberti	feathers			10				2		1.7
Pteridophora alberti	live			9		1	1			1.6
Ptiloris magnificus	bodies								7	1.0
Ptiloris magnificus	skins							1		0.1
Seleucidis melanoleuca	bodies			1					2	0.4
Seleucidis melanoleuca	live				4		4			1.1
Semioptera wallacii	bodies			2						0.3

Source: CITES Annual Report Data.

ECONOMICS AND ANIMAL WELFARE: The Case of the Live Bird Trade

Timothy M. Swanson[15]

INTRODUCTION

There are two generally agreed facts which capture the essence of the concerns about the current state of the live bird trade: unacceptable mortality rates of birds in trade and unequitable distribution of revenues derived from the trade.

- **Unacceptable Mortality**
  There is significant mortality within the bird trade from point of capture to point of final sale; however, in particular, there is great concern about pre-export mortality rates, and for good reason. What evidence there is indicates that this is where the greatest proportion of mortality occurs. For example, Nash (1991) reports that birds trapped for export in Irian Jaya experience pre-export mortalities of about 30% to 40%, while US import data indicate that mortality of the species exported from Irian Jaya during transport and the first month following import averaged approximately 20% (Mulliken *et al.*, this volume). In any event, this represents the loss of many wild birds, both in the process of capture and during transport and quarantine.

- **Unequitable Distribution of Revenues**
  Once in developed countries, the value of birds in trade is very significant, ranging up to US$1000 per bird; however, very little of this revenue flows to the persons who actually harvest the birds or live in close contact with their habitat. A comparison of trapper/trader prices with wholesale prices for any of the parrot species exported from Irian Jaya to the United States exemplifies the small share of the wholesale price that is retained by the 'bird producers' source countries. For example, for the Indonesian parrot *Chalcopsitta atra* (Black Lory) the price rose from an equivalent of US$3.41 per bird paid to the trapper to US$199 paid to the US wholesaler for the same bird. This increase in price is a very general phenomenon throughout the bird trade. Nash's data for Irian Jaya indicate that the average price paid to Irian Jaya 'trappers' for birds exported is US$2.57 per bird, while the average wholesale price for the same birds in the United States is US$256 (Mulliken, pers. comm.). In general, therefore, the producers of this natural resource receive a very small proportion of the revenues derived from its sale.

For many, the conclusions to be derived from these two generally accepted facts are straightforward:

- First, there is no value being derived from the bird trade (for the producers), and plenty of harm being done to the birds. Therefore, the solution is to ban the trade.
- Second, if there is a value to be had from keeping pet birds, it need not be satisfied by this 'inhumane' process; let the birds be generated from domestic stocks which are comparatively well-cared for. The final conclusion, therefore, is to move toward the captive breeding of species formerly provided by trapping, in combination with a ban on the wild bird trade.

With the 'captive breeding/wild bird ban' solution in place, all concerned parties are theoretically satisfied because:

- Birds in the wild remain undisturbed.
- People who like to do so get the pleasure of keeping exotic pet birds.
- An unjust trade is discontinued, while the pet bird business remains in place.

Although this combination appears to be an answer to all of the problems of most parties concerned with the live bird trade in importing countries, in fact this is no answer at all. From a general perspective, the conclusions listed above are not valid.

First, birds in the wild will not remain undisturbed, because the discontinuance of the bird trade does nothing to assure the maintenance of the *status quo*. This is because most of the wild birds of the developing world are as threatened by the loss of habitat as they are by over-exploitation. The countries shipping large quantities of wild birds, e.g. Argentina, Senegal, Tanzania and Indonesia, are all experiencing large-scale changes in terms of human population growth, land use and/or resource development.

Second, it is very unlikely that the range of tastes of purchasers of exotic birds in the developed world will be satisfied by birds derived only from domesticated stocks. To date, much of the value of wild birds has been closely associated with the intrinsic value of diversity, i.e., it is a combination of the relative rarity and unique nature of exotic birds that makes them of particular interest and value in importing countries. It has been an interest in the unusual that has generated the international bird trade, i.e., an interest in sampling exotica. This sort of preference will not be satisfied by the movement towards the domestic production of exotic birds.

Finally, the economic injustice of the existing trade will not be eliminated by captive production of birds; instead, it will be consummated by the final elimination of all need to pay the producers in developing countries for their contributions to the maintenance of diversity. By the transference of the base genetic resource to the developed countries and its domestication there, the

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appropriation of the whole of the value of this resource is completed. The role of the developing countries as the producer of the resource will then be totally usurped by the wholesalers/breeders who had previously captured the majority of the value. Although the proportion of value that would be removed from developing countries through this final transfer is tiny, reflecting the low prices now paid by developed countries for the resources, such a transfer would ultimately eliminate the developing countries' rightful claim to a far more substantial share.

It is clear, therefore, that the simple solution to the problems set forth above is not a solution at all. Instead, it constitutes a part of a much broader process of genetic transference from South to North that has occurred across a wide spectrum of resources, most notably plant genetic resources. And, it is a process that is generating many of the same losses of habitat, and hence diversity, that the Northern states decry. This is because denial to the South of the value of the diversity that they have maintained, precisely when they are questioning the value of such diversity's contribution to their societies, increases the incentives to convert diverse habitats to other uses, e.g. agriculture.

This chapter does not attempt to address the broad issue of habitat conservation. Instead, its focus is limited to the development of the ideas presented in the first part of this introduction. In particular, it demonstrates the direct link between animal welfare and economics.

Furthermore, it shows how shifting ownership' of species in trade away from the producers in the developing world towards the developed world is the essence of the problems within the bird trade, both economic and animal welfare, not the essence of their solution.

THE LINK BETWEEN ANIMAL WELFARE AND ECONOMICS

The basic conflict regarding animal welfare with respect to the live bird trade derives from the asymmetry of perspectives regarding the value of the animals. Wholesale prices in importing countries indicate that Northerners place relatively high value on birds in trade, as much as US$200 to US$1000 per bird for some species, and therefore wonder at the waste implied by high trade-associated mortalities. By contrast, the primary caretakers of the wild resource in developing countries value the birds in accordance with the prices that they receive, US$2 to US$10 per bird for the more valuable species, and therefore take the amount of care that such a resource warrants. Of course, less than US$2 worth of care for a resource worth hundreds of US dollars strikes Northerners as wasteful, and it is; however, it would seem equally odd to a producer in the South to take care that required hundreds of US dollars worth of medicines and equipment for a resource that earns them US$2. It is this basic asymmetry in perspectives that makes for profound disagreements on the issue of animal welfare. This is the fundamental link between animal welfare and economics.

The source of this asymmetry is also to be found in economics. The two generally agreed facts set forth above -- unacceptable mortality and unequitable income distribution -- are both symptoms of the same economic problem: the failure of resource managers to capture the intrinsic value of the resource, i.e., the failure of producers to capture rents. This results in the producers receiving a very small proportion of the value of a highly valued resource. When this occurs, there is little reason for the resource manager to take the amount of care of the resource that the ultimate consumers would like to see. From the consumer societies' perspective, what results is highly wasteful management of the resource

This section explains the economics of 'rent capture' and its links to animal welfare. The next section illustrates this concept in more detail by reference to a case study of US parrot imports.

The Economics of Rent Capture

The 'rents' of a resource are the returns derived from its intrinsic value. The sale price charged for a resource reflects the sum of several components, including the value of the labour involved in the resource's management and harvest, the value of equipment required for harvest, storage and transport, etc. Over and above the value of these investments is the intrinsic value of the resource itself, the resource's 'rents'. In general, the value of such rents is determined by subtracting actual expenses, including labour, etc., from the sale price of the resource, with the remainder therefore attributable to the intrinsic value of the resource.

The first party with an opportunity to capture the rents of a natural resource is the producer, i.e., trappers. In the case of the bird trade, it is clear that little if any rent value is captured by trappers. This is obvious both when comparing prices paid relative to wages and comparing prices paid at various levels of the industry.

The escalating values of the 'unaltered' birds through the series of transfers to the market in developed countries indicate where the rents are accumulating. Thomsen and Brautigam (1991) estimate that trappers in Neotropical countries earned US$33 million for parrots exported between 1982 and 1986, with middlemen earning US$114 million from the sale of the same birds. The middlemen's return of US$81 million on expenses of US$33 million is indicative of rent capture.

In general, the precise 'rent value' of a natural resource is often difficult to determine at the later stages of production, on account of the amount of 'processing' that occurs in the course of the movement of the goods from producer to final consumer. This is less of a problem with the live animal trade, however, as they remain throughout the process nearly 'natural' products. This is to be contrasted with an article such as elephant ivory which derives the bulk of its value at the stage of hand processing; it is difficult in that case to determine what proportion of the value is derived from human craftsmanship and what proportion is rent capture.

Since the majority of live birds in trade are virtually unaltered at the point of final sale,[16] the vast majority of their wholesale value (in excess of input costs) is likely to be resource rent. In order to compute the amount of rent captured, it is necessary to subtract the labour and capital costs of capture, care, transport and quarantine, as well as a premium for 'lost birds'.

In order to illustrate the process of rent capture at later stages of the trade, the example of the Irian Jaya parrots will be considered in further detail. Nash (1991) reports that Irian Jaya trappers receive about US$1 per bird for smaller parrots (e.g. lories) and up to US$14 for larger species. The average weekly wage in Indonesia was US$8.37 in 1988 (Hoffman, 1990). There are no data available regarding the effort required to trap birds for export. For the purposes of this discussion, it will be assumed that on average, it takes one man-day to capture a commoner variety of wild parrot and one man-week to capture a rarer variety. Prices paid to trappers must also cover the costs of equipment needed for the enterprise.

Based on Nash (1991) and available trade information, Irian Jaya exporters paid an average of US$7 per bird for birds they were exporting to the United States. Irian Jaya exporters do not pay for birds that die during the first 15 days following purchase, and therefore it will be assumed that mortality is not a significant 'cost' for these exporters.

No information was available regarding expenses incurred to maintain birds prior to export, but given Indonesia's extremely low cost of living, it is unlikely that these costs were more than a small fraction of the birds' purchase price. For the purposes of this discussion, it will be assumed that exporters spend approximately 50% of the purchase price of birds on maintaining them and preparing them for shipment.

It is generally assumed that the costs of transport and duties comprise about a 10% to 20% premium over the cost of goods exported; however, for live birds, transport costs are likely to be much more. For the sake of this discussion, it will be assumed that transport costs are 100% of the purchase price. Approximately 20% of the birds of the species exported from Irian Jaya die during transport to or quarantine in the United States, therefore a premium of 25% on the survivors is required to cover this loss. This sums up to additional costs of 175% of the exporters' purchase price. The cost of quarantine (30 days in the United States) is an additional expense. To ensure that there is no possibility of underestimates, for the sake of this discussion quarantine will be considered to be 200% of the exporters' purchase price. If it is assumed that birds were held for, on average, an additional month prior to sale, at maintenance costs equal to those of quarantine, then an additional 200% would be added to the costs of the birds. As a result, the total pre-sale cost of birds imported into the United States would be 675% of the price paid by exporters for the birds.

Under these assumptions, the 'middlemen' trading in Indonesian birds, the exporters and importers, pay about US$7 per bird to traders for the resource, and then incur a further US$47 per bird for transport, quarantine, mortality premium and subsequent storage costs. The total costs involved in the acquisition of the surviving live birds would then be, by way of illustration, approximately US$54. This is to be subtracted from the average wholesale price of US$256, which leaves a residual amount of about US$202 per bird. This residual is an estimate of the intrinsic value of the bird to wholesale consumers, i.e., the resource's rent value.

Therefore, this estimate indicates that bird trade middlemen (exporters and importers) are appropriating rents of about $200 per Irian Jaya bird. It is fundamentally important to emphasise that US wholesalers cannot increase the wholesale value of a live bird over that which it has naturally. US consumers are willing to pay a wholesale price of US$256 because of imported birds' natural characteristics, not because of some skilled process that the birds have undergone. In short, there can be no question that the vast majority of this substantial gap between the wholesalers' price and production costs represents anything other than the rents of the natural product.

The Economics of Producer Rent Appropriation

Usually, resource rents are captured by producers alone because they have the capacity to control the rate of output, which in turn determines the amount of rent. For example, by means of orchestrating controls over and managing the rate of output, the Organisation of Petroleum Exporting Countries (OPEC) has attempted

[16]Nestlings harvested for export must be hand-fed, and become habituated to handling by humans in the process. This increases their 'pet' value.

to maximise and capture the rents of oil production: by restricting output, OPEC has tried to create maximum petroleum rents.

This is precisely the role of any rent creation mechanism, i.e., output restriction and price maintenance to create and capture rents. The appropriation by producers of the majority of natural resource rents should not be viewed as pernicious. In fact, it is important to society that rents be created and appropriated by producers. This is why most societies give producers the exclusive rights to resource rents (known as property rights): to encourage rent creation and appropriation by those persons.

If producers do not capture any rents, then they see the resource and its generating habitat as having no intrinsic value. They are therefore provided no incentives to care for either the resource or its habitat. Since there is no substitute for the natural generating capacity of nature, the failure to take care of this process can result in the loss of the resource, i.e., its extinction.

The failure to create and appropriate natural resource rents at the level of the habitat-manager and wildlife-producer lies at the core of the problem of habitat destruction and species endangerment throughout much of the developing world. The absence of property rights in natural habitats and the generally 'open access' harvesting of the resources in these areas makes the producers' investment in these resources uneconomic.

The Economics of Non-producer Rent Appropriation

It is not easy to create and appropriate rents from a natural resource when one is not the party with control over the production of the resource -- but it can be done. This requires 'disorganisation' at the producer level followed by 'careful organisation' at the level of the rent appropriation.

Disorganisation at the producer level implies:

- Open access to the resource.
- Overproduction of the resource.
- Competition to sell the resource.

These aspects of disorganisation lead to competition that drives the sale price of the resource down to the costs that were invested in its capture. That is, disorganised producers of the resource receive virtually nothing more than the value of the time and equipment that was employed in its harvest. There is no residual value and they receive no rents.

This is precisely what is occurring with the bird trade, and, in fact, with most wildlife trade. Exclusive rights of access are generally not enforced with regard to natural habitat, allowing open access to the resource. With so many trappers involved, it is impossible to organise to prevent over-harvesting. And, with so much harvesting, it is not possible to reduce competition, with the result that prices paid to trappers for birds are driven down to the bare minimum. That bare minimum price is equivalent to the value of the time and materials used in the capture of live birds, measured in regard to the payments that could have been acquired if the time and materials had been employed elsewhere. For example, the US$7 per bird payment (when allocated over the amount of time required on average to capture a bird) will then approximate the same hourly payment the person would have received in alternative employment using the same equipment and materials.

By contrast, careful organisation at the level of rent appropriation implies:

- A relatively small number of participants at that level.
- Knowledge of the producers' costs.
- Knowledge of the consumer market.
- Capacity to set prices for both producers and consumers.

This sort of careful organisation allows middlemen to set their sale prices to consumers according to demand, and to set their purchase prices to producers in accordance with the producers' costs. By focusing on the maximisation of revenues on one end of the market, while minimising costs on the other, the middlemen are able to open up a gap between the wholesale price and the supply cost. This gap represents the rents of the resource, which the middlemen are able to appropriate under these conditions.

Non-Producer Rent Appropriation, Resource Conservation and Animal Welfare

The capture of rent by producers is important for the proper management of a resource. As mentioned above, this provides the incentives to care for the resource and its habitat.

However, where persons receiving resource rents do not manage the resource's habitat or harvest rates, there is no *a priori* reason to believe that these rents will contribute to the conservation of these resources: these persons are not the best-placed individuals to manage these resources. Non-producers may lack the capacity to take sufficient control over habitat maintenance and trapping to contribute to the management of the resource. Furthermore, although rents generally create incentives to manage the resources that give rise to them, these incentives are largely absent if the persons appropriating the rents are not in a position to manage the resource.

In the case of the live bird trade, middlemen who capture resource rents have little incentive to manage

the resource. In fact, they rely on initial over-production followed by subsequent restrictions on production to create economic rents, creating an economically expendable surplus of birds. For this reason, rent appropriation by middlemen goes far toward explaining the two generally accepted facts of unacceptable mortality and low producer revenues in developing countries: middlemen rent appropriation is the basis of the link between economics and animal welfare.

First, rent appropriation by middlemen is the force that opens the gap between prices received by managers of the resource in the South and those received by marketers of the resource in the North. In short, the capture of rents by middlemen denies them to producers and thus reduces the levels of care applied to the animals and habitat under the control of the producers. This gap also creates the asymmetry in perspectives between Southern producers and Northern consumers regarding the amount of care that should be accorded each bird. This causes much alarm among final consumers, who pay substantial rent value for the resource but do not see the amount of desired care being taken by producers.

However, the link between middlemen rent appropriation and animal welfare is much more direct than this. In essence, rents are competed away at the producer level by reason of over-production, but are later recreated by middlemen at subsequent stages in the trade. This could not happen if all of the birds captured by initial producers were ultimately sold to final consumers. Instead, the phenomenon of middlemen rent appropriation directly implies the production of a significant proportion of 'economically expendable animals', i.e., middlemen rent creation **requires** that more birds are captured than are sold to final consumers.

It is important to keep in mind that rent creation is largely a function of the **final** demand for a product. The absence of rents at the producer level for products for which a market is known to exist implies overproduction of the product in regard to final demand. Producer rents are dissipated as competition between large numbers of trappers trying to harvest and sell as many birds as possible forces prices down. The aggregate payment for all birds actually declines as a result of this competition. Furthermore, trappers' prices fall to a point at which, **if all birds harvested were to reach the final consumer market**, the final consumer price would be very low.

As noted above, subsequent rent creation requires just the opposite, i.e., close organisation and restricted sales. In essence, the wholesalers in importing countries would not want to sell to consumers 100% of the birds captured by trappers even if they were delivered alive and well. The decreases in market prices that would result from the increased supply would more than outweigh the value of increased sales. Thus, it is in the middleman's interest to encourage the production of large quantities of birds (in order to drive rent appropriation by producers to zero) while selling reduced quantities (to maximise prices) to final consumers. This is how rents are created at non-producer levels of the trade.

What happens to the surplus birds that build up between the two stages of the industry? There is no reason to store them, as excess numbers must be trapped again in the next harvest season in order to once more create rents. Their value lay in the effects of their over-production at the harvest stage, i.e., suppression of producer prices. However, they would have a negative effect on rent capture by middlemen if marketed, as surplus birds would drive down market prices, and actually reduce aggregate revenues more than they generate in their own sale. In short, the surplus birds are economically expendable.

This analysis might seem harsh or speculative; however, such a system is the only way that rents can be created at post-production stages of a trade in a natural resource that is largely unaltered at the point of final sale. So, if the initial argument is correct (that the vast majority of the wholesale value represents the intrinsic value of the bird rather than the costs of inputs), then it is difficult to escape the conclusion that this manner of rent appropriation creates incentives for making birds expendable.

It is therefore clear that animal welfare and economics are closely interlinked in the context of the bird trade: non-producer rent appropriation is largely driving the unsatisfactory treatment of the birds. The fact that the rents from this natural resource are not being captured by producers results in a lack of care of the resource and its habitat by the producers. And, because the rents captured by middlemen require over-production of the resource, a proportion of the birds trapped for trade are automatically expendable.

Who Are The Middlemen in the Live Bird Trade?

A brief depiction of US bird imports demonstrates the validity of these hypotheses.

As is clear from the information presented in this volume, the vast majority of the wild birds in trade are exported by a relatively small number of producer countries, although the birds themselves may come from a much broader area. Therefore, although there are very likely many thousands of individuals pursuing wild birds on a disorganised basis, the vast majority of

birds captured ultimately find themselves funnelled through fewer than ten ports of export. This 'channelling' process is the first step in the rent creation process.

The multitude of trappers operate through a network of traders, who are themselves quite large in number. Traders travel from village to village collecting birds for sale to exporters. Ultimately, birds are transported to ports of export, and the government-recognised exporters.

The number of exporters in each of the five countries profiled is relatively small in number (see Part 3 of this volume). Tanzania has by far the most: ninety licensed exporters. Argentina has twenty-seven licensed exporters, but thirteen of these hold 90% of the market. Guyana has sixteen licensed bird exporters; Indonesia has fifteen; and Senegal has twelve, with three holding 80% of the market. In several of these countries, then, the channel of trade has been reduced from thousands of individuals to fewer than twenty by this stage in the trade.

However, the point at which the trade becomes carefully organised is clearly at the stage of US importers. In 1988, a mere six firms accounted for 74% of US live bird imports. Under closer scrutiny, though, three of these firms appear to be under common ownership, which means that in effect only four distinct firms appeared to hold approximately three-quarters of the US market.

A 'four firm concentration ratio' of 74% is nearly unheard of in a nationwide US industry. It represents a level of market power that would definitely afford the prospect for carefully orchestrated and organised marketing of imported birds. In short, it is precisely this manner of market control that allows the creation of market rents. This is what is occurring with the bird trade.

The progress of birds exported from Irian Jaya through the various stages of this industry, the concentration of power at the point of import and the resulting prices are illustrated in Table 1. Table 1 illustrates the correspondence between increasingly small numbers of operators in the trade, the effects of compounded mortality, and increasingly high prices. The middlemen in this trade, in the sense of the 'carefully organised' segment of the trade able to create and appropriate rents, are clearly the US importers.

In summary, the current situation derives from rent creation at the middle stages of the trade, i.e., the opening of a gap between costs and prices at a point other than the manager of the habitat and harvest itself. In consequence, this reduces the incentives of producers to care for the animals and their habitat. It also generates the necessity of capturing more birds than are ultimately sold. It creates the asymmetry in expectations about animal welfare between Southern producers and Northern consumers. Therefore, middlemen rent appropriation embodies the problem of trade-associated mortality. Mortality and the capture of rents by middlemen go hand-in-hand.

The solution to the problem of the live bird trade will not be easy. The proper management by producers of wild bird populations and habitat is a complex issue, and not addressed in this chapter. The only point addressed here is whether the correct method of solving the two problems set forth at the beginning of this chapter is to move toward captive breeding combined with a ban on trade in wild-caught birds. The economic analysis provided here concludes that it is not.

Banning the trade in wild-caught birds and supplying the market for exotic birds through captive breeding would institutionalise the economic injustices that are creating the current situation. If this analysis is correct, then the problems of the live bird trade derive from the fact that the middlemen have the benefit of the 'owners'' interest in the natural resource. To now give the middlemen the lawfully protected monopoly on production for the industry is like rewarding the cat who ate the canary.

From the perspectives of conservation and people within producer countries, it does not make any difference who in the developed countries controls or profits from captive breeding: the point is that production is being moved to the developed world. It is perfectly predictable, however, that those who were already involved in the trade would consider such a monopoly on production as a benefit, and would go into production themselves.

That US importers are preparing for such trade restrictions is evident, as many are now starting to market captive-bred birds, both those bred in other countries and those bred within the United States. In addition, these importers will be in the best position to control imports of those wild-caught birds allowed in trade for captive breeding and other purposes if trade bans on wild-caught birds are to be put in place.

A CASE STUDY OF THE US PARROT TRADE

The propositions of the previous section are examined in more detail below. A specific model of the relationship between the provision of care by producers and the price received is provided, followed by a discussion of the results of a statistical analysis of US parrot import data for major producer countries.

Table 1. Commercial progress and mortality of psittacines exported to the United States from Irian Jaya, Indonesia.

COMMERCIAL ENTITY (TYPE)	(NUMBER)	NUMBER OF BIRDS IN TRADE/MORTALITY (PERCENT)	AVERAGE PRICE RECEIVED PER BIRD (US DOLLARS)
Trapper	100s	100% - trapper mortality (30%)	2.57
Trader	30	70% - trader mortality (15%)	7.09
Exporter	15	59% - exporter mortality (?)	49.43
US Importer	<6	< 59% less transport/quarantine mortality (20%) and pre-sale mortality (?)	256.00

Sources: Edwards and Nash (this volume); Mulliken and Thomsen (in prep.).

The conclusions of these analyses support the theory presented above. It is clear that the price paid for a bird does indeed have an impact on the welfare of that same bird. Producers invest in providing 'care' in order to make a return on a captured bird. Therefore, the lack of rents received by producers will go far toward explaining the relatively high levels of mortality associated with trade, especially prior to export.

A Model of the Provision of Care for Captured Birds

This model operates on the assumption that the trade follows the following general pattern.[17] First, exporters establish the prices they are willing to pay for birds, based on their knowledge of the import market and of the approximate number of 'net birds' that will be delivered at the quoted prices. Second, traders determine the level of profit they wish to make, and inform trappers of what they will pay for birds of different species. The trappers then spend time capturing birds until the birds are rendered scarce enough that it does not 'pay' (in comparison with other economic activities) to continue trapping.

Birds, then, are seen by trappers only as a means of generating an hour's employment. Because so many people are harvesting birds, trappers know that there is no reason to expect any price other than the one quoted by the trader. There is too much competition to expect to be able to negotiate on price. Therefore, trappers use the traders' prices as a guide to the amount of time to put into bird harvests.

Now, traders only come around to collect birds periodically, and the captured birds begin to accumulate. The trapper then has two choices with regard to maintaining a supply of birds:

- Care: The trapper can invest time and money in the care of previously caught birds (by building bigger cages, acquiring proper foods or medicines, attending to sanitation, etc.); or

- Capture: The trapper can get more birds by hunting and capturing them.

The two alternatives are both ways of producing a bird in a day's work, and the choice between them depends upon their relative productivity and costliness.

There is no reason to expect that trappers (and subsequently traders) would not wish to invest time in caring for their captured birds, to the extent that it produced live birds of a given value. The real constraint on proper care for birds probably derives from a lack of knowledge and capital requirements. That is, there is only so much that can be accomplished with regard to care by the use of time alone. Some level of training with respect to proper care of birds, and substantial amounts of equipment and materials (e.g. cages, feeds, medicines, etc.) must be combined with time in order to generate substantial increases in care.

In most developing countries, however, the costs of such capital items are out of reach for most rural peoples, and training is unavailable. It is these constraints that are initially binding for the provision of adequate care. It is likely to be more feasible and less expensive to go out and replenish lost stocks than it is to acquire the knowledge and capital items necessary to care for those birds already obtained.

This same principle applies to the traders who purchase directly from the trappers, since all that they have to do in order to replenish their stocks is to hire a few more hours of trappers' time. Given the cost of transport, packaging and medicines, it is probably less expensive to substitute labour (in acquiring new birds) than it is to care for those already purchased.

The amount of care received by birds in developing countries is therefore directly related to the price received for those birds by the producers. Higher prices would be available, and thus increased care would be available, if the producers were able to organise and capture rents.

This is unlikely, however, as the rents of the natural resource are already being captured elsewhere by a far more organised segment of the industry. The middlemen who have captured the rents might be able to influence the care provided to the resource, either by attempting to exercise controls at earlier levels or by organising the producers. However, the middlemen have no incentives to do so. Organisation of the producers would only deprive the middlemen of their rents.

Instead, middlemen operate through an arms-length approach that generates rents and places a large proportion of the blame for mortality on producers. This occurs through the power to set a price that generates the number of **net (surviving) birds** that they wish to ultimately market — once the gross number captured have completed the entire process. Furthermore, it is important that the number of **gross (harvested) birds** is greater than the number of net birds in order to create 'middlemen rents'. It is through this process of producing large numbers of birds that competition is kept intense and prices kept low. The consequent wastage is also necessary in order to generate the much-reduced number of birds that will

[17]The economic modelling of the problem is available from the author on request.

ultimately be marketed. Middleman rent creation implies a narrowing of the channel of production between producers and consumers, and this narrowing (in the case of a live resource) must imply mortality.

Analysis of US Parrot Trade Data

This section provides empirical evidence in support of the theory advanced in section I of the paper. It develops the model set forth in the previous section and tests it against US parrot import data for 1986 to 1990.

The data used in this analysis derive from US Department of Agriculture quarantine information for imports from the five countries profiled in this study: Argentina, Guyana, Indonesia, Senegal and Tanzania (Table 2).[18] The data include information regarding the percentage of birds in each shipment that were dead on arrival and the percentage that subsequently died during the 30-day minimum quarantine period. These data were supplemented with wholesale price data collected from US bird wholesaler pricelists by TRAFFIC. The analysis that follows used these data, as well as data from Nash (1990) regarding trapper and trader prices for Irian Jaya parrot species.

The Impact of Increased Price on Animal Welfare

The theory developed above implies that there is a positive relationship between the price of an animal and the amount of care that it receives. This is because caring for an animal is an alternative means of 'producing' that animal for sale. As the price of any animal increases, it would be expected that more resources would go into its production, with one facet of that production being proper care and attention.

The graphs in Figure 1 demonstrate this relationship more analytically. In the first graph, middlemen set both the wholesale price (Pm) and the supply price (Ps). The wholesale price is set in accordance with profit maximisation principles, i.e., where marginal revenues equal marginal costs. Therefore, when the sale of an additional bird causes market prices to drop, this is taken into consideration in the determination of the number of birds to sell wholesale. This profit maximising quantity is Q*.

The middlemen know that, as birds become more scarce, larger harvests imply higher prices (Ps). This is represented by an upward sloping marginal cost curve (MC). However, middlemen also know that, so long as harvests are kept at high levels, only input costs will be payable to producers, not rents. Therefore, disorganisation at the level of the producer militates in favour of the middlemen, although it also produces far more birds than would be sold on the wholesale market (i.e., Qs>>Q*).

The price paid to producers (Ps) determines the amount of time and material that trappers (and other suppliers) put into producing that animal. Production occurs in two ways: hours invested in capture (or harvest) and hours (and capital) invested in the care of already captured birds. Birds are produced only as a means of securing employment, i.e., individuals pursue birds only as a means of securing a wage comparable to that they could receive in other pursuits. Therefore, the labour (l*) invested in capturing (or caring for) birds will take into consideration the alternative wage rate (RW) and the productivity of time put into bird production (MP).

Turning to the third graph, it is clear that if the price received by producers rises, then the amount of care taken must increase. That is, if Ps were to shift upwards, then both the amount of capital and time devoted to caring for animals (k*,l*) would unambiguously increase.

This hypothesis was tested by means of analyzing the relationship between the prices of various parrot species and mortality rates during international transport. Of course, this is a very incomplete indicator of overall trade-associated mortality. It would be expected that the lack of care received after capture would take most of its toll well before the animals were placed in a plane for export. Although it is apparent that mortality during international transport is a fraction of total mortality, it is also reasonable to assume that mortality during transport would be linked to the level of care received, and thus correlated with overall mortality.

Analysis of the data in Table 2 showed that increasing prices of birds resulted in decreased mortality (Table 3).[19] Although the amount of data available for trapper/trader prices was quite small (making the finding of significance difficult), the link between wholesale prices and mortality is clear-cut. This means that care is being rationed on birds in accordance with the prices received for them.

A similar study on the impact of bird prices on mortality rates in quarantine revealed no significant correlations. This is probably attributable to the greater availability of the equipment (and other capital) necessary to care for the birds. In essence, the prices being received by shippers are not sufficient to make any investments in medical care for birds economically justifiable.

The analogue to a rise in bird prices is a fall in real

[18]These data were compiled by TRAFFIC, and include approximately 1.4 million birds received in over 3400 shipments during the five-year period.

[19]Ordinary least squares estimations are provided in Appendix I.

Table 2. Mortality and US wholesale value of psittacine species exported in the largest numbers from Argentina, Guyana, Indonesia, Senegal and Tanzania.

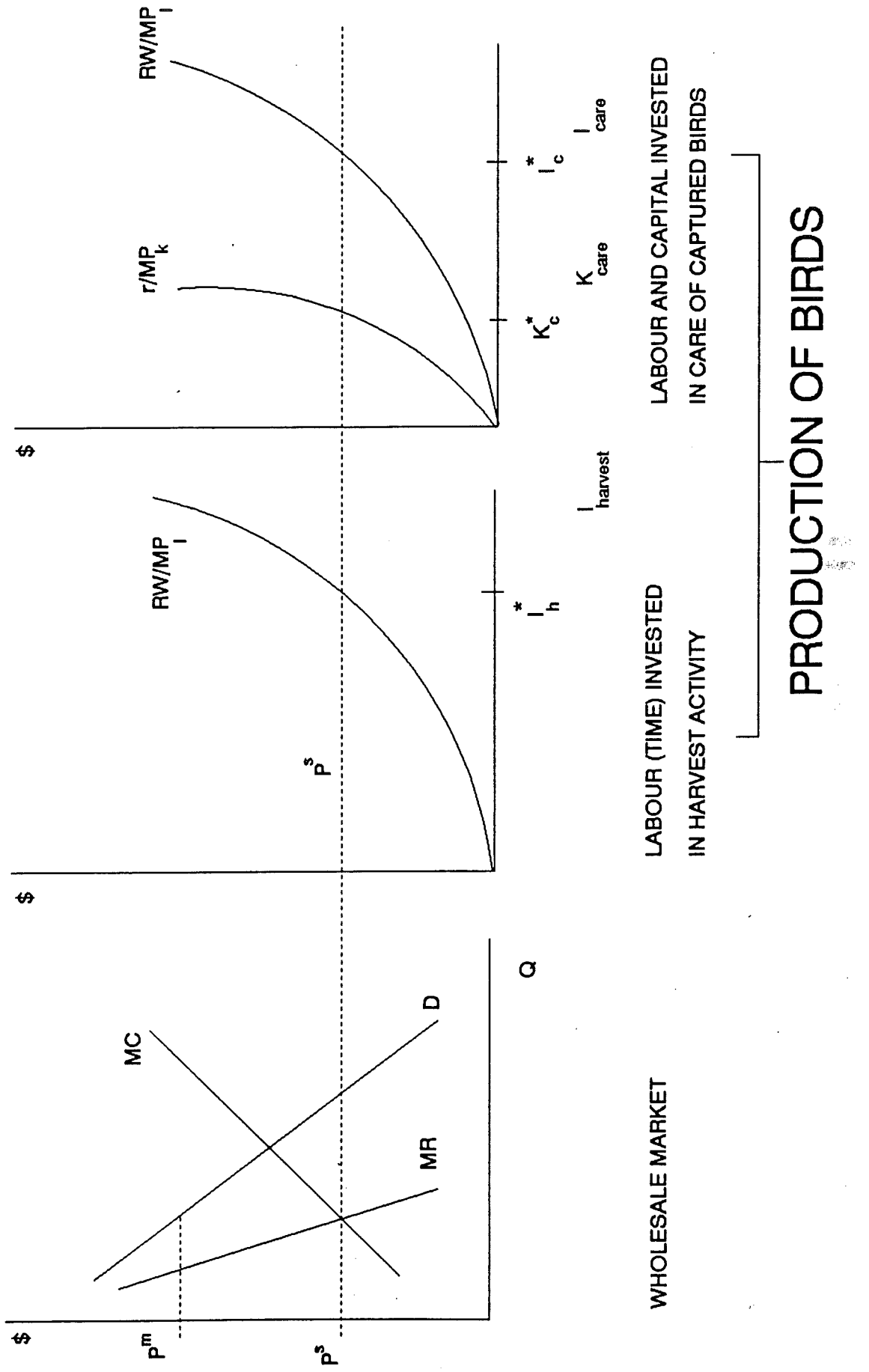
COUNTRY OF EXPORT/ SPECIES	TOTAL MORTALITY	DEAD ON ARRIVAL	DIED DURING QUARANTINE	WHLSLE VALUE
		(PER CENT)		(US$)
Argentina				
Amazona aestiva	15.76	1.37	14.39	200
Nandayus nenday	4.49	2.45	2.04	17
Aratinga acuticaudata	10.02	7.29	2.73	45
Myiopsitta monachus	22.43	3.73	18.70	20
Aratinga mitrata	13.62	2.80	10.82	65
Pionus maximiliani	15.23	2.26	12.97	175
Aratinga aurea	16.94	2.02	14.92	45
Brotogeris versicolorus	18.98	3.32	15.66	45
Pyrrhura frontalis	12.64	5.57	7.07	46
Cyanoliseus patagonus	6.32	4.18	2.14	45
Guyana				
Amazona amazonica	16.49	1.13	15.36	125
Amazona ochrocephala	21.22	1.01	20.21	350
Ara ararauna	4.85	0.16	4.69	699
Amazona farinosa	28.41	1.64	26.77	225
Ara chloroptera	6.16	0.31	5.85	775
Ara manilata	25.11	3.96	21.15	199
Aratinga pertinax	25.40	0.00	25.40	45
Ara nobilis	1.99	0.26	1.73	249
Pionus menstruus	20.84	1.47	19.37	250
Pionites melanocephala	24.00	4.10	19.90	299
Indonesia				
Cacatua goffini	2.91	0.08	2.83	125
Cacatua alba	4.69	0.18	4.51	249
Cacatua moluccensis	3.89	0.19	3.70	550
Eos bornea	13.74	0.73	13.01	80
Cacatua sulphurea	6.26	0.33	5.93	329
Trichoglossus haematodus	20.51	1.16	19.35	80
Lorius garrulus	20.44	1.09	19.35	110
Eos reticulata	16.84	0.89	15.95	159
Psittacula alexandri	15.27	2.04	13.23	75
Cacatua sulphurea citrinocristata	8.57	0.03	8.54	425
Eos squamata	16.98	0.75	16.73	80
Pseudos fuscata	10.40	1.04	9.36	109
Cacatua galerita	1.62	0.06	1.56	325
Alisterus amboinensus	29.26	2.62	26.64	325
Tanygnathus megalorhynchos	15.58	0.83	14.75	300
Aprosmicutus erythropterus	12.45	0.12	12.33	
Psittaculirostris desmarestii	26.61	5.75	20.86	199
Charmosyna placentis	39.24	10.56	28.68	175
Charmosyna papou	42.82	2.82	40.00	260
Chalcopsitta atra	14.51	3.59	10.92	150
Trichoglossus goldiei	11.31	0.90	10.41	125
Charmosyna pulchella	42.32	1.71	40.61	199
Psittaculirostrus edwardsii	11.17	0.27	10.90	199

Table 2. continued.

COUNTRY OF EXPORT/ SPECIES	TOTAL MORTALITY	DEAD ON ARRIVAL (PER CENT)	DIED DURING QUARANTINE	WHLSLE VALUE (US$)
Eos cyanogenia	11.16	1.22	9.94	200
Trichoglossus flavoviridis	49.16	4.62	44.54	
Chalcopsitta sintillata	19.86	1.42	18.44	150
Chalcopsitta duivenbodei	18.40	0.00	18.40	175
Loriculus galgulus				
Cacatua sanguinea	2.72	0.00	2.72	550
Senegal				
Poicephalus senegalus	14.59	2.29	12.30	32
Psitacula krameri	17.12	2.76	14.36	28
Psittacus erithacus	18.27	1.39	16.88	275
Tanzania				
Agapornis fischeri	10.63	4.57	6.06	25
Poicephalus meyeri	28.24	2.45	25.79	85
Poicephalus rufiventris	28.96	6.04	22.92	175

Sources: Mulliken and Thomsen (in prep.); Mulliken, in litt.; US wholesaler price lists.

Figure 1.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LABOUR (TIME) INVESTED
IN HARVEST ACTIVITY
LABOUR AND CAPITAL INVESTED
IN CARE OF CAPTURED BIRDS
PRODUCTION OF BIRDS
WHOLESALE MARKET

Table 3. Impact of increasing values per bird on mortality during international transport.

SAMPLE	PRICE	IMPACT ON MORTALITY	T - STATISTIC
16	Trapper	Decrease in Mortality	1.17
16	Trader	Decrease in Mortality	1.39
55	Wholesale	Decrease in Mortality	2.80
55	Real Wage	Increase in Mortality	2.33

wages, as bird production looks increasingly attractive as wages from alternative activities decline. Therefore, caring for birds is a better use of time and capital when alternative opportunities are more restricted. The finding, reported above, that increased wages resulted in increased mortalities confirms this hypothesis once again.

The Impact of Captive Breeding Programmes (and Trade Bans)

The impact of captive breeding (and trade bans) is to divert production away from producer states to consumer states. This has the effect of reducing the demand for birds from producer states, effectively lowering the prices.

As revealed in the previous analysis, a lowering of prices will reduce the amount of time and capital put into caring for birds. Although fewer birds will be shipped from developing countries (reducing any incentives that exist to maintain natural habitats), the mortality rates of those that will be shipped are likely to be higher.

CONCLUSION

The linkages between animal welfare and economics are clear-cut and concrete. People will 'take care' of resources, in many different meanings of that phrase, if they have incentives to do so. This lesson is equally important to apply with regard to conservation and animal welfare concerns.

All parts of the wildlife conservation community need to work together in order to address these issues. There is no inconsistency between the desires of the animal welfare advocates, the habitat conservation advocates or the developing countries advocates. What is necessary is to supply the necessary incentives for the people who live with these resources to care of them. This will take care of the people, the habitat and the animals.

In order to identify and provide incentives, it is usually necessary to look at the nature of the disincentives. It is odd that people wish to misuse and waste **their** resources, so it is worth asking why this might be the case.

Many times this sort of wastefulness results because the resources do not belong to the local peoples in any real sense. They often do not have the legal title (because their own state deprives them of such rights) or the beneficial interest (because foreign industries deprive them of their rents). This paper demonstrates both of these points, but especially the latter. Rent appropriation by others than the producers of a resource is the 'worst-case' for a resource. It creates incentives to overproduce the resource, while also generating disincentives for caring for it. It renders a fair proportion of the overproduced animals 'economically expendable', and thus leads to increased mortality. Finally, it encourages misunderstandings between producers and consumers, because of the pronounced asymmetry in perspectives on the same problem.

The solution to the bird trade problem is probably very complicated, but it certainly is not to institutionalise the current situation by banning the trade and moving toward captive breeding. This would constitute international legal ratification of the injustice which is at the very heart of the current dismal state of affairs.

It would also be one more part of a larger process of moving the 'natural genetic wealth' of the South to the North. This is an unworthy movement to participate in, for two reasons. First, it is not actually possible to transfer this wealth to the North, because the wealth derives from immovable eco-systems, not bits and pieces of those systems. More importantly, this wealth belongs to the peoples of the developing world; it is their natural endowment. If real development is to be achievable, it should be focused on their unique resources and capabilities (i.e., their 'comparative advantage'), and Northerners should encourage these efforts not stymie them (Swanson and Barbier, 1992).

The nature of a real solution to this problem will be the return of the legal and beneficial interests to the local

peoples whose resources these are. This is not a simple answer. The practical difficulties of managing the utilisation of birds are not to be ignored. The restructuring of the current system of rights, when interests are as clearly vested as they are, will be a very difficult task. However, the possibility of a real solution for the general problem of conserving diverse resources is at stake, and it is important to at least strive for movements in the right direction.

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Annex 1. Ordinary least squares estimation.

DEPENDENT VARIABLE IS PER CENT BIRDS DEAD ON ARRIVAL

16 observations used for estimation from 32 to 47

Regressor	Coefficient	Standard Error	T-Ratio
TRAPPER	-0.3107	0.2643	-1.1755
C	3.0690	1.1664	2.6312

R-squared	0.0898	F-statistic F(1,14)	1.3819
R-bar-squared	0.0248	S.E. of regression	2.5363
Residual sum of squares	90.0601	Mean of dependent variable	1.9181
S.D. of dependent variable	2.5684	Maximum of Log-likelihood	-36.5261
DW-statistic	1.5011		

16 observations used for estimation from 32 to 47

Regressor	Coefficient	Standard Error	T-Ratio
VALUE	-0.1442	0.1033	-1.3964
C	3.3559	1.2033	2.7890

R-squared	0.1223	F-statistic F(1,14)	1.9499
R-bar-squared	0.0596	S.E. of regression	2.4907
Residual sum of squares	86.8527	Mean of dependent variable	1.9181
S.D. of dependent variable	2.5684	Maximum of Log-likelihood	-36.2360
DW-statistic	1.5527		

55 observations used for estimation from 1 to 55

Regressor	Coefficient	Standard Error	T-Ratio
TRADER	-0.0041624	0.0014860	-2.8010
C	2.9106	0.4116	7.0711

R-squared	0.1289	F-statistic F(1,53)	7.8457
R-bar-squared	0.1125	S.E. of regression	1.9907
Residual sum of squares	210.0295	Mean of dependent variable	2.0365
S.D. of dependent variable	2.1131	Maximum of Log-likelihood	-114.8893
DW-statistic	1.5253		

Stephen R. Edwards[20] and Juan Villalba-Macías

LEGAL/ADMINISTRATIVE STRUCTURE

Government Policy

The Government of Argentina considers wildlife to be an economic resource to be exploited. This view is reflected by the placement of the primary wildlife management agency, the Dirección Nacional de Fauna Silvestre (National Directorate of Wild Fauna; DNFS), within the secretariat of the Ministerio de Economía (Ministry of Economy), responsible for agriculture and livestock. Further, while government funds are provided for DNFS's core staff and basic overheads, field surveys and traditional conservation activities are not supported (see **Budget and Revenues**).

The Government supports the idea of sustainable use of wild bird resources, including the export of live birds. According to DNFS, given proper management of the species in trade, the harvest of wild birds for export is sustainable. To this end, DNFS hopes to develop a conservation management programme for the sustainable harvest of wild birds.

Legal Framework

Argentina became a party to CITES in 1981. During that same year, a comprehensive wildlife law, Ley No. 22.421, was adopted to consolidate national wildlife legislation and provide a framework to regulate activities related to all wildlife species except those covered by fisheries laws (including sea mammals and birds). Ley No. 22.421 is implemented through Reglamentación 691/81 [Regulation 691/81], adopted later in the same year, which vests administrative responsibility for Ley No. 22.421 in the Secretaría de Agricultura Ganadería, y Pesca de la Nación (Secretariat of Agriculture, Livestock and Fisheries of the Nation), Ministry of Economy (Fuller *et al.*, 1987).

The Government periodically adopts more detailed Resolucións (Resolutions) to facilitate implementation of Ley No. 22.421. Resolutions are drafted by the Director of DNFS and approved by the Secretariat of Agriculture, Livestock and Fisheries. Resolutions are prepared and adopted as necessary to accommodate changes in CITES listings and/or resolutions adopted at Conferences of the Parties to CITES. The Director prepared a Resolution to adjust the export quota of CITES-listed parrot species for 1990 (Dirección Nacional de Fauna Silvestre, *in litt.*, 1989) and again for 1991 (Dirección Nacional de Fauna Silvestre, *in litt.*, 1991). A comprehensive review of Argentina's wildlife trade laws may be found in Fuller *et al.*, 1987.

Allocation of Government Responsibility

DNFS is responsible for wildlife management and conservation at the national level. However, Argentina's constitution stipulates that activities pertaining to natural resources, such as hunting, are the jurisdiction of individual provinces. As wildlife is considered a natural resource, its capture and holding is controlled by provincial authorities within individual Direcciónes Provinciales de Fauna Silvestre (Provincial Directorates of Wild Fauna). DNFS maintains responsibility for inter-provincial and international wildlife trade, captive breeding, activities performed on federal lands and establishment of emergency measures to protect endangered species.

DNFS is located in the Ministry of Economy, under the Subsecretariat of Livestock in the Secretariat of Agriculture, Livestock and Fisheries. It serves as the CITES Management Authority, and issues all export permits for CITES-listed species (including fish and timber species).

The Director of DNFS is Lic Jorge Cajal. Lic Cajal was appointed to this post in mid-1989 with the election of a new Government. Technical decisions of DNFS are taken under the authority of Lic Cajal, who reports directly to the Secretariat of Agriculture, Livestock and Fisheries. DNFS employs a total of 12 staff: 6 professionals (including one veterinarian) and 6 support staff. The staff is supplemented by 25 volunteer inspectors appointed by Resolution (see **Legal Framework**). It is expected that the full-time staff will increase to 20 individuals when this office becomes responsible for wild plant as well as animal resources (see below).

Lic Cajal reported that the Ministry of Economy is being reorganised. In the near future the Subsecretariat will include two agencies with responsibility for wildlife. The Dirección Nacional de Recursos Naturales (National Directorate of Natural Resources) will include the Dirección de Fauna y Flora Silvestre (Directorate of Wild Fauna and Flora), expanding the responsibilities of DNFS to include plants; the Dirección de Bosques (Forestry Directorate); and the Dirección de Suelo y Agua (Directorate of Land and Water). The second agency, the Dirección Nacional de Pesca (National Fisheries Directorate), will include a Dirección Nacional de Pesca Maritima and a Dirección Nacional de Pesca Continental (National Directorate of

[20]Stephen Edwards, Programme Director, IUCN Sustainable Use of Wildlife Programme; Juan Villalba-Macías, Director of TRAFFIC South America.

Marine Fisheries and National Directorate of Continental Fisheries).[21]

Both DNFS and the Museo Argentino de Ciencias Naturales 'Bernardino Rivadavia' (Bernardino Rivadavia Museum of Natural Sciences) are designated as CITES Scientific Authorities. In practice, however, DNFS functions as the Scientific Authority, and only occasionally contacts the Museum for information or support. This office consults with a variety of universities and institutes, depending on the question or problem under consideration. DNFS has not undertaken field assessments directly, owing to its limited number of staff and inadequate financial support.

To address the lack of research and scientific support, DNFS supported creation of an independent, but closely associated private research foundation capable of receiving grants and donations and undertaking field studies. The Fundación para la Conservación de las Especies y el Medio Ambiente (Foundation for the Conservation of Species and the Environment; FUCEMA) was established in 1990 to support these goals. The activities of FUCEMA are discussed in more detail in **Other Sources of Conservation Support**.

DNFS does not have regular contact with other government offices, such as Provincial Directorates of Wild Fauna, except as is necessary in conjunction with issuing CITES export permits. DNFS has met with the Administración Nacional de Aduanas (Customs Department), which is also located in the Ministry of Economy, regarding how it might provide instruction to Customs officials in identification of CITES Appendix I wildlife and wildlife products.

Provincial Directorates of Wild Fauna authorise capture, maintenance and temporary holding of wildlife at the provincial level. In addition, they issue transit permits for wildlife to be shipped outside of the province in which it was harvested.

Budget and Revenues

DNFS does not prepare an annual budget. Staff salaries and basic overhead costs (offices, heat, electricity, etc.) are provided by the Secretariat of Agriculture, Livestock and Fisheries. Field surveys of wildlife populations are not provided for in national budgets.

Wildlife and wildlife product exports generate considerable revenues through levies and fees, but no funds except those generated by permit fees are allocated directly to DNFS. None of the government revenues generated by wild bird exports are used to undertake field surveys, population monitoring or basic conservation activities. The private foundation FUCEMA is the only vehicle available for these types of projects over which the Government has some influence, and it is dependent on receiving funds from external sources.

Several fees are based on government-assessed export values established by DNFS. Lic Cajal expressed interest in receiving authoritative values for commonly exported species. Fees associated with wildlife exports are described in more detail below:

1. 1.5% of the assessed export value (in US dollars) is collected by the Customs Department and assigned to the Instituto Nacional de Tecnologia Agraria (National Institute of Agricultural Technology). Although these funds are supposed to be reinvested in wildlife surveys, this has not been done.
2. 3% of the government-assessed export value (established as above) is collected and assigned to the general treasury.
3. Approximately Ara200,000 (US$20)[22] is charged for each CITES permit and/or certificate issued (this fee was recently indexed to the inflation rate; it was reported that it will be increased to approximately Ara500,000 (US$50) per permit/certificate this year). These revenues are allocated to the Secretariat of Agriculture, Livestock and Fisheries.
4. The Servicio Nacional de Sanidad Animal (National Service of Animal Sanitation; SENASA) collects an inspection fee for inspecting animal holding facilities.

An internal study of the revenues generated during 1990 by the various Directorates in the Secretariat of Agriculture, Livestock and Fisheries concluded that 59% of the total revenues was derived from wildlife and wildlife product exports.

Other Sources of Conservation Support

DNFS regularly seeks advice and assistance from Argentina's scientific community. As mentioned above, the establishment of FUCEMA has provided a mechanism for government personnel to cooperate directly with members of the scientific community in field research and other projects.

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[21]Much of this restructuring apparently took place during autumn 1991. Furthermore, a Presidential Decree has established a new Secretariat, the Secretaría de Recursos Naturales y Ambiente Humano (Secretariat of Natural Resources and Human Environment) to become effective December 1991, and which will incorporate the Directorate of Wild Fauna and Flora. This Secretariat will report directly to the President, and therefore will be independent from the Ministry of Economy (Waller, *in litt.*, 1991).

[22]Exchange rate: 10,023 Australs (Ara) per US$1 (30 July 1991).

FUCEMA's actions, including decisions regarding which projects to support, are overseen by a seven-member Board of Directors (FUCEMA, *in litt.*, 1990). None of the members of the board of directors is a government employee. FUCEMA employs a Manager, with a number of qualified field personnel retained by FUCEMA under term contracts. DNFS provides technical support and guidance for projects, for which it receives an administration fee.

FUCEMA has received funds from the CITES Secretariat and NGOs. In addition, wildlife exporters associations have agreed to make voluntary contributions to FUCEMA to cover the costs of field surveys. DNFS has entered into a tripartite agreement with FUCEMA and the Cámara Argentina de Importadores y Exportadores de Animales Vivos de la Fauna Silvestre (Argentine Association of Live Wild Animal Importers and Exporters; Wildlife Exporters Association) to undertake field surveys of *Amazona aestiva* (Blue-fronted Amazon) in Formosa, Salta and Jujuy Provinces. DNFS has made similar agreements with the exotic skin exporters, the CITES Secretariat and FUCEMA, for field studies to determine the status of wild populations of *Tupinambis* spp. (Tegu), *Caiman crocodilus yacare* (Yacare), *Caiman latirostris* (Broad-nosed Caiman) and *Rhea americana* (Greater Rhea).

Exporters have pledged US$40,000 to support the *Amazona aestiva* project. In addition to supporting surveys, donated funds for this project are used to support a public education campaign designed to inform rural communities about how to collect parrots from nests without destroying the nests or trees. The campaign additionally identifies parrot species such as *Amazona tucumana* (Tucuman Amazon), noting that they are endangered and are not to be collected. Donated funds have been used to print and distribute posters, as well as to pay for radio and television announcements.

FUCEMA is only one many conservation NGOs in Argentina. The Fundación Vida Silvestre Argentina (Argentina Wildlife Foundation) is the largest national non-governmental organisation (NGO), and the designated World Wide Fund for Nature (WWF) Affiliate in the country. Most of the NGOs are social organisations, have only one staffmember, and are supported by the wealthier segment of the population. However, there is an increase in the number of younger people becoming involved in conservation-related activities. Many have technical training in addition to a very strong conservation ethic.

DNFS has also sought assistance directly from the CITES Secretariat with respect to export controls. This office has accepted and implemented all suggestions from the CITES Secretariat offered to date.

It is important to recognise that there is a very strong nationalistic philosophy underlying the actions of DNFS and national NGOs. While they do not question the need for technical assistance in some areas (e.g. captive management and husbandry of parrots), they recognise that there is considerable scientific and technical competence within their own country. They do not appreciate the implication that they need outside help to undertake activities such as field surveys.

CONSERVATION AND TRADE CONTROLS

Land Ownership and Habitat Status

Much of Argentinian land is privately-owned. There is reportedly considerable deforestation in the northern provinces, in the range of *Amazona aestiva*. Two National Parks (Parque Nacional El Rey, Salta Province, and Parque Nacional Bantu, Jujuy Province) and one Provincial Reserve (Cepo, Santiago del Estero Province) are located in the area from which birds are collected for trade. While poaching of mammals has been reported it is not believed that birds are collected from these government lands. The Government owns additional land that has not been designated for particular purposes. It is not known if wild parrots are collected on these lands.

Assessment of Wild Populations and Effects of Trade

Very little is known about the status of the wild populations of any native species of parrots. No formal procedures exist at this time to provide 'non-detriment findings' as required under Article IV of CITES. Field surveys currently in progress will, however, provide DNFS with the necessary baseline data to make such determinations in the future, assuming on-going monitoring programmes are implemented.

There are currently three field studies being undertaken to establish the status of *Amazona aestiva*:

1. World Wildlife Fund-US (WWF-US) is funding Dr Enrique Bucher, of the Centro de Zoología Aplicada (Centre of Applied Zoology) to: a) determine the distribution and status of *Amazona aestiva* in the Salta Province; b) assess agricultural damage caused by the species; c) determine its biological and ecological requirements; and d) provide a means for the sustainable exploitation of the wild population (Bucher *et al.*, *in litt.*, 1990). The budget for the 1990/91 project year is US$29,800. There is little, if any, communication between this project and FUCEMA personnel or DNFS.

2. FUCEMA supports a project to determine the status of the wild population in Formosa, Salta and Jujuy Provinces. This project was begun in 1990 by project staff Ricardo A. Banchs, Flavio N. Moschione and Ana M. Balabusic. This project is

focused exclusively on establishing the population densities of the species in the three provinces. Project staff are using traditional census procedures and will rely on statistical techniques to extrapolate the total population size. Based on their preliminary results, the largest concentration of the species is in Jujuy and Salta Provinces in a north-south band of forest 80km wide. They expect to have a population estimate in six months (Balabusic *et al.*, 1991). The cost is US$40,000 per year.

3. The Argentinian Association of Live Wild Animal Importers and Exporters (see **Wildlife Exporters Association**) is funding its own project in collaboration with the Universidad Nacional de Salta (University of Salta). This project was started in 1988. Its objectives are to determine the status of the wild population in Salta Province (Garrido, 1990). The preliminary results of the study have been questioned by DNFS, and prompted the establishment of the FUCEMA project. The Association invited outside/international review of their project to determine whether it was scientifically sound. While this study is starting with *Amazona aestiva*, it is the intent of the exporters to include other parrot species in the survey in the future. The budget for this project is approximately US$32,000 per year.

In a meeting held in November 1990 (including representatives from the exporters, University of Salta, CITES Secretariat and DNFS) it was agreed that this study would be coordinated in the future with the FUCEMA project by DNFS. A copy of the agreement was sent to the CITES Secretariat and WWF-US.

Although it is premature to establish specific population monitoring requirements for *Amazona aestiva* prior to completion of the surveys, it could be expected that such monitoring would be required to ensure that trade was maintained with sustainable limits. However, no mention was made of any plans to monitor the wild populations upon conclusion of the surveys described above.

Quotas

In the absence of scientifically-defensible field data on the status of wild populations, DNFS has imposed what the Director considers to be conservative export quotas for parrot species. These are established by a Resolution prepared by DNFS, and are based on prior export levels. The 1990 and 1991 export quotas are provided in Table 1. In the case of *Amazona aestiva* the quota will be adjusted when the results of the FUCEMA field study are concluded.

Ninety per cent of the established quota for each species is proportionally divided among licensed exporters,

Table 1. Argentina export quotas for psittacine species (1990-1991).

SPECIES	1990	1991
Amazona aestiva	23,000	23,000
Ara auricollis	0	0
Ara chloroptera	0	0
Aratinga acuticaudata	15,000	15,000
Aratinga aurea	500	0
Aratinga leucophthalmus	2,500	3,000
Aratinga mitrata	5,000	7,000
Bolborhynchus aurifrons	0	0
Bolborhynchus aymara	1,500	0
Brotogeris versicolurus	1,000	0
Cyanoliseus patagonus	NO LIMIT	NO LIMIT
Enicognathus ferrugineus	0	0
Forpus xanthopterygius	0	0
Myiopsitta monachus	NO LIMIT	NO LIMIT
Nandayus nenday	15,000	14,000
Pionus maximiliani	5,000	7,300
Pyrrhura frontalis	4,000	2,250
Pyrrhura molinae	1,000	2,250
TOTAL	73,500	73,800

Source: National Directorate of Wild Fauna.

based on their past export history for the species. The remaining 10% of the quota is set aside to accommodate new traders. If all or part of this 10% is not used, it is distributed among those traders that have previously exported the species. For example, in 1991, the total number of *Amazona aestiva* initially available for allocation to exporters was 90% of the total export quota of 23,000 specimens of this species, or 20,700 birds. Each exporter was allocated part of this figure based on his past export volumes.

There is some 'trade' of export quotas within the Wildlife Exporters Association. When an exporter finds that he will not use his full export quota for a particular species, he may choose to sell the unused portion of his quota to a second exporter. This type of 'trading' is common for many commodities.

Permits

Capture of wild birds is governed by the wildlife authorities of individual provinces. Harvest of psittacines is allowed in the Provinces of Formosa, Salta, Jujuy, Chaco and Santiago de Estero. Capture permits for psittacines are issued by provincial wildlife authorities.

DNFS requires that all wildlife and wildlife product

exports be accompanied by an export permit or certificate issued by that office. Export permits are issued for CITES-listed wildlife and all products derived from CITES-listed species. In general, parrots are the only live animals authorised for export, although a small number of captive-bred reptiles [e.g. *Tupinambis* spp., *Boa constrictor occidentalis* (Argentine Boa Constrictor), *Epicrates* spp. (Boa)] may be exported with captive-bred certificates. Only licensed exporters are issued export permits for parrots (see **Licences**).

Before parrot export permits will be issued, exporters must first obtain a valid Guía de Tránsito (Transit Permit) to move the birds to Buenos Aires, the only authorised port of export. Transit permits are only issued for those species allowed by national legislation to be transported and/or traded between provinces. Transport permits must be signed by the Director of the relevant Provisional Directorate of Wild Fauna. DNFS must approve transit permits for live psittacines before psittacines may be transported outside of the provinces in which they were trapped. Once a transit permit has been issued, the parrots to be exported may be moved to Buenos Aires. Once in Buenos Aires, the birds must be held for a set quarantine period and inspected by a SENASA veterinarian, who must certify that the animals meet sanitary standards before issuing a required health certificate. In practice, the SENASA inspection requirement is little more than a formality, and serves little enforcement function. Exporters are required to present both the transit permit and health certificate to DNFS before they will be issued an export permit.

Licences

All live animal exporters are required to be licensed by DNFS. Licence applicants must meet a number of requirements before a licence is granted. They must satisfy Customs requirements, including verification that: they have at least US$15,000 in assets; they do not have a police record; that there are no pending court actions; and that the export business is legally registered in Argentina.

Exporters must also have an animal holding facility near Buenos Aires. This facility must have been inspected and approved by a veterinarian from SENASA, the government animal health office (also located in the Ministry of Economy).

All such holding facilities are located between 30km and 50km from Buenos Aires, and are regularly inspected by SENASA veterinarians. Exporters may maintain additional holding facilities in the provinces, which are inspected, approved and licensed by Provincial Directorates of Wild Fauna and subject to inspection by a veterinarian working for SENASA.

When all of the above licence requirements are satisfied, DNFS issues a letter 'licensing' a company as a wildlife exporter. Licences are granted for a five-year period. No licensing fee is assessed.

There were 27 licensed wild bird exporters as of May 1991.

COMMERCIAL ACTIVITIES

Trapping and Trade[23]

Psittacines are collected in Formosa, Salta, Jujuy, Chaco and Santiago de Estero Provinces in the north of the country, some distance from Buenos Aires. All of these provinces issue permits for live bird trade. *Amazona aestiva* are collected in Formosa, Salta, Jujuy and Santiago de Estero Provinces.

Corrientes, Tucuman and Catamarca Provinces, which also have populations of species in trade, do not issue permits for trade. It is believed that some birds are collected in these provinces and taken illegally to those provinces that permit trade, and subsequently transported to Buenos Aires for export.

Collection of parrots is carried out primarily on private lands. In many cases hunters are encouraged by the land owners to remove the birds because they are considered pests. It is common for land owners growing citrus crops to encourage, and even pay, rural

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[23]As a general rule, a minimum of three tiers were involved in the capture and sale of birds for export in each of the five countries profiled. Different countries use different terms to explain the role of individuals involved in the trade. To avoid confusion, the following terms are used throughout this document to describe individuals employed at various levels of the international bird trade:

- **Trappers:** Individuals who actually remove birds from the wild. Trappers generally live in rural villages near the areas where birds are captured.
- **Traders:** These are usually 'middlemen' who purchase birds from trappers. There may be more than one level of traders within some countries. Traders may be independent businessmen or be in the direct employ of an exporter. Traders generally travel over large areas to buy birds and transport them to exporters.
- **Exporters:** Exporters may be individual owners of or a partner in an export businesses. Exporters generally obtain their birds from traders and sell them to foreign buyers. Exporters may also act as wholesalers to the domestic market, as is the case in Senegal. Exporters are usually located near a government-authorised port of export, and are subject to some form of government registration or licensing in each of the countries profiled.

people, often referred to as 'campesinos', to collect parrots that are feeding on fruit crops.

Birds are also harvested in conjunction with the felling of trees for agriculture (primarily for sugar cane and citrus plantations). The procedure followed to open up new lands for agriculture is straightforward: a bulldozer knocks down the trees and pushes them into a pile which is burned. Not surprisingly, bird collectors follow the bulldozers and harvest birds from the fallen trees.

Amazona aestiva is collected primarily by removing young from the nest. This species prefers to nest in either of two species of trees: *Aspidosperma quebrachoblanco* (Quebracho Blanco) and *Schinopsis balans* (Quebracho Colorado). In most cases nesting trees are cut down to collect the birds. In other cases nests are destroyed by collectors.

For species other than *Amazona aestiva*, adult birds are most often collected for trade. A common capture method involves using a decoy to attract adult birds to exposed branches coated with 'glue'.

Exports of wild birds depend on the efforts of a series of 'businessmen', including trappers, traders and exporters. Captured birds are sold by trappers to domestic traders who cover a large area, which will include several villages. The trader sells his birds to an exporter, or in some cases to a second trader, or 'middleman'. The exporter or middleman accumulates the birds in a holding facility in the province where trapping took place until such time as there are enough to justify transport to Buenos Aires, the only government-authorised port of export for parrots (prior to 1991 it was possible to export birds from Santa Fe, a major city about 700km north of Buenos Aires). Transport is usually by aeroplane.

When the birds arrive in Buenos Aires they are transferred to the exporters' holding facility, where they are held for a minimum of 30 days before they are exported. Birds are normally held for at least 40 days to allow time for processing of CITES permits in DNFS and, in some cases, within the country to which the birds are being shipped. During this holding period, the birds are inspected by a private veterinarian who treats them for parasites, inoculates them against pox and may administer vitamins and antibiotics.

There are varying degrees of mortality at the holding facilities. Statistics on mortality rates were not available. One cause of mortality is inappropriate hand-feeding of young birds. Exporters are trying to correct this problem by training bird handlers.

Following treatment by the private veterinarian, birds are inspected by a SENASA veterinarian in conjunction with export permit requirements.

Wildlife Exporters Association

About one-half of the licensed wild bird exporters belong to the Argentinian Association of Live Wild Animal Importers and Exporters (Wildlife Exporters Association). It was reported that one-half of the members are not located in Buenos Aires. A similar association exists for the exotic leather exporters.

Four representatives of the Wildlife Exporters Association, including the President, participated in a meeting with the authors of this chapter arranged by Lic Cajal. The exporters were informed of the proposed legislation in the United States that would stop the importation of wild-caught birds over a five-year period. They were told that in the United States, the state of New York already has a law that prohibits the importation of wild-caught birds; and that similar legislation was being considered in New Jersey.[24] The country-selective trade-control approach taken by the European Community was also described.

Those exporters present were very open and asked numerous questions throughout the two-hour meeting. It was reported that 13 Association members account for 90% of the total birds exported from Argentina. All of these exporters wish to remain in the trade. The exporters at the meeting allowed that in the past they had not been convinced that field surveys were needed; however, they fully understood the need today. They recognised the need for training people in humane treatment of birds to reduce mortality, particularly with respect to hand-feeding of young birds.

Meeting participants noted that the exporters had begun a field study of *Amazona aestiva* in 1989 through the University of Salta. In addition to their own project, exporters are contributing to the FUCEMA *Amazona aestiva* project.

The exporters agreed to provide data on the number of people benefiting from the wild bird trade, as well as the amount paid for birds at the various levels of the trade chain. This information was not available at the time of publication.

During a second meeting with the exporters, they provided information about their internal 'rules', which have been agreed to by all of the Association's members. These include the use of a specific type of label on all shipping containers (starting 1 January 1991) which is numbered and can be traced back to a particular exporter. The label is required to include the scientific name of the species being shipped and the

[24]This legislation was adopted on 12 August 1991.

number of specimens in the container. The purpose of the labelling scheme is to allow infractions of wildlife laws and regulations to be linked to individual exporters. If an Association member does not provide accurate information on the label he can be suspended for a period of 90 days. If during the 90-day period another Association member collaborates with the suspended member to export birds, then both exporters can be expelled from the Association. If a member is discovered to be violating the government laws or regulations, then he can also be expelled from the Association. The Association has expelled three members (in 1990) because they violated laws or the Association's rules.

Information regarding suspensions and expulsions is communicated to DNFS, which has agreed to honour the Association's decisions.

The Wildlife Exporters Association has not enjoyed much political influence. However, while DNFS cannot favour a particular company, the Director has found it convenient to work through the Association to introduce more rigorous controls over wild bird harvests and exports. Lic Cajal noted that in the past the bird exporters had not been as forthcoming in their discussions with him as had the reptile skin exporters.

At the suggestion of TRAFFIC South America, the exporters agreed to prepare a 'code of ethics' for the Wildlife Exporters Association, and to communicate it to Lic Cajal. If the Association does prepare an acceptable 'code of ethics' it could serve as the basis for a Resolution establishing criteria for exporter licensing. The 'code of ethics' would also serve to limit membership in the Wildlife Exporters Association.

Export Volumes

Table 2 summarises the number of specimens of psittacines recorded as exported from Argentina from 1983 to 1990. According to CITES Annual Report data (1983 to 1988) and the data provided by DNFS (1989 to 1990), a total of 1,149,360 parrots were exported during this eight-year period. The peak year for exports was 1985 (182,643 specimens) followed closely by 1988 (180,770 specimens). Exports in 1990 reflect a dramatic drop in the number of specimens exported (less than 50% of the previous year) and the number of species exported (eighteen in 1989 and ten in 1990).

The species exported in the largest numbers was *Amazona aestiva*, representing 27% of the total exports; 1990 exports of this species represented over 36% of the total exports for that year. Of the thirty-three species exported from 1983 to 1990, ten accounted for 93% of the total exports. Annual total net world trade computed from CITES Annual Report data and exports from Argentina for each of these species are illustrated in Figures 1 to 10. Argentina has become the only major supplier of birds to the international market for nine out of ten of these species; only *Myiopsitta monachus* (Figure 4) was reported as exported in relatively large numbers from a country other than Argentina.

An export quota system was implemented in 1990 (see **Quotas**). Export quotas for 1990 and 1991 are provided in Table 1. Comparison of reported exports with the established quota can only be made for 1990 (Table 3). In 1990 a total of 73,500 specimens were authorised for export. Actual exports were 62,559 specimens, or about 85% of the authorised total. Of the ten most commonly exported species prior to 1990, two [*Myiopsitta monachus* (Monk Parakeet) and *Cyanoliseus patagonus* (Patagonian Conure)] were identified as 'No Limit' species under the 1990 (and 1991) quotas. No data were available from the Argentine Government regarding the number of specimens of these species exported in 1990.

Benefits

Benefits derived from the wild bird export trade are not documented. DNFS is undertaking a study of the socioeconomic benefits derived in rural communities from *Tupinambis spp.* and *Amazona aestiva* exports. The Wildlife Exporters Association agreed to provide data on the socioeconomic benefits derived from wild bird exports. The exporters' report will be available at the eighth meeting of the Conference of the Parties to CITES. Based on the preliminary figures provided by the exporters, it appears that the total number of people affected by wild bird exports could be considerable.

DNFS has compiled a schedule of the different average prices paid for live psittacines during 1989 (in US dollars) at each step in the trade (Dirección Nacional de Fauna Silvestre, 1989). For *Amazona aestiva*, trappers were paid an average of between US$1.20 and US$1.50 per bird and domestic traders in the provinces between US$6.50 and US$7.00. The exporters' purchase price for the same bird was estimated to range from US$8.50 to US$10.00 in Buenos Aires. The declared export value was not reported for this species; however, the price paid by importers in importing countries was reported to be between US$50 and US$55 in the United States and between US$70 and US$75 in Europe (Bucher and Beissinger, 1991). These figures are somewhat out of date, however. Today, trappers reportedly receive approximately US$5 for each specimen of *Amazona aestiva* sold to a trader, according to one exporter.

As noted, considerable revenue is realised by the Government from wild bird exports; however, only a very small percentage (i.e., from permit fees) is received by DNFS.

Table 2. Reported exports of live psittacines from Argentina (1983-1990).

SPECIES	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	AVG.	%	CUM %
Amazona aestiva	29,306	35,777	46,766	44,539	35,461	57,757	37,507	22,744	309,857	38,732	26.9	26.9
Nandayus nenday	39,155	22,643	21,970	17,875	21,962	16,865	24,078	11,810	176,358	22,045	15.3	42.2
Aratinga acuticaudata	16,067	13,928	17,763	14,209	16,254	17,967	15,211	12,740	124,139	15,517	10.8	53.0
Myiopsitta monachus	12,522	17,664	18,618	16,012	15,918	13,205	18,689	—	112,628	14,079	9.8	62.7
Aratinga mitrata	40	570	19,985	25,409	17,275	28,456	12,538	4,370	108,643	13,580	9.4	72.2
Pionus maximiliani	1,756	3,220	25,596	14,684	6,570	4,207	4,895	4,108	65,036	8,130	5.6	77.8
Aratinga aurea	2,375	1,542	6,892	13,928	11,187	5,533	7,614	75	49,146	6,143	4.3	82.1
Brotogeris versicolurus	910	399	4,312	10,676	12,671	9,686	8,380	797	47,831	5,979	4.2	86.2
Pyrrhura frontalis	6,003	3,078	5,225	5,630	5,929	6,014	3,865	3,015	38,759	4,845	3.4	89.6
Cyanoliseus patagonus	4,876	3,770	4,182	3,062	6,386	5,166	10,992	—	38,434	4,804	3.3	92.9
Aratinga leucophthalmus	2,618	4,565	4,592	7,636	4,536	7,135	4,800	2,470	38,352	4,794	3.3	96.3
Amazona tucumana	60	1,798	2,942	2,735	2,882	6,295	3,787	0	20,499	2,562	1.8	98.0
Aratinga jandaya	1,200	150	3,148	0	3,602	0	0	0	8,100	1,013	0.7	98.7
Bolborhynchus aymara	60	0	600	2,309	1,130	1,518	760	60	6,437	805	0.6	99.3
Aratinga spp.	0	200	1004	899	100	603	0	0	2,806	351	0.2	99.5
Forpus xanthopterygius	0	0	17	0	520	460	429	0	1,426	178	0.1	99.7
Pyrrhura molinae	0	0	0	80	0	435	460	370	1,345	168	0.1	99.8
Aratinga nana	400	150	0	80	177	0	0	0	807	101	0.1	99.9
Ara auricollis	0	0	2	2	2	0	752	0	758	95	0.1	100.0
Bolborhynchus aurifrons	0	0	0	30	0	20	200	0	250	31	0.0	100.0
Amazona agilis	0	0	0	0	150	0	0	0	150	19	0.0	100.0
Forpus passerinus	0	0	18	100	0	0	0	0	118	15	0.0	100.0
Eos cyanogenia	0	0	0	0	104	0	0	0	104	13	0.0	100.0
Enicognathus ferrugineus	0	0	0	56	0	0	4	0	60	8	0.0	100.0
Neophema chrysostoma	0	0	0	0	0	50	0	0	50	6	0.0	100.0
Barnardius spp.	0	0	0	0	0	45	0	0	45	6	0.0	100.0
Enicognathus leptorhynchus	0	0	10	10	0	0	0	0	20	3	0.0	100.0
Neophema pulchella	0	0	0	12	0	0	0	0	12	2	0.0	100.0
Amazona albifrons	2	9	0	0	0	0	0	0	11	1	0.0	100.0
Platycercus icterotis	0	0	0	8	0	0	0	0	8	1	0.0	100.0
Ara ararauna	0	0	3	0	4	0	0	0	7	1	0.0	100.0
Amazona viridigenalis	0	0	0	6	0	0	0	0	6	1	0.0	100.0
Ara chloroptera	0	0	2	2	2	0	0	0	6	1	0.0	100.0
Amazona ochrocephala	0	2	0	0	0	0	0	0	2	0	0.0	100.0
Amazona farinosa	0	0	0	0	0	1	0	0	1	0	0.0	100.0
TOTAL	117,350	109,465	183,647	179,989	162,822	181,418	154,961	62,559	1,152,211	144,026	100.0	

Sources: CITES Annual Report Data (1983-1988); National Directorate of Wild Fauna (1989-1990).

Table 3. Comparison of 1990 Argentina psittacine export quotas and reported exports (as of 31 January 1991).

SPECIES	QUOTA	EXPORTS	DIFFERENCE	% QUOTA
Amazona aestiva	23,000	22,744	256	98.9
Aratinga acuticaudata	15,000	12,740	2,260	84.9
Aratinga aurea	500	75	425	15.0
Aratinga leucophthalmus	2,500	2,470	30	98.8
Aratinga mitrata	5,000	4,370	630	87.4
Bolborhynchus aymara	1,500	60	1,440	4.0
Brotogeris versicolurus	1,000	797	203	79.7
Cyanoliseus patagonus	NO LIMIT	------	------	------
Myiopsitta monachus	NO LIMIT	------	------	------
Nandayus nenday	15,000	11,810	3,190	78.7
Pionus maximiliani	5,000	4,108	892	82.2
Pyrrhura frontalis	4,000	3,015	985	75.4
Pyrrhura molinae	1,000	370	630	37.0
TOTAL	73,500	62,559	10,941	85.1

Source: National Directorate of Wild Fauna.

Domestic Market

There is considerable domestic trade in birds for pets. The majority of birds in national trade are passerines. Researchers participating in the FUCEMA *Amazona aestiva* project determined that there was an average of three captive parrots for every six to eight houses in the rural communities of the northern provinces being studied.

Captive Breeding

Exporters expressed interest in developing captive management facilities, for either breeding or ranching, but they recognised the need for technical assistance if such endeavour were to be successful.

There is only one facility presently licensed by a Provincial Authority (Corrientes Province) for captive breeding of parrots. It is interesting to note that Corrientes Province is one of the provinces that does not issue permits for capture and trade of wild birds. It is assumed that captive-bred birds would be approved for trade, however. This facility, owned by exporter Sr Antonio J. Chacon, was established in 1988 primarily for parrots, but does include other wildlife including mammals, non-parrot bird species and reptiles. This facility has not been formally registered by DNFS; however, the owner has submitted documentation on the origin of his birds to that office.

The stock, including many CITES Appendix I species, was reportedly purchased from a variety of people throughout Argentina. In each case Sr Chacon reports that he has obtained papers substantiating the purchase. The Provincial Authorities have declared that the birds are legal based on the papers provided by the owner. Sr Chacon stated that he is trying to work within the system and would like to develop his facility into a legal, *bona fide*, captive breeding operation. However, the legality of a number of birds present at this facility has been questioned by TRAFFIC South America.

Of the numerous parrot species at the facility, only one pair of *Amazona vinacea* (Vinaceous Amazon) reportedly has produced young in the three years since Sr Chacon started. Numerous other species of mammals, birds and reptiles have successfully produced young at this facility.

FUTURE OF TRADE

Sustainability

DNFS would like to develop a conservation management programme for the sustainable harvest of wild birds. However, given the status of the Department and its overwhelming responsibilities with far too few staff, it is not very likely that this will be done without technical assistance.

The principal problem that must be overcome to ensure the survival of the wild birds in Argentina is deforestation for agriculture. Lic Cajal recognises this problem and has noted his desire to develop species management plans that will take into account habitat requirements for the species. However, any action in this area will require a change government priorities and in the public's perception of the value of wildlife if it is to be successful.

DNFS does not want to stop export of wild harvested birds. While it does not provide any direct revenue to DNFS, the Director believes that the wild harvest provides a strong link to the management of the natural habitat. Unfortunately, given the present rate of deforestation in the area in which most birds are harvested, he does not have much hope for the long-term status of the species. While the data are incomplete for most species, the Government is compiling considerable data on the status of *Amazona aestiva*, which will help them establish a sustainable export quota in the future.

Consequences of Trade Bans

There would be little repercussion in DNFS if wild bird exports were stopped. This Directorate's budget is not linked to the income (at least at present) from this trade. DNFS would retain responsibility for overseeing all other CITES-related exports (which comprise over 90% of their work now). In terms of government revenues, it is estimated that wild bird exports contribute less than 1% of the revenue generated by the activities of DNFS. By far the largest share of revenue is derived from exotic leather and fur exports.

Nevertheless, according to Lic Cajal, with the loss of parrot exports, particularly of *Amazona aestiva*, there would be one less argument against the rampant deforestation for agricultural purposes. Wild birds have considerable export value and their harvest contributes to the rural economy. If this value is not realised and the rural communities lose this income, there is nothing that can be used to argue for the maintenance of the natural forests. As a consequence it is only a matter of time before the habitat is destroyed and species lost.

For a large number of the other parrot species that are exported, there is nothing to prevent their continued extermination as pests.

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Miguel Pellerano, Director, Fundación Vida Silvestre Argentina

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Felipe Carolas Sola, Ministerio de Economía

Rodolfo Tecchi, President, Fundación para la Conservación de las Especies y el Medio Ambiente

Tomás Waller, TRAFFIC South America — Argentina Office

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Mr Tomás Waller, TRAFFIC South America — Argentina Office, smoothed the way and, with Juan Villalba-Macías, organised meetings with representatives of the exporters association. Lic Jorge Cajal, head of the Argentina CITES Management Authority, and his staff patiently responded to questions and provided detailed statistics and other information regarding Argentina's wild bird exports. Lic Cajal also provided an interim report on the status of the FUCEMA-sponsored *Amazona aestiva* field survey. Members of the Cámara Argentina de Importadores y Exportadores de Animales Vivos de la Fauna Silvestre (Argentine Association of Live Wild Animal Importers and Exporters) that met with the authors were also very helpful.

Figure 1. Trade in *Amazona aestiva* (1983-1990)

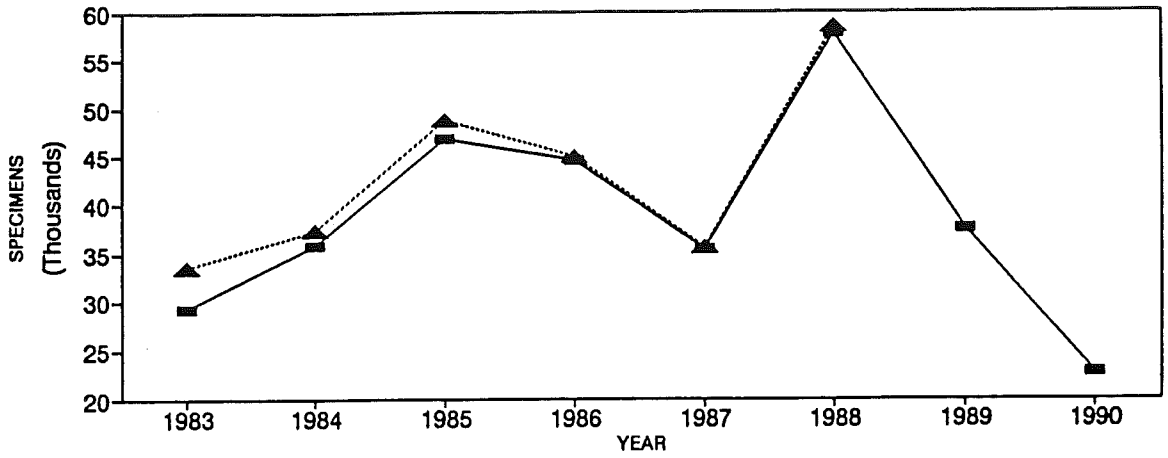


Figure 2. Trade in *Nandayus nenday* (1983-1990).

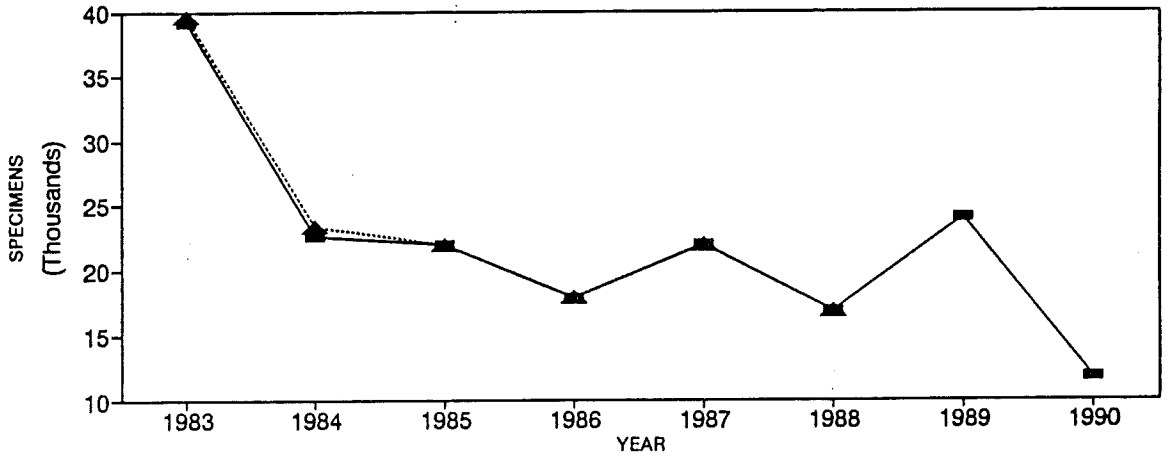


Figure 3. Trade in *Aratinga acuticaudata* (1983-1990).

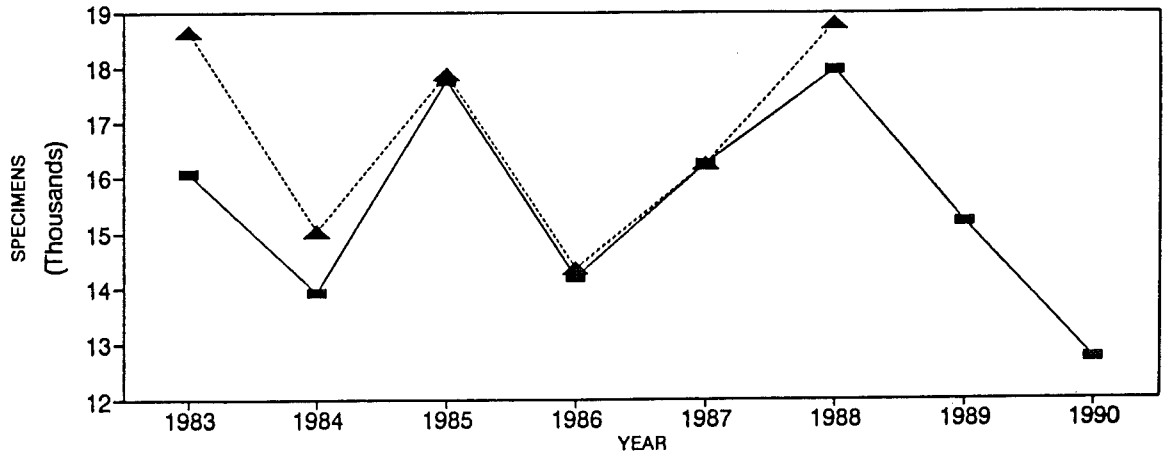


Figure 4. Trade in *Myiopsitta monachus* (1983-1990).

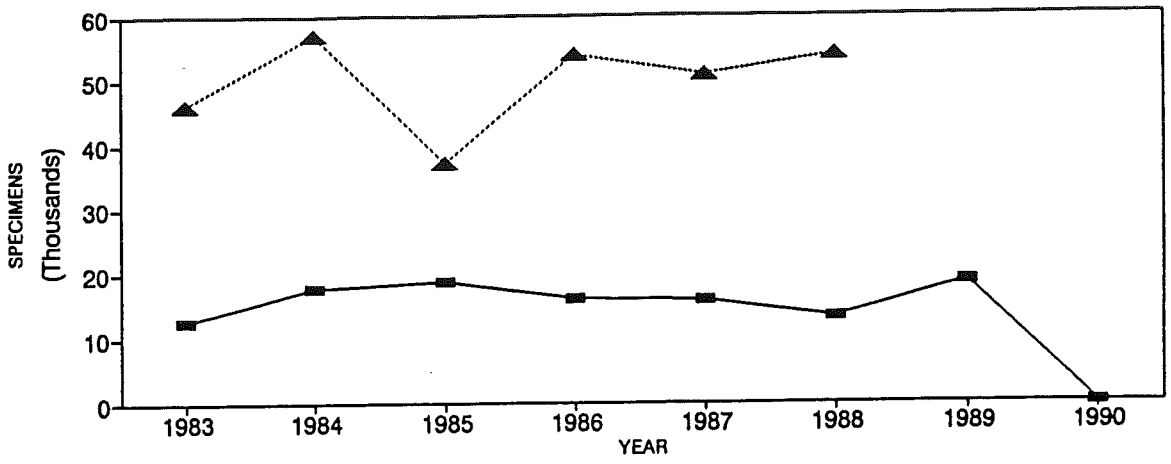


Figure 5. Trade in *Aratinga mitrata* (1983-1990).

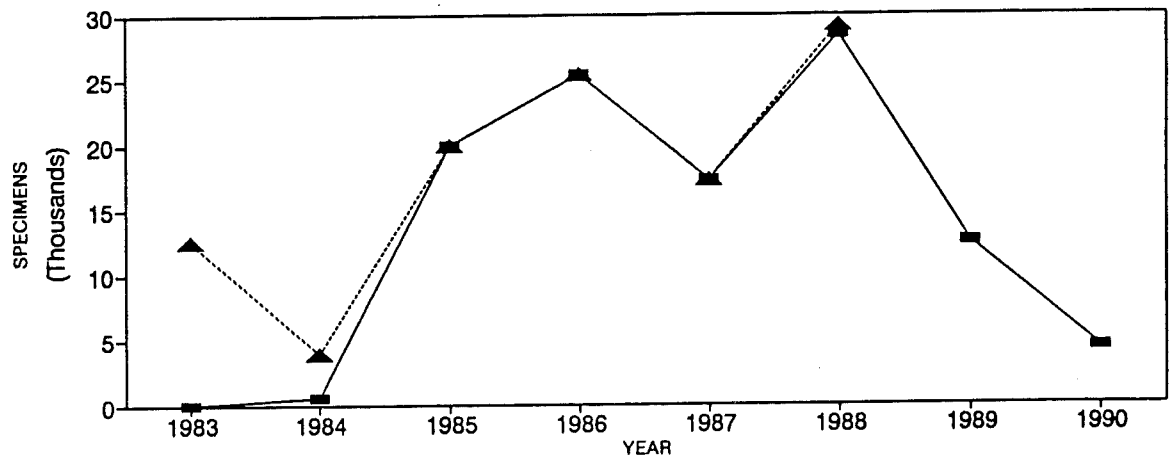


Figure 6. Trade in *Pionus maximiliani* (1983-1990).

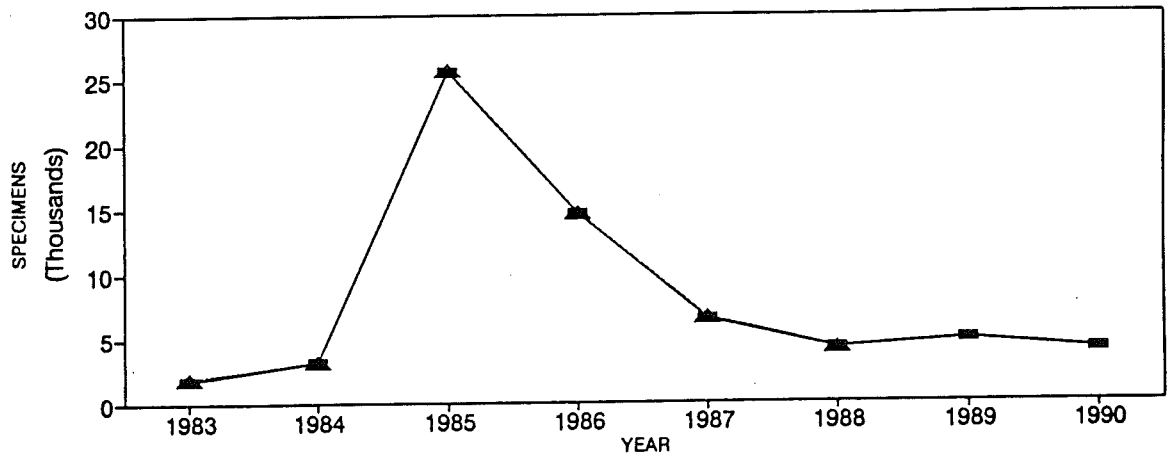


Figure 7. Trade in *Aratinga aurea* (1983-1990).

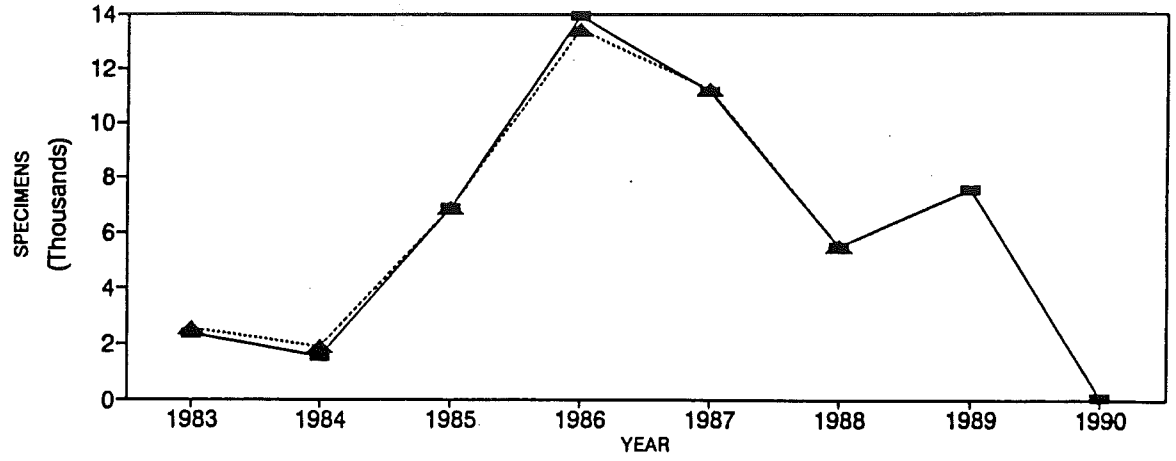


Figure 8. Trade in *Brotogeris versicolurus* (1983-1990).

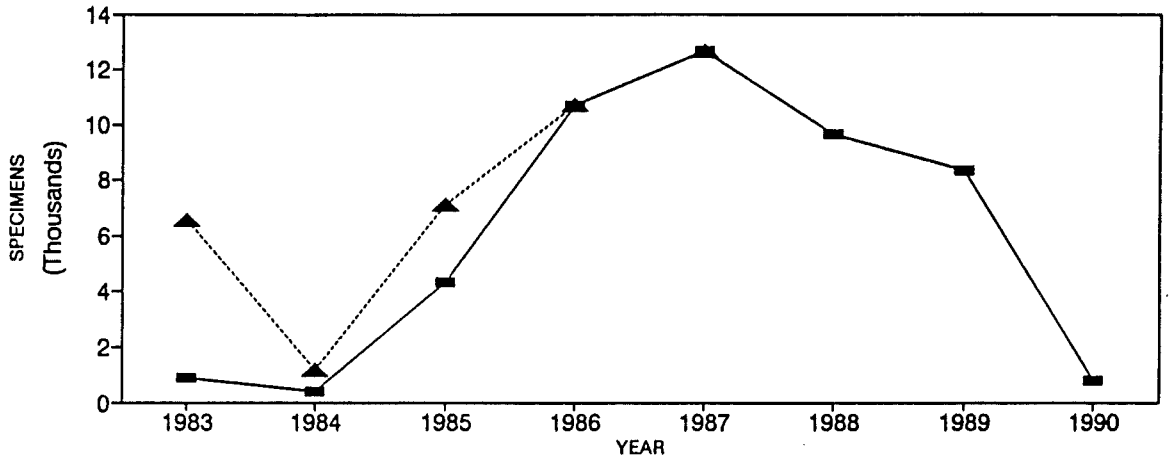


Figure 9. Trade in *Pyrrhura frontalis* (1983-1990).

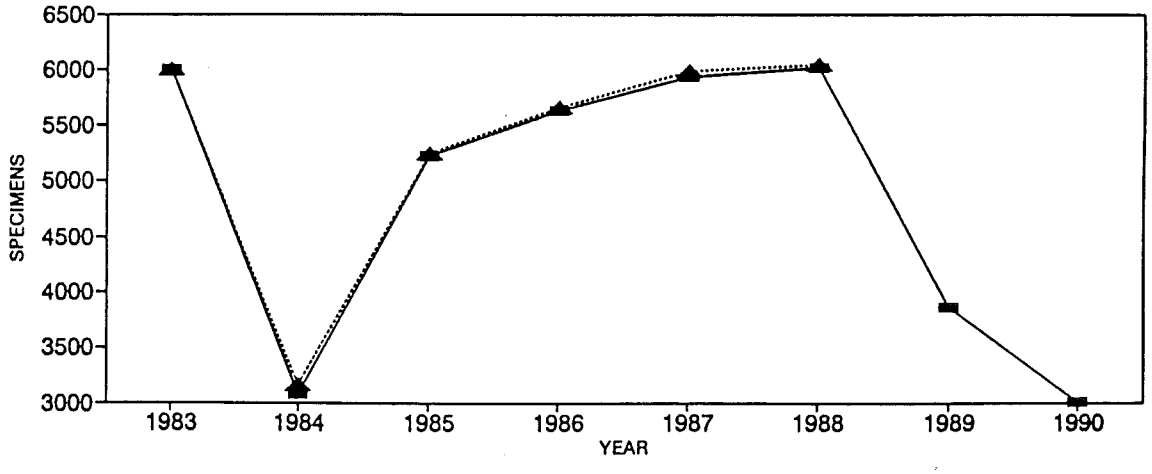
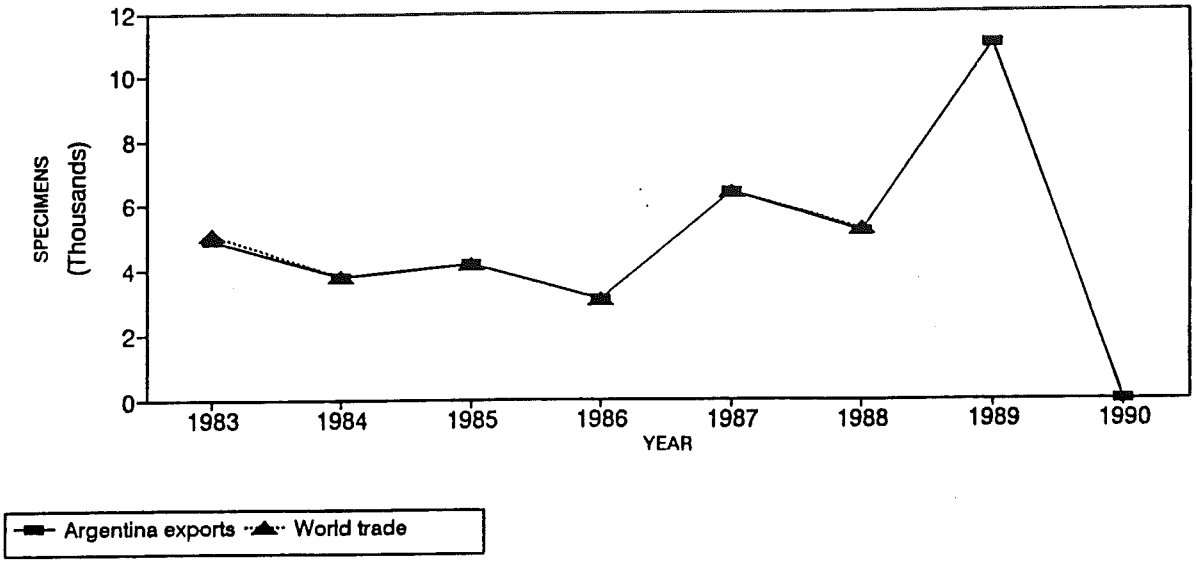


Figure 10. Trade in *Cyanoliseus patagonus* (1983-1990).



Sources: Exports — CITES Annual Report Data (1983-1988); National Directorate of Wild Fauna (1989-1990).
World Trade — World Conservation Monitoring Centre.

LEGAL/ADMINISTRATIVE STRUCTURE

Government Policy

The Government of Guyana is committed to using its natural resources to the benefit of its people, within limits that ensure that the resources are sustained for future generations. To that end, the Government has begun to implement the recommendations of the CITES Secretariat Caiman Management Project, and is anxious to begin a survey of wild parrot populations. The Government has also agreed to put some of the income generated by export fees toward wildlife surveys.

The Government of Guyana has no desire to stop exports of wild-harvested birds. Being realistic, however, the Government understands that the consumer market is being pressured to stop buying wild-collected birds. The Government has therefore actively been encouraging exporters to consider prospects for captive breeding birds for export.

Legal Framework

Guyana's only law specific to wildlife is the *Wild Birds Protection Act* of 1919, as amended in 1969. Guyana acceded to CITES on 25 August 1977. At present the government office responsible for wildlife management, the Wildlife Services Division, operates under an 'Administrative Agreement' with the Senior Minister of Agriculture. Actions taken by the Division, including the issuance or termination of export licences, assignment of quotas and establishment of export levies, are all undertaken within the framework of this Administrative Agreement.

A new wildlife law, entitled 'Conservation of Wildlife', was in its third draft as of November 1991. This law provides the means to establish protected areas and allows for conservation and stricter regulation of wild animal harvests and exports. The new law will allow promulgation of specific regulations to provide more effective implementation of CITES. Draft regulations establish: criteria for licensing trappers and exporters; transportation requirements; standards for holding facilities, sanitation and care of live wild animals; and export restrictions. Specific regulations for the location and construction of holding facilities for various species are also provided (Wildlife Services Division, 1991a). Facilities not meeting these standards would be able to be closed under the new law.

The new 'Conservation of Wildlife' law will also set limits on the reasonable number of 'pets' that may be held on an individual's property. This will allow the Government to address a current tactic used to smuggle birds: individuals acquire a large number of 'pet birds'; the birds subsequently 'die' in large numbers (i.e., are removed and exported); and are replaced by new 'pets'.

The principal reason for the delay in enactment of the Conservation of Wildlife law is the lack of staff in the Guyana Attorney General's office necessary to prepare required legal documents. In addition, recently, considerable legislation has been required to respond to International Monetary Fund loan requirements. Finally, much attention is being given to preparations for national elections, which have been postponed several times to allow for voter registration. In short, there are many internal issues that have a higher priority on the national political and governmental agendas than the enactment of the 'Conservation of Wildlife' law. Nevertheless, the Senior Minister of Agriculture, the Honourable Senior Minister Patrick L. McKenzie, stated that the law was the highest priority in the Ministry, and that he would push for its earliest consideration by the Cabinet -- a necessary step prior to the law's submission to the General Assembly for adoption. Minister McKenzie added that he hopes the law will be adopted in 1991.

Allocation of Government Responsibility

The Wildlife Services Division, Department of Crops and Livestock, Ministry of Agriculture, is responsible for conservation and management of Guyana's wildlife resources. The Department of Crops and Livestock includes four additional Divisions: Animal Services, Crop Services, Extension Services and Project Support. The Heads and Deputies of these five Divisions meet monthly. In addition to Crops and Livestock, the Ministry of Agriculture includes three other Departments: Hydraulics, Lands and Surveys, and Fisheries.

Minister McKenzie serves as the political head of the Ministry of Agriculture. Technical decisions are taken at the Division level in consultation with the Chief Crops and Livestock Officer. When decisions involve political considerations they are taken by Minister McKenzie. The Head of the Wildlife Services Division reports to the Chief Crops and Livestock Officer, Mrs Elsie Croal, who reports directly to the Permanent Secretary of Agriculture. The day-to-day administration of the Wildlife Services Division is the responsibility of Dr Karen Pilgrim.

The Wildlife Services Division serves as the CITES Management Authority for Guyana and employs two professionals (both holding Doctorates in Veterinary Medicine) and three support staff. Dr Pilgrim, Assistant Chief Crops and Livestock Officer, serves as Head of the Wildlife Services Division. Dr Dolly Semple is the Veterinary Officer. Both personnel and salary levels are limited in accordance with Ministry regulations.

The National Research Council of Guyana is the designated CITES Scientific Authority; however, it has not been active and makes no contributions to the implementation of the Convention. Decisions

concerning 'non-detriment findings' (under Article IV of CITES) are handled by Dr Pilgrim, in consultation with Mrs Croal.

At the present time there are no formal relationships between the Wildlife Services Division and other Ministries, although personnel in the various government offices communicate to a varying extent as evidenced above. In addition, the President's Cabinet, comprised of all government Ministers, meets regularly to coordinate implementation of national policies.

The actions of several offices outside of the Wildlife Services Division influence or have the potential to influence wildlife management and conservation. Both the Forestry Commission (responsible for forestry management) and the Geology and Mines Commission (responsible for controlling mineral exploitation) within the Guyana Natural Resources Agency undertake programmes that could significantly impact wildlife. The Forestry Commission has regular contact with the Wildlife Services Division, following the Wildlife Services Division's assistance with drafting of the Guyana National Forestry Action Plan.

The Guyana Agency for Health Education Services, Environment and Food Policy also has contact with the Division on wildlife-related issues. This latter Agency has undertaken field surveys of wild species in the past.

The Ministry for Planning and Development, and the Department of International Economic Cooperation (which is attached to the Office of the President) could both have significant influence on Guyana's wildlife utilisation policies. In particular, funding solicited from international bilateral and multilateral assistance agencies is subject to review by both of these agencies. Economic development projects involving wildlife could be encouraged by these agencies without consultation with the Wildlife Services Division.

A special team of consultants is presently reviewing the entire civil service and government agency structure of Guyana. The consultants have completed their review of the Ministry of Agriculture. While their report has not been made public, Mrs Croal was told that the consultants recommend that 'wildlife' be moved out of the Ministry of Agriculture; however, because there were other sectors of Government that dealt with wildlife in some manner, the consultants were not sure how the government structure should be reorganised with respect to wildlife management.

Because of the relatively low position of the Wildlife Services Division within the government structure, wildlife conservation and management is not considered a high priority. Nevertheless, within the Ministry of Agriculture the Division does enjoy strong support from Minister McKenzie and Mrs Croal. The commitment of the President to "study utilisation of tropical forests on a sustainable basis" (see **Land Ownership and Habitat Status**) has also raised the profile of the Wildlife Services Division within the Government.

Budget and Revenues

According to Minister McKenzie, the Wildlife Services Division is financed almost exclusively with income generated by a special levy assessed on all wildlife exports. At present the levy is 20% of the assessed value of the wildlife at the time of export, which is well below the actual value of the wildlife in the importing country. If 100% of all export quotas were filled, the maximum earned income has been estimated to be US$1.5 million. However, according to Dr Pilgrim, the total income generated from all wildlife exports in 1990 was approximately US$200,000, of which the levy on wild-caught bird exports contributed well over 75%.

The Wildlife Services Division indicated that an 'official' list of average prices paid by importers for wildlife would be particularly helpful to them in establishing fair assessed values for the purpose of collecting the export levy.

Exporters state that they willingly pay the export levy; however, they question how it is being spent.

Revenues collected with the export levy are administered in a revolving fund under the authority of the Ministry of Agriculture. While the Wildlife Services Division prepares an annual operating budget as part of the Ministry's general request for support, in fact the Division's funding is totally dependent upon the income generated by the export levy. This fact was reinforced by Minister McKenzie's comments about the future of wildlife conservation in Guyana if the wild bird export trade were terminated (see **Sustainability**). According to Mrs Croal and Minister McKenzie, levy revenues will also be used to cover the cost of monitoring wild populations, and to contribute toward baseline surveys of wildlife populations, e.g. the planned psittacine surveys.

The Customs Department collects a tax of 1.5% of the assessed value of wildlife exports.

Other Sources of Conservation Support

According to the Wildlife Services Division, the type of scientific and technical support needed by that Division is not available in Guyana. There are no known conservation-oriented NGOs in Guyana. The Guyana Society for the Prevention of Cruelty to Animals (GSPCA) has cooperated with the Wildlife Services Division on live animals cases in the past. A 1990 World Wildlife Fund-US proposal to fund and undertake a parrot survey, in collaboration with the CITES Secretariat, was rejected by the Government.

The Wildlife Services Division has sought advice from the CITES Secretariat concerning parrot exports and captive breeding of parrots and other wild birds. The Division has also requested assistance in implementing parrot field surveys.

The Wildlife Services Division has consistently tried to follow the advice and recommendations of the CITES Secretariat with respect to parrots and other wildlife in trade. At present the Government is focused exclusively on implementing recommendations from the international scientific community concerning Caiman conservation, management and harvest, which were developed as part of a CITES Secretariat-sponsored project.

CONSERVATION AND TRADE CONTROLS

Land Ownership and Habitat Status

The vast majority (over 80%) of Guyana is owned by the national Government. Specially designated areas, totalling approximately 1.4 million hectares, are set aside for the exclusive use of Amerindians. This land is distributed among 65 Amerindian villages. The majority of these designated areas are located close to the frontiers with Venezuela, Brazil and Suriname and serve as the principal bird collecting areas. According to Guyanan law, non-Amerindians are required to obtain permission from the Amerindians before they use these lands for mineral extraction or other purposes. In practice, it was reported, this is not done.

In addition to the lands reserved for Amerindians, Guyana has one National Park at Kaieteur Falls, and 364,230ha in the centre of the country set aside by the President for a 'Programme for Sustainable Tropical Forestry'. This programme was developed following a 1989 meeting of the Heads of Commonwealth Governments, at which Guyana's President agreed to allocate a portion of the country's rainforests for a project to "study utilisation of tropical forests on a sustainable basis and the conservation of species".

An inter-agency committee, which includes representation from the Wildlife Services Division, has been established to design the programme. Plans have been made and funding obtained to develop the set-aside lands in accordance with sustainable forestry objectives. The Government plans to: undertake sustainable use of tropical forest resources; establish an international centre for research and training; and establish a centre for data management and communications. The plan for the area also calls for comparing the status of the area being used with an area that will be retained as a natural wilderness.

Assessment of Wild Populations and Effects of Trade

There have been no baseline population surveys performed for bird species exported from Guyana. Nevertheless, the Wildlife Services Division believes that established export quotas maintain trade at levels below those which would be detrimental to species' wild populations.

Based on their comments, there is little doubt that the exporters believe that wild bird resources are vast and that quotas are not really needed. Exporters stated that they restrict their harvest to an area equal to only about 10% of the available habitat and therefore, in their view, the remaining 90% of the habitat is an adequate source of stock to repopulate over-harvested areas.

Both the Government and exporters are keen to initiate field surveys of wild bird populations, however. Many traders commented that survey consultants should work with traders and trappers, as no outsider would be able to give an accurate assessment of the status of wild populations without their assistance. Exporters also noted that they would like to participate in the process by which quotas are established.

The Government does not intend to develop a conservation management plan for all wildlife; instead, management plans will be developed for those species that are surveyed, as has been the case for crocodilian species. The closest example of a comprehensive conservation plan is the Guyana National Forestry Action Plan, which underscores the need for sustainable harvest of wildlife.

The Guyana National Forestry Action Plan was drafted in 1987 by forestry consultants (mostly Canadian) and Guyanese counterparts. Funding for this process was provided by the Canadian International Development Agency. The plan presents 37 recommendations, including the following pertaining to wildlife conservation and management: a) establishment of fifteen protected areas in various parts of the country; b) establishment of an 'International Centre for Applied Research on Tropical Forest Ecosystems'; c) implementation of a public environmental education programme; and d) initiation of a sustainable wildlife utilisation project in the Rupununi region of Guyana (to encourage use of indigenous animal protein sources and reduce dependence on imported foods).

Quotas

Guyana's export quota system was established in 1987, in response to a 1986 EC ban on wildlife imports from Guyana. Reacting to the EC's claim that Guyana lacked a proper management programme for psittacines, Guyana suspended exports of all wild birds for nine months, and instituted the quota system and other export

controls. The EC lifted the import ban following implementation of the quota system.

In the absence of baseline population surveys, it has been the policy of the Wildlife Services Division to assign quotas for each species at levels below those which they believe might be a threat to wild populations. Following establishment of the initial species' quotas, the Wildlife Services Division established individual quotas for each exporter. Exporter quotas were based on 1987 calculations of exporters' previous trade levels. Individual exporter quotas for each species were determined by averaging each exporter's annual exports of that species for the five years preceding the ban. This figure was then adjusted so that no exporter would receive more than 15% of the total export quota for a particular species. Under this scheme each exporter was assured a quota for those species which he had exported in the past. Annual quotas have subsequently been adjusted relative to the size of holding facilities maintained by each exporter.

Exports are authorised for twenty psittacine and ten non-psittacine species [including three toucan species: *Ramphastos toco* (Toco Toucan), *R. tucanus* (Cuvier's Toucan) and *R. vitellinus* (Channel-billed Toucan)]. Table 1 lists psittacine species authorised for export with their respective export quotas for the period 1987/88 to 1991.

The Wildlife Services Division has reduced or eliminated the quota for certain species in response to the advice of the CITES Secretariat (see Table 1). Export quotas for several species were reduced between 1989 and 1990, with the total export quota declining by 4000 specimens as a result. The largest quota reduction was for *Amazona amazonica* (reduced from 17,500 to 15,000). The species quotas have remained unchanged since 1990.

Exporters are known to 'sell' unused portions of their quotas to other exporters. The Wildlife Services Division is aware of this practice, but has difficulty identifying such transactions because exports are normally made in the name of the exporter for which the quota was authorised, in order to ensure that their licence remains valid.

Licences

The Wildlife Services Division requires that wildlife exporters are licensed by the Division. Licences are issued to companies for the export of wild birds, mammals, reptiles and, most recently, caiman skins. Only live animal and caiman skin exporter licences are recognised at this time. At present, 17 companies are licensed: 16 live animal exporters and one caiman skin exporter (Wildlife Services Division, 1991b). Most live animal export licence holders do not limit exports to bird species. A few export specimens of all authorised species of animals.

An additional nine companies are licensed to export tropical fish. Although the Fisheries Department of the Ministry of Agriculture handles the tropical fish trade, export permits are processed by the Wildlife Services Division. One person has expressed interest in exporting orchids, but to date a licence has not been granted.

The Wildlife Services Division has not granted licences to any new exporters since 1983. New licences are not being granted because: a) it would be very difficult for the two professional staff in the Wildlife Services Division to effectively control any more facilities and exporters; b) the staff are uncomfortable about going too far beyond their present legal authority before the 'Conservation of Wildlife' legislation is adopted; and c) the staff are developing and implementing basic veterinary health-care and maintenance standards for captive wildlife even before formal adoption of the new legislation (Wildlife Services Division, 1991a). Additional licensing provisions that will result from these new standards include requiring exporters to maintain daily records on the specimens in their holding facilities, and records of other captive birds in their possession. Dr Pilgrim believes that exporters would not resist such a requirement.

Export licences that were active prior to Guyana's 1987 export ban on wild birds were 'reauthorised' without the imposition of additional fees when the ban was lifted. However, all previously licensed bird exporters were required to comply with a new requirement to maintain an animal holding facility near Georgetown, imposed following the 1987 ban.

All exporters have established holding facilities, either along the road to the airport, or on the east coast of Demurara. At present there are no government reporting requirements associated with these facilities, but this may change with adoption of the new regulations mentioned above. Exporters' holding facilities are inspected periodically by the Wildlife Services Division Veterinarian.

The author was taken to visit three holding facilities for birds and mammals in January 1991. The facilities' owners were not given prior notice of the visit. Two of the facilities belonged to licensed exporters, but the third did not. The two licensed facilities were maintained within reasonable limits of sanitation, and the birds held therein appeared to be in good health. Conditions in the 'non-licensed' facility were abysmal. The Wildlife Services Division was unable to take any action against this facility's owner, however, owing to a

Table 1. Guyana export quotas for psittacine species (1987/88–1991).

SPECIES	1987/88	1989	1990	1991
Amazona amazonica	17,500	15,000	15,000	15,000
Amazona d. dufresniana	240	0	0	0
Amazona farinosa	2,300	2,300	2,300	2,300
Amazona festiva	300	0	0	0
Amazona ochrocephala	2,300	2,000	2,000	2,000
Ara ararauna	2,400	2,000	2,000	2,000
Ara chloroptera	1,800	1,500	1,500	1,500
Ara manilata	1,500	1,500	1,500	1,500
Ara nobilis	1,000	1,000	1,000	1,000
Aratinga leucophthalmus	300	300	300	300
Aratinga pertinax	3,000	3,000	3,000	3,000
Aratinga solstitialis	600	600	600	600
Brotogeris chrysopterus	180	180	180	180
Deroptyus accipitrinus	480	480	480	480
Forpus passerinus	600	600	600	600
Pionites melanocephala	600	600	600	600
Pionus fuscus	300	300	300	300
Pionus menstruus	900	900	900	900
Pyrrhura egregia egregia	120	120	120	120
Pyrrhura picta picta	300	300	300	300
TOTAL	36,720	32,680	32,680	32,680

Source: Wildlife Services Division.

lack of legislative authority (see **Legal Framework**). In this instance, Dr Pilgrim contacted the GSPCA who intervened under animal cruelty laws. It was reported later that the facility owner's nephew had been taken to police headquarters for questioning, and that GSPCA was continuing to follow up.

Exporters not active for a period of two years lose their licence. In the past year, one exporter lost his licence because of inactivity. Another licence was suspended because fees were not paid; however, the fees have subsequently been paid and it is likely that the company will be allowed to begin exports again.

COMMERCIAL ACTIVITIES

Trapping and Trade

Collecting of live birds for export is primarily done close to Amerindian reservations. Collecting is largely limited to three areas: in the northwest near the Venezuela border; in the southwest close to Brazil; and in the east near the border with Suriname. Exporters stated that the total area from which birds are collected is less than 10% of the land area of Guyana.

Birds are captured according to procedures described by Schouten (1989). Captured birds are generally free-flying rather than nestlings.

Amerindians are the primary trappers of birds for export. Trappers normally sell their catches to domestic traders (middlemen) who, in turn, sell the animals to exporters. According to exporters interviewed, the organisation of wild bird collecting activities varies between villages, which vary in size from approximately 100 to over 3000 inhabitants. In some cases business is conducted by independent trappers, while in others trapping is organised by villages as a whole. In the latter case, traders negotiate with the head of the village, who speaks on behalf of the villagers. Payment for birds is made to the village, and proceeds subsequently distributed to the individual villagers.

Traders are usually associated with a particular exporter. Some exporters buy birds directly from the Amerindians, however. Birds are kept at exporters' holding facilities prior to shipment. The Customs Department and the Wildlife Services Division do not have holding facilities at the airport.

Macaws and toucans are sold by traders to exporters for the equivalent of US$40 to US$50 each. Traders sell *Amazona* spp. (Amazons) to exporters for the equivalent of US$6 to US$10 each. Trappers may receive as much as US$5 for macaws and as little as US$2 to US$3 each for the more common *Amazona* species.

Wildlife Exporters Association

Trade associations are very common in Guyana, being one expression of the 'cooperative' philosophy that dominated government and private sectors for over 15 years. The Guyana Wildlife Exporters Association was formed for the purpose of dealing with problems common to all exporters (health standards, veterinary services, government support, feed imports, etc.). The principal requirements for membership are an export licence and payment of annual dues. Fifteen of the 17 licensed wildlife exporters belong to the Association. Some exporters feel that they are better able to address these problems on their own, however.

The Guyana Wildlife Exporters Association has not been very active in the past few years. The current President of the Association, Mrs Roxanne Reece, expressed her desire to see the Association take a more active role in working on wildlife surveys and cooperating with the Government.

Fifteen members of the Association were interviewed during a meeting organised by Dr Pilgrim. They were informed of the proposed legislation in the United States regarding bans on imports of wild-caught birds. Actions to prohibit the importation and/or sale of wild-caught birds, such as the present laws in New York and the then proposed but subsequently adopted law in New Jersey were described. The approach taken by the EC was discussed.

Some of the exporters were very open and asked numerous questions. Others remained silent throughout the two-hour meeting. They all wished to remain in the trade, with one or two individuals stating openly that if wild-caught bird imports are banned they will just go on trading 'under the table'. All exporters supported the need for parrot surveys. A small number of exporters indicated their desire to develop captive breeding facilities, but did not know how to do so.

The influence of the wildlife exporters in Guyana reflects this country's very open government: all citizens have access to government officials up to the Office of the President. While no particular political influence can be attributed to the Guyana Wildlife Exporters Association, there is no doubt that individual exporters have influenced government decisions. By example, at least one individual was granted an export licence in lieu of money the Government owed him. This licence was subsequently revoked because the individual did not export wildlife over a two-year period. There is no evidence, however, that individual exporters have influenced the assignment of quotas for individual species to specific companies.

Export Volumes

Between 1983 and 1989 172,557 specimens of 31

species of wild-caught psittacines were exported from Guyana (Table 2). Exports peaked in 1984 when 39,297 specimens were exported. Parrot exports reached their lowest number in 1987, following a temporary ban on imports from Guyana imposed by the EC in 1986, and a subsequent nine-month suspension of exports imposed by the Guyanan Government in response to the EC's action. Guyana reopened bird exports in 1987, in conjunction with the establishment of an export quota system. The number of specimens exported rose to 19,641 in 1988, but dropped to 15,325 in 1989. Export volumes in 1990 are expected to be at the same level as those of 1989, based on the established export quotas.

The number of specimens recorded as exported during 1989 and 1990 has been compared with export quotas for those same years (Table 3). Total recorded exports during 1989 and 1990 represented 53.5% and 46.9% of the total authorised quotas for the respective years.

Of the thirty-one species of parrots exported, one-third (ten) comprise 95% of the reported number of specimens exported. Specimens of *Amazona amazonica* (Orange-winged Amazon) alone represent over 50% of the total exports. Comparisons of total world trade and Guyana's exports for the period 1983 to 1989 are summarised in Figures 1 to 10. Guyana's export quotas for 1988 to 1991 are also indicated in these Figures. Trade figures for *Amazona ochrocephala* (Yellow-crowned Amazon) and *Ara araruana* (Blue and Yellow Macaw) (ranked second and third respectively in overall exports) indicate that the latter species has been the second most common export since 1987.

Exports are authorised for ten non-psittacine species, but export data are not available. The quotas established are considerably lower than those for psittacine species and therefore it is assumed that they do not contribute significantly to the overall export total.

Benefits

To understand the economic benefit of the wild bird trade in Guyana, it is important to have some knowledge of the overall economic situation in that country.

Inflation in Guyana is rampant. In January 1991 the exchange rate was US$1 to 106 Guyana dollars (G$). In March 1991 the exchange rate was approximately US$1 to G$125. The average annual salary of Guyana citizens is G$50,000, or US$400 at the present rate of exchange. Professionals in the Wildlife Services Division receive slightly less than twice this amount. While food and other basic living expenses are on a par with these salary levels, imported merchandise sells at prices comparable to those paid in the source country, e.g. Trinidad and Tobago, the United States, etc. Hotels and other segments of the economy that cater to visitors and the expatriate community are also relatively expensive.

Mrs Reece of the Guyana Wildlife Exporters Association provided information on the number of people benefitting from the bird export trade. According to Mrs Reece, 16 exporters provide employment to a total of 430 individuals, and therefore direct financial benefit to these individuals and their family members. Approximately 7540 trappers and domestic traders are also involved in the trade, and similarly receive financial benefit from trade-associated activities. Factoring in their spouses and children (where the average family has five children) the total would be about 50,000.

An estimated further 2000 individuals (including family members) benefit from the sale of supplies, medication and transportation services to exporters and/or the middlemen in the wild bird trade. Taking into account all those individuals associated with the trade in some way, Mrs Reece estimates that over 54,000 Guyanans receive some financial benefit from wild bird exports. Based on Guyana's total population of 765,000 (Hoffman, 1990), these figures would indicate that over 5% of the country's population derives some financial benefit from wild bird exports.

About 75% of the people involved in the wild bird trade are Amerindians, whose total population numbered approximately 43,000 in the 1980s, according to Janette Forte (*in litt.*) of the Amerindian Research Unit of the University of Guyana. Mrs Reece stated that during the bird season (May to December), the majority of the male Amerindian population is involved in bird trapping. Because these people can choose freely between bird collecting and other sources of livelihood, such as traditional hunting, gathering, fishing, handicrafts and shifting agriculture, it is safe to conclude that Amerindian men find collecting of birds more financially rewarding than these other activities.

To provide a comparison of benefits provided by another type of natural resource utilisation, Mrs Reece compiled information on the logging industry in Guyana. There are nine large-scale logging and sawmill firms, and a further 72 small sawmills in the country. There are also approximately 200 manufacturers of secondary and tertiary products, of which 170 would be considered 'cottage industries'. It is estimated that 10,000 people are employed in this sector of the economy. When factoring in their families, a rough estimate of the total number of people receiving financial benefit from logging is 70,000 individuals, which is of the same order as the number benefitting from wild bird exports. The forest products industry

Table 2. Reported exports of live psittacines from Guyana (1983-1989).

SPECIES	1983	1984	1985	1986	1987	1988	1989	TOTAL	AVG.	%	CUM %
Amazona amazonica	15,506	21,881	14,443	14,499	4,454	10,758	7,588	89,129	12,733	51.7	51.7
Amazona ochrocephala	2,070	3,353	2,316	3,662	908	1,274	1,070	14,653	2,093	8.5	60.2
Ara ararauna	1,448	1,117	2,851	3,371	1,153	1,737	1,806	13,483	1,926	7.8	68.0
Amazona farinosa	1,583	4,578	2,081	1,584	430	1,269	1,016	12,541	1,792	7.3	75.3
Ara chloroptera	1,046	1,476	1,614	2,328	1,048	1,340	1,413	10,265	1,466	5.9	81.2
Ara manilata	1,045	967	601	844	273	1,052	777	5,559	794	3.2	84.4
Aratinga pertinax	1,349	2,042	696	557	834	50	0	5,528	790	3.2	87.6
Ara nobilis	774	755	618	1,037	177	621	599	4,581	654	2.7	90.3
Pionus menstruus	1,050	1,021	477	680	255	571	190	4,244	606	2.5	92.8
Pionites melanocephala	372	825	614	721	138	316	292	3,278	468	1.9	94.7
Deroptyus accipitrinus	348	380	335	674	208	204	270	2,419	346	1.4	96.1
Pionus fuscus	58	288	206	260	82	103	164	1,161	166	0.7	96.7
Forpus passerinus	17	25	622	256	15	71	80	1,086	155	0.6	97.4
Amazona festiva	31	2	16	566	94	131	0	840	120	0.5	97.9
Aratinga solstitialis	358	60	176	22	0	0	2	618	88	0.4	98.2
Amazona albifrons	0	0	0	591	0	0	0	591	84	0.3	98.6
Amazona dufresniana	112	64	134	127	41	35	3	516	74	0.3	98.9
Ara macao	8	151	310	0	0	0	0	469	67	0.3	99.1
Brotogeris chrysopterus	31	0	165	83	13	88	50	430	61	0.2	99.4
Pyrrhura picta	148	154	10	15	2	7	0	336	48	0.2	99.6
Ara auricollis	0	0	300	0	0	0	0	300	43	0.2	99.7
Aratinga acuticaudata	0	112	125	0	0	0	0	237	34	0.1	99.9
Pyrrhura egregia	0	0	0	50	25	6	0	81	12	0.0	100.0
Aratinga leucophthalma	26	20	0	0	0	8	5	59	8	0.0	100.0
Amazona mercenaria	20	0	0	20	0	0	0	40	6	0.0	100.0
Amazona aestiva	0	25	10	4	0	0	0	39	6	0.0	100.0
Ara militaris	5	0	20	0	0	0	0	25	4	0.0	100.0
Ara severa	7	0	10	0	0	0	0	17	2	0.0	100.0
Amazona viridigenalis	10	0	0	0	0	0	0	10	1	0.0	100.0
Eos bornea	0	0	0	10	0	0	0	10	1	0.0	100.0
Ara spp.	0	1	0	6	0	0	0	7	1	0.0	100.0
Aratinga auricapilla	0	0	0	3	0	0	0	3	0	0.0	100.0
Aprosmictus spp.	0	0	2	0	0	0	0	2	0	0.0	100.0
TOTAL	27,422	39,297	28,752	31,970	10,150	19,641	15,325	172,557	24,651	100.00	

Sources: CITES Annual Report Data (1983-1988); Wildlife Services Division (1989).

Table 3. Comparison of Guyana psittacine export quotas and reported exports (1987/88-1989).

SPECIES	1987/88 QUOTA	1987/88 EXPORTS	1987/88 DIFFERENCE	1987/88 % QUOTA	1989 QUOTA	1989 EXPORTS	1989 DIFFERENCE	1989 % QUOTA
Amazona amazonica	17,500	10,758	6,742	61.5	15,000	7,588	7,412	50.6
Amazona d. dufresniana	240	35	205	14.6	0	3	(3)	
Amazona farinosa	2,300	1,269	1,031	55.2	2,300	1,016	1,284	44.2
Amazona festiva	300	131	169	43.7	0	0	0	
Amazona ochrocephala	2,300	1,274	1,026	55.4	2,000	1,070	930	53.5
Ara ararauna	2,400	1,737	663	72.4	2,000	1,806	194	90.3
Ara chloroptera	1,800	1,340	460	74.4	1,500	1,413	87	94.2
Ara manilata	1,500	1,052	448	70.1	1,500	777	723	51.8
Ara nobilis	1,000	621	379	62.1	1,000	599	401	59.9
Aratinga leucophthalmus	300	8	292	2.7	300	5	295	1.7
Aratinga pertinax	3,000	50	2,950	1.7	3,000	0	3,000	0.0
Aratinga solstitialis	600	0	600	0.0	600	2	598	0.3
Brotogeris chrysopterus	180	88	92	48.9	180	50	130	27.8
Deroptyus accipitrinus	480	204	276	42.5	480	270	210	56.3
Forpus passerinus	600	71	529	11.8	600	80	520	13.3
Pionites melanocephala	600	316	284	52.7	600	292	308	48.7
Pionus fuscus	300	103	197	34.3	300	164	136	54.7
Pionus menstruus	900	571	329	63.4	900	190	710	21.1
Pyrrhura egregia egregia	120	6	114	5.0	120	0	120	0.0
Pyrrhura picta picta	300	7	293	2.3	300	0	300	0.0
TOTAL	36,720	19,641	17,079	53.5	32,680	15,325	17,355	46.9

Sources: CITES Annual Report Data; Wildlife Services Division.

generates about US$4 million annually in foreign exchange earnings according to the Guyana National Forestry Action Plan. This is at least two to three times the foreign exchange produced by wild bird exports.

As noted previously (see **Budget and Revenues**), export levies placed on wild bird exports provide the majority of funding for the Wildlife Services Division.

Domestic Market

Dr Pilgrim reported that most homes have a wild bird or other wild animal of some kind. During a three-day period, a dozen or so song birds and a few parrots were seen being carried on the streets of Guyana. It is assumed that these birds were for sale (or purchased) for domestic use. National trade levels are believed to have remained at a constant level for years.

Recognising the Division's limited staff size, and its responsibilities under CITES, the Wildlife Services Division has chosen to concentrate its resources entirely on controlling international trade. As a result, there is no licensing requirement for domestic bird dealers, and the domestic trade is not monitored.

Captive Breeding

The Wildlife Services Division, following Ministry of Agriculture policy, has been encouraging exporters to consider captive breeding of birds for export. However, there is currently a lack of expertise regarding captive breeding in Guyana. If such programmes are to be successful, exporters will require assistance from an avian captive breeding specialist capable of advising them on which species would be likely to breed, what facilities and equipment would be required, etc. The CITES Secretariat has arranged for Dr Semple to receive training in captive management and avian veterinary medicine in the United States.

A few exporters have expressed interest in captive breeding birds for export, but none have made a commitment to develop captive breeding facilities. Some feel that it would be in their best long-term interest to export breeding stock and set up captive breeding facilities in consumer countries. From their perspective this option would be preferable to the establishment of captive breeding operations in Guyana, owing to the high cost of setting up facilities in that country.

FUTURE OF TRADE

Sustainability

A large percentage of Guyana remains more-or-less in its natural state. The country also has an extremely small human population, over 90% of which lives within 20km of the coast. Given the prevailing climatic conditions, readily available water and the high diversity of wildlife, there is no reason why adequate measures cannot be taken now to ensure that wildlife utilisation is sustainable.

At present, the only data that the Government can use to assess the impact of trade on wild populations are export records. A company's failure to use its full export quota could be interpreted to reflect a drop in supply; however, a number of other variables could also influence the number of birds exported that have nothing to do with the status of wild populations.

As in the case of Caiman, the Government believes that future utilisation schemes must start with scientifically defensible surveys to establish the status of the wild population. The Government is anxious to begin surveys of wild parrot populations and has agreed to provide funds earned through export levies to support Guyanan counterparts in these surveys. Once collected, survey data can provide the basis for establishing realistic harvest quotas, with periodic monitoring mechanisms put in place to ensure that harvests are sustainable. The Government has also agreed to use a portion of export levies to fund continued monitoring.

The Government has sought and welcomed scientific assistance whenever it has been made available. All of the Government's activities with respect to the bird trade in recent years have been in accordance with decisions taken by the Conference of the Parties to CITES and in consultation with the CITES Secretariat.

Consequences of Trade Bans

If wild-harvested birds were banned from import into the principal markets, it would remove the need (and funding source) for the Wildlife Services Division. Minister McKenzie stated that "...in such an event the Wildlife Services Division would be at risk because there would be no funds to cover its operating costs." He also stated that such a ban would have the greatest impact on the overall employment situation in Guyana. A large number of people, ranging from Amerindians, through the traders, to the exporters, are dependent upon wildlife trade for their livelihood. Minister McKenzie noted that in the absence of wildlife utilisation it was inevitable that a vast segment of the forest would be converted to other uses with greater economic potential, such as agriculture and cattle ranching.

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Wildlife Services Division. 1991b. Exporters of live birds, mammals, reptiles, amphibians & arthropods. Unpublished.

INDIVIDUALS INTERVIEWED

Elsie Croal, Chief Crops and Livestock Officer, Ministry of Agriculture

Honourable Senior Minister Dr Patrick L. McKenzie, Senior Minister of Agriculture

Karen Pilgrim, Assistant Chief Crops and Livestock Officer, Ministry of Agriculture

Roxanne Reece, President, Guyana Wildlife Exporters Association

Dolly Semple, Veterinary Officer, Ministry of Agriculture

M. A. 'Raymond' Shaw, President, Guyana Wildlife Trappers and Exporters

ACKNOWLEDGEMENTS

Special thanks are due the following individuals and organisations for their important contributions to this report:

Drs Karen Pilgrim and Dolly Semple of the Guyana CITES Management Authority were extremely helpful, providing documentation on the Government's management programme for wild species. Both Ms Elsie Croal, head of the Management Authority, and Minister McKenzie, (Ministry of Agriculture) candidly responded to questions and provided helpful insights into government policies and procedures. Mrs Roxanne Reece, President of the Guyana Wildlife Exporters Association, was kind enough to provide information regarding economic benefits of the wild bird trade accruing to rural communities in Guyana.

Figure 1. Trade in *Amazona amazonica* (1983-1991).

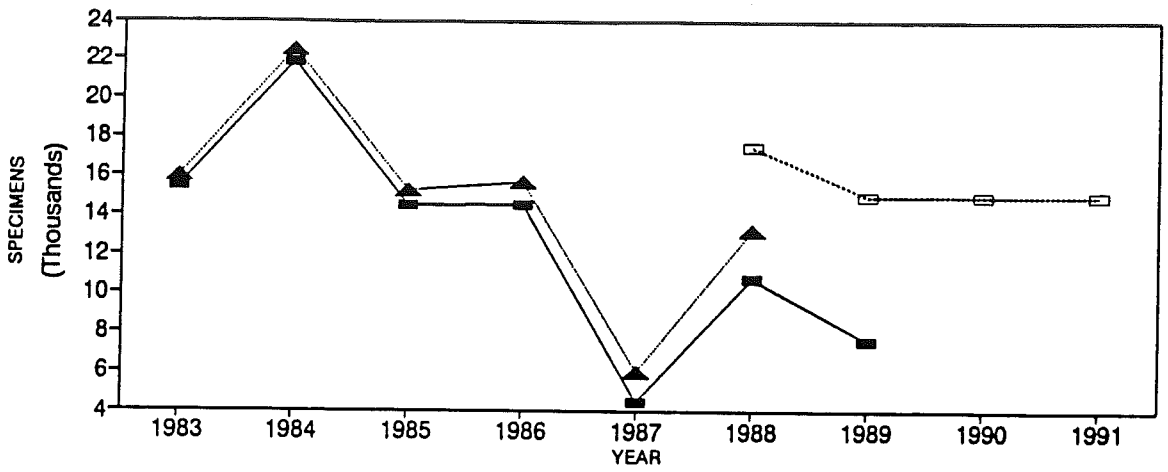


Figure 2. Trade in *Amazona ochrocephala* (1983-1991).

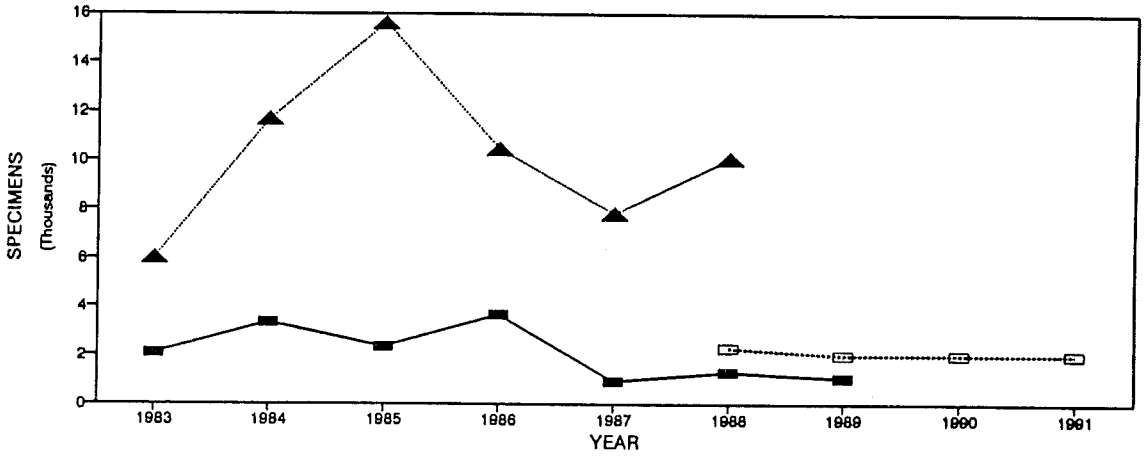
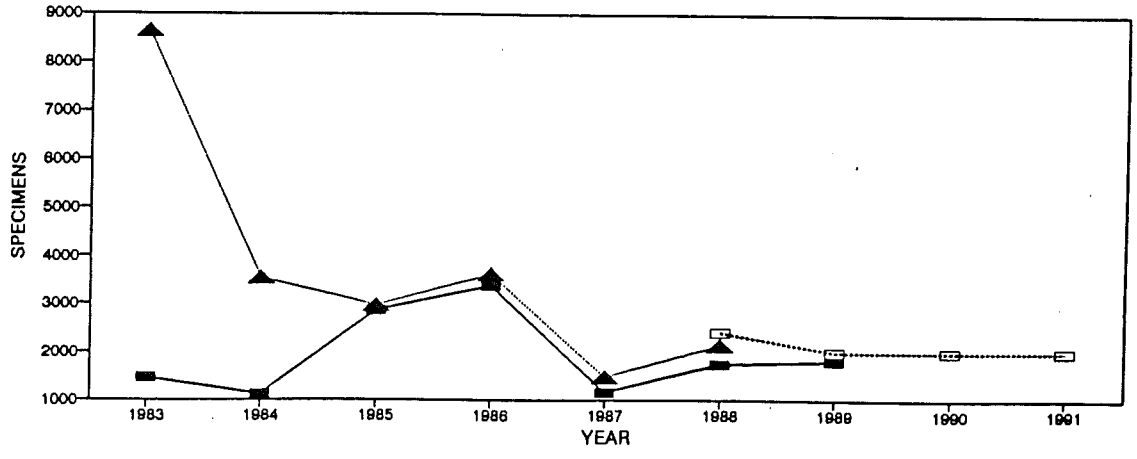


Figure 3. Trade in *Ara ararauna* (1983-1991).



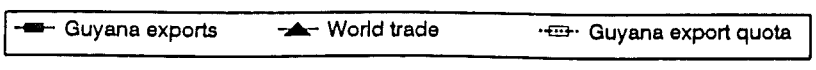


Figure 4. Trade in *Amazona farinosa* (1983-1991).

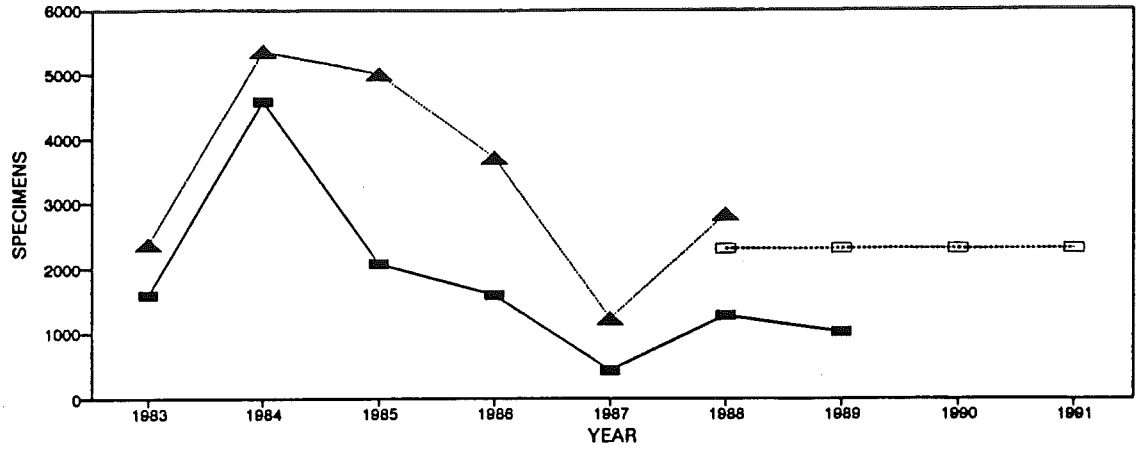


Figure 5. Trade in *Ara chloroptera* (1983-1991).

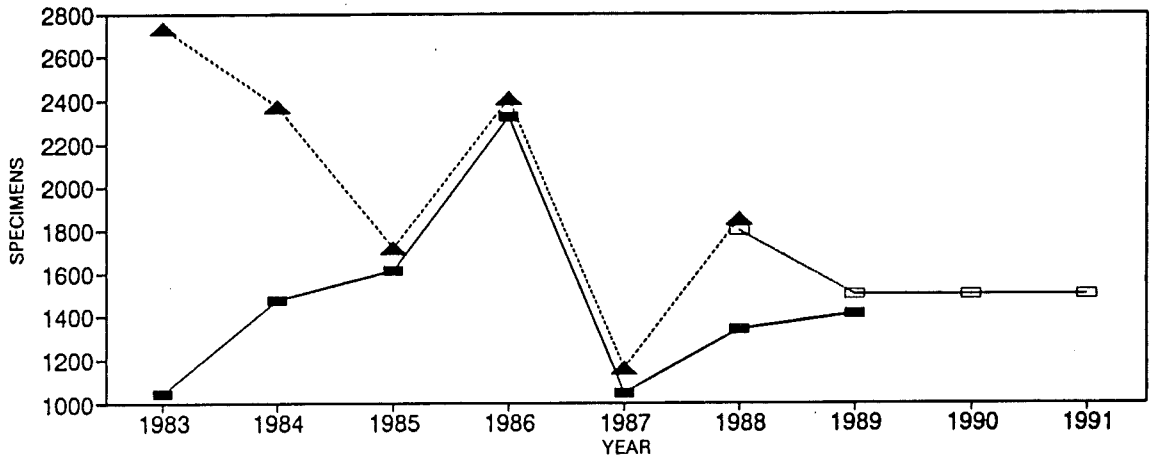


Figure 6. Trade in *Ara manilata* (1983-1991).

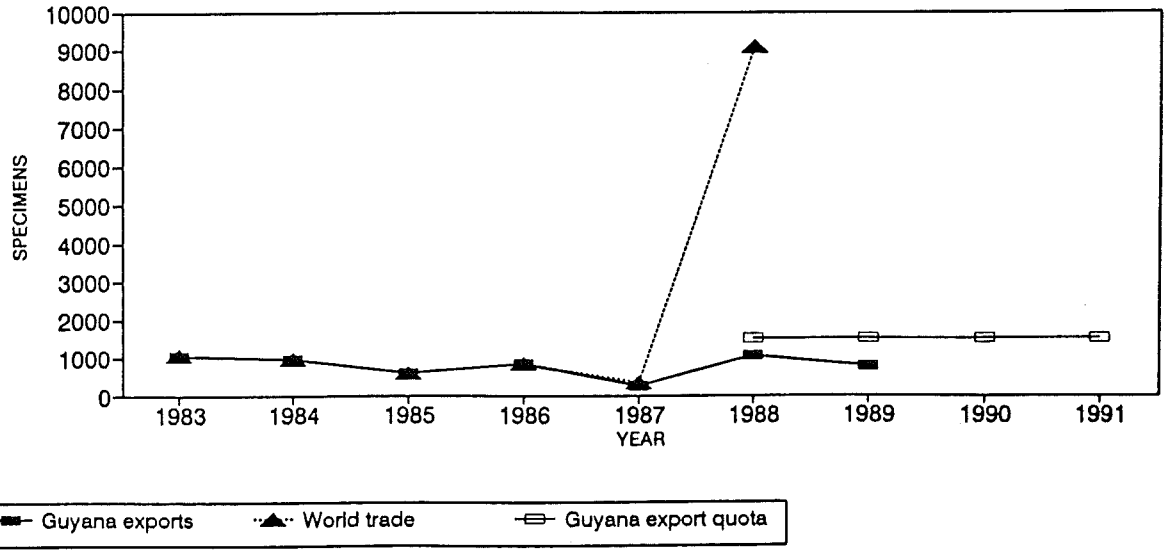


Figure 7. Trade in *Aratinga pertinax* (1983-1991).

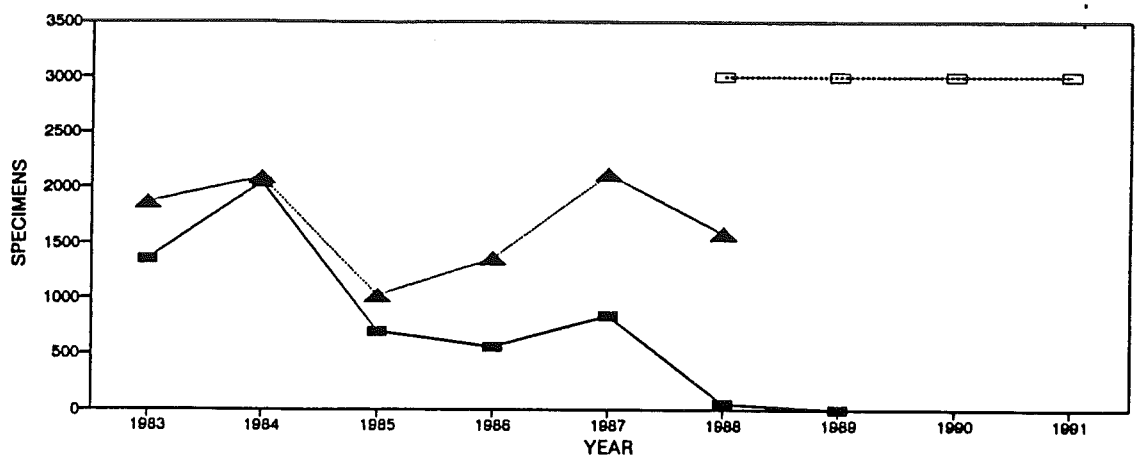


Figure 8. Trade in *Ara nobilis* (1983-1991).

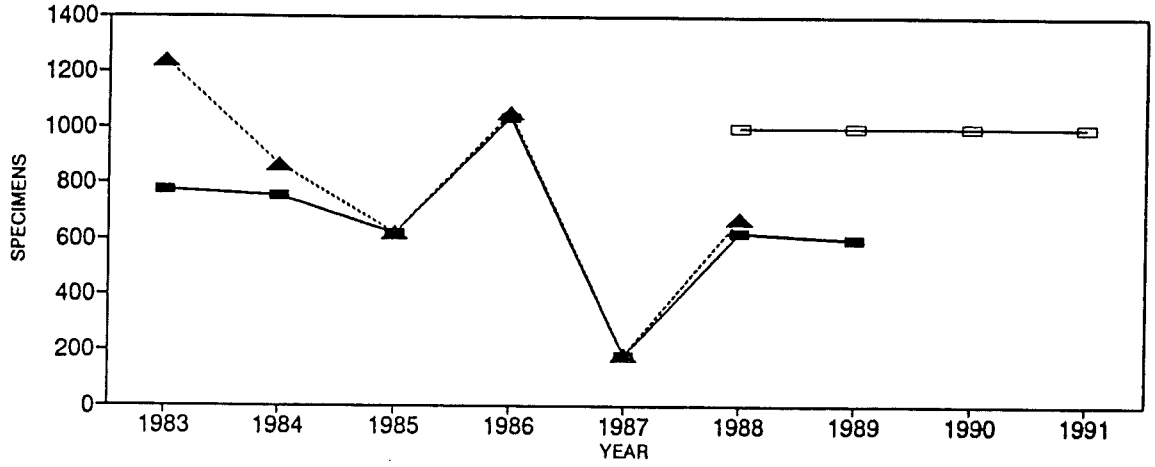


Figure 9. Trade in *Pionus menstruus* (1983-1991).

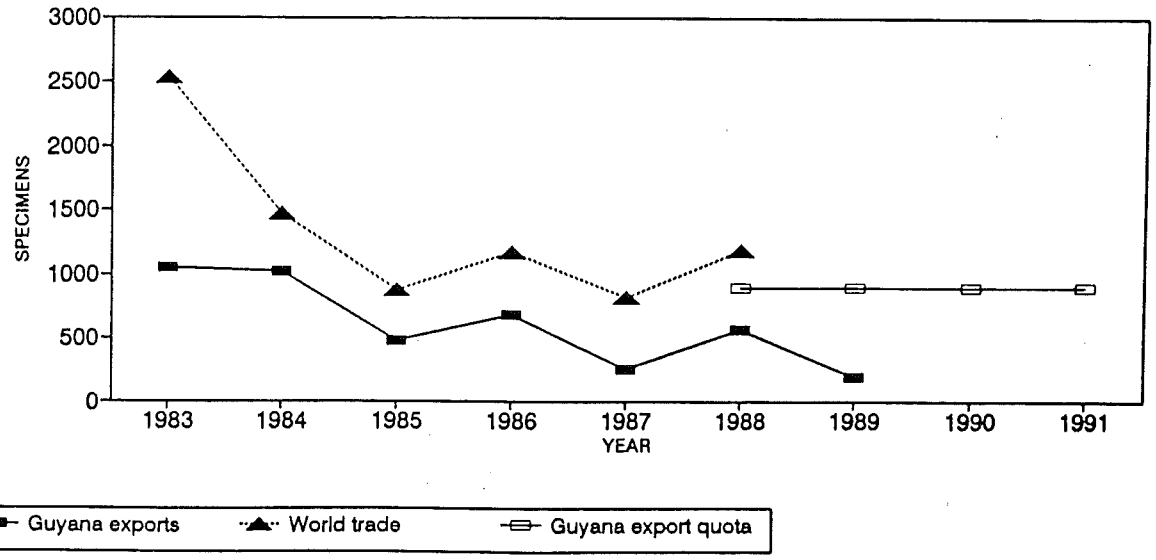
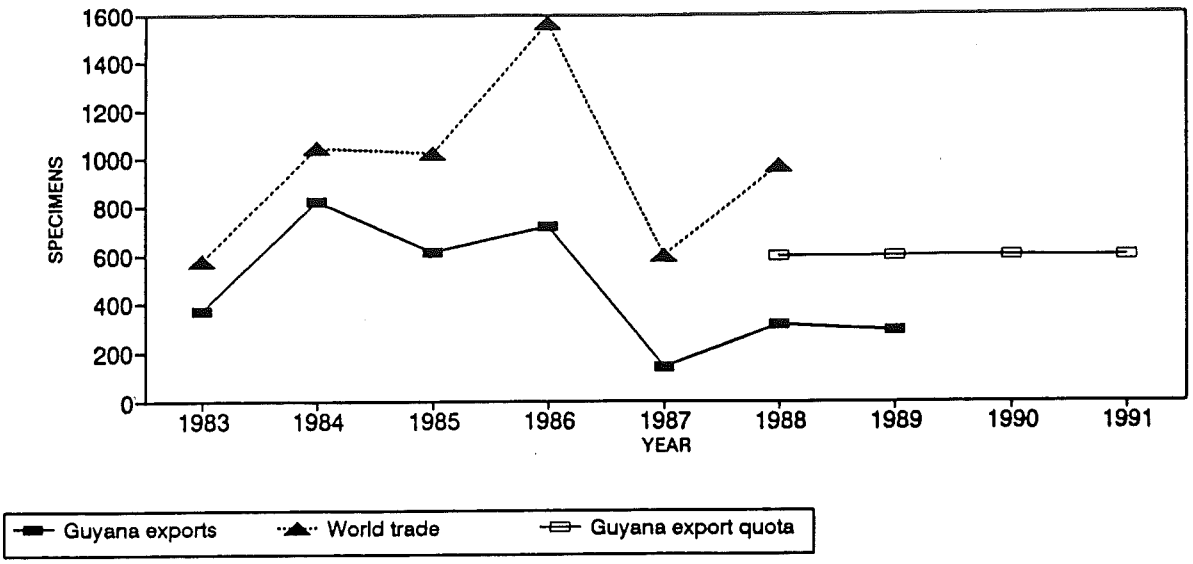


Figure 10. Trade in *Pionites melanocephala* (1983-1991).



Sources: Quotas — Wildlife Services Division.
Exports — CITES Annual Report Data (1983-1988); Wildlife Services Division (1989).
World Trade — World Conservation Monitoring Centre.

Stephen R. Edwards and Stephen V. Nash[25]

LEGAL/ADMINISTRATIVE STRUCTURE

Government Policy

The Government of Indonesia appears to be committed to conserving its wildlife resources. A Presidential speech in 1990 provided a strong endorsement of the importance of the environment to Indonesia's economic development. While not a legal decree, this speech has had considerable influence in government decision-taking and establishment of priorities. The adoption of the 1990 *Act on Conservation of Living Resources* (see **Legal Framework**) is further evidence that Indonesia is taking a strong interest in conserving its wildlife resources.

From a political standpoint the Government recognises that approximately 80% of the population is rural and that this population has varying dependence on wildlife resources. Personnel in the Directorate General of Forest Protection and Nature Conservation (PHPA), the Government body responsible for nature conservation in Indonesia, believe that a large segment of the population depends to some extent on wildlife harvests. PHPA officials point out that because wildlife has cash value rural people have greater incentives to care for and conserve wildlife and habitats. PHPA has used this argument to secure the support of provincial authorities in their efforts to protect wildlife and habitat. In relation to wildlife trade, and particularly trade in wild-caught psittacines, it was reported that the Government of Indonesia would oppose a ban on imports in consumer countries.

Legal Framework

Until 1990, wildlife conservation was based on the *Ordinance for the Protection of Wild Animals* adopted in 1931. This Ordinance prohibited hunting, capture, killing, trade, possession or export of species designated as 'protected', and the trade, possession or export of their hide, skin or plumage. This Ordinance also prohibited removal, destruction, trade or possession of the nests or eggs of protected species (Nichols *et al.*, 1991).

The *Act on Conservation of Living Resources and their Ecosystems* (1990 Conservation Act) was endorsed by the Peoples' Assembly and signed into law by the President in 1990. This Act was in preparation for ten years and effectively replaces the 1931 Ordinance. It focuses on domestic conservation and does not provide any more authority for implementation of CITES than existed in the past.

Ministerial Decrees now reference the 1990 Conservation Act as their legal authority, but no regulations have been adopted to technically implement the Act thus far. However, prior Decrees listing species as 'protected' are still in force. It was reported that five or six regulations are planned covering such topics as wildlife harvests, protected forests, life-support systems, tourism and domestic hunting. PHPA is responsible for preparing these regulations. The first regulation, covering tourism in conservation, is under interdepartmental review, the last step before approval by the Cabinet Secretary and formal adoption. The remaining regulations are to be completed by the end of 1991.

Government Ministers are authorised to issue Decrees, a number of which are relevant to wildlife management. Decrees issued by the Minister of Forestry are the most important legal instrument for implementing Indonesia's responsibilities with respect to CITES. Problems can arise if different Ministers issue contradictory Decrees. Such is the case where the Minister of Forestry decreed that certain marine turtles were protected and the Minister of Agriculture decreed that marine turtles were fish and subject to exploitation. Ministry of Forestry authority only applies when the turtles are on a protected beach during egg-laying or when any turtle products are exported. While it has not occurred, a similar conflict could arise if certain bird species were decreed agricultural pests; however, in principle, such Decrees would be subject to PHPA approval before they were issued.

Prior Decrees still in effect that are particularly important in regards to wildlife conservation and implementation of CITES are summarised below:

- Ministry of Forestry Decree No. 86/Kpts-II/1983. This Decree requires that permits be obtained to capture, keep and transport, both domestically and internationally, all wildlife, whether protected or not. Protected wildlife may only be captured for Presidential gifts to another country, zoological exchange, scientific research or population control. The officials responsible for issuing these permits are identified in the Decree.

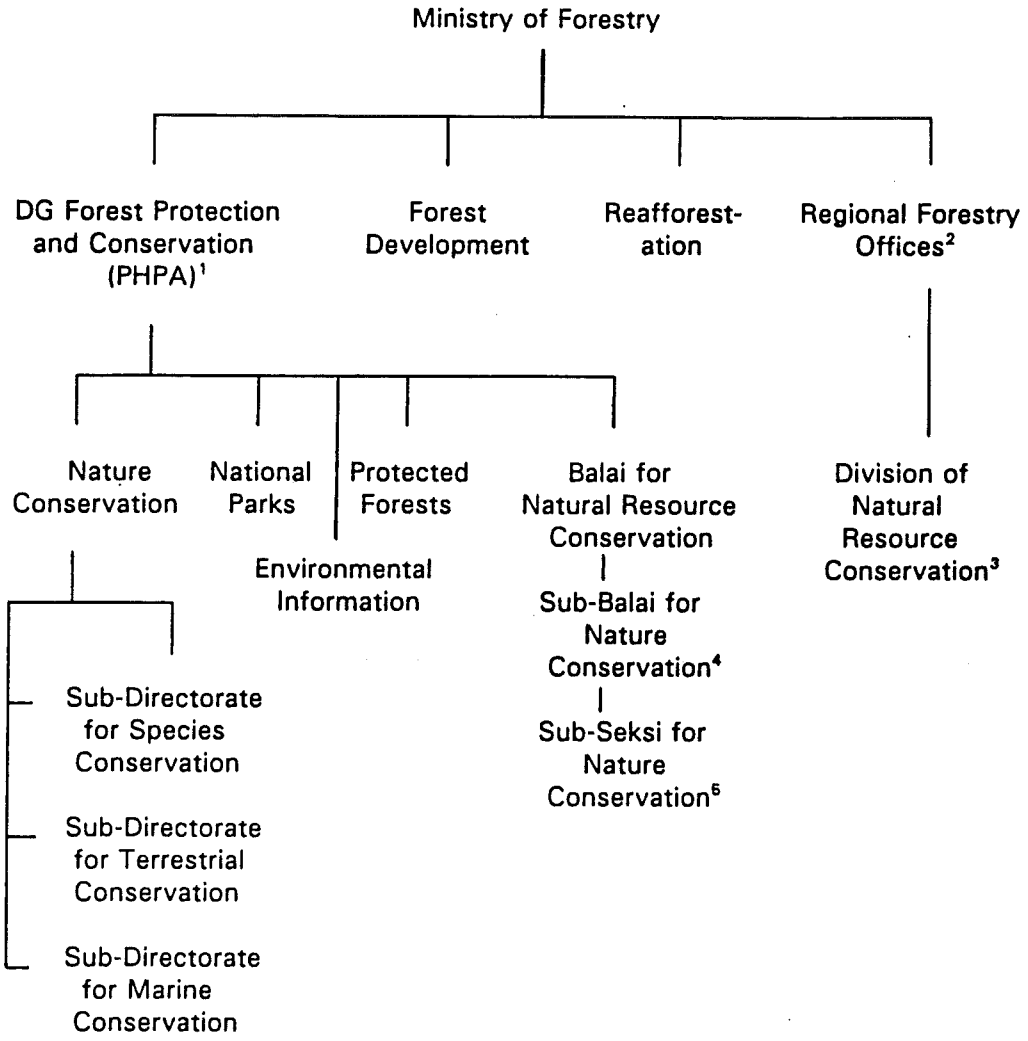
- The Director General of Forest Protection and Nature Conservation issued a decree (No. 5/Kpts/VI-Sek/1985) outlining the administrative procedures for obtaining a permit for capture, possession, keeping and transport (domestic and international) for protected species and non-protected wildlife. Prior to 1990, protected species were decreed under the authority of the 1931 Ordinance by either the Minister of Forestry or the Minister of Agriculture.

- A number of Decrees have been issued to establish 'protected' status for particular species or subspecies of psittacines (see **Quotas**; Table 1).

- Annual Decrees are issued to establish the year's

[25]Director of TRAFFIC Southeast Asia.

Figure 1. Organisation of the Ministry of Forestry as it relates to CITES responsibilities and conservation of wildlife.



[1]Only the Director General has authority to permit trade in species designated as 'protected' and exports of non-protected species.
[2]Head of office responsible for issuing capture permits.
[3]Responsible for provincial-level trade monitoring and supervision; preparing and processing capture permits.
[4]Have authority to issue domestic shipping permits for fauna and flora; also provide shipment inspection reports. May also issue permits to 'keep and care for' protected species.
[5]May also issue domestic shipping permits and provide shipping inspection reports. Also authorised to issue permits to 'keep and care for' protected species.

Source: PHPA.

quota for capture of wild birds. These Decrees set the total capture quota for each species and allocate 'sub-quotas' to particular provinces.

Nichols *et al.* (1991) describe in more detail the principal legislation in force in 1989 that affected wildlife trade. Callister (1989) reports that prosecutions with stiff fines and imprisonment for Paradisaeidae (bird of paradise) and Rhinocerotidae (rhino) poaching were imposed under Law 4/82 (= Forestry Law No. 4, adopted in 1982).

Allocation of Government Responsibility

Four Ministries have authority over conservation and/or use of wildlife: Ministry of Agriculture; Coordinating Ministry for Population and the Environment; Ministry of Finance and Tax; and Ministry of Forestry.

The Ministry of Agriculture is responsible for quarantine facilities and fisheries (both marine and freshwater), with the exception of international trade in CITES-listed species. The Coordinating Ministry for Population and the Environment is responsible for environmental issues in general and has had considerable influence in the past over the Government's adoption of more sensitive environmental policies. Another function of this Ministry is to coordinate actions between different Ministries on environmental issues. The Ministry of Finance and Tax includes the Customs Department, which is responsible for collecting export taxes on wildlife.

The Ministry of Forestry is relatively new. Previous to its creation six years ago, government functions related to forestry were handled within the Ministry of Agriculture. The Ministry has a Regional office, or Kantor Wilayah (= Kanwil), in each of Indonesia's 27 provinces. The head of each Provincial Office is appointed by, and reports directly to, the Minister of Forestry. Administrative relationships within the Ministry of Forestry are illustrated in the organisation chart provided in Figure 1.

Wildlife conservation is primarily the responsibility of PHPA, within the Ministry of Forestry. Only the Director General of PHPA has the legal authority to allow trade in species listed as 'protected' under Indonesian law and exports of non-protected species. PHPA serves as the CITES Management Authority.

Within PHPA, the Directorate of Nature Conservation (PA) and the Sub-Directorate for Species Conservation are responsible for controlling most trade in wildlife in Indonesia. The Director of the Sub-Directorate for Species Conservation reports to the Director of Nature Conservation who, in turn, reports to the Director General of PHPA.

PHPA is not considered as strong as the Directorate General for Forest Development and the Directorate General for Reafforestation, also within the Ministry of Forestry. However, on 17 August 1990, the anniversary of Indonesia's independence, the President's national address emphasised the importance of the environment in the country's development. This speech was published and excerpts were carried in newspapers throughout the country. Therefore, it served as an important policy statement that has influenced all government agencies and sectors of the population. Because of the passage of the 1990 Conservation Act and the President's speech, the environment has gained more attention in the last year, and the stature of PHPA and PA has risen accordingly.

PHPA has established eight regions in the country, each with a regional office or 'Balai' office. Balai are divided into 'Sub Balai', which may be further divided into 'Sub Seksi'. Sub Balai offices are located in each province. Heads of Balai, Sub Balai and Sub Seksi offices are appointed by the Director General of PHPA. Heads of Balai offices report to the Director of Nature Conservation.

The Ministry of Forestry and PHPA's Director General are located in Jakarta, while the Nature Conservation Directorate and Species Conservation Sub-Directorate are located in Bogor, about 40km from Jakarta. Thus, the Director of Nature Conservation is obliged to have an office and spend part of each week in both cities. Final processing and issuance of wildlife export permits is handled in an office in Jakarta.

The former Director of Nature Conservation, Ir. Effendy Sumardja, was recently transferred to head the Bali Regional Forest Office. Sumardja assumed his new post on 2 July 1991. He has been replaced by Ir. Abdul Bahri.

Within PHPA, the Directorate of National Parks, Directorate of Protected Forests and Directorate of Environmental Information also have responsibility with respect to wildlife conservation. Marine conservation is the responsibility of the Directorate of Nature Conservation.

The Indonesian Institute of Sciences Research, Development Centre for Biology (LIPI) is the designated Scientific Authority. LIPI staff, numbering about 200, are primarily engaged in various research projects determined by internal priorities. Their principal responsibility with respect to CITES has been to participate in the establishment of annual capture quotas. Staff have also undertaken field surveys for CITES-listed species.

Budget and Revenues

The Ministry of Forestry submits an annual budget based on an agreed five-year plan. This budget includes about Rp6 billion (US$3 million)[26] to cover the PHPA's basic operating expenses, including those of the Directorate for Nature Conservation central office, and the Balai, Sub Balai and Sub Seksi offices. Funds are allocated through the normal budgeting process.

All forest-related products are subject to an export tax, referred to as the IHH tax. This tax covers such items as lumber and other wood products, crocodile and other reptile skins and wild birds. The tax rate, which varies for different export products, is set on the basis of an assessment of the value of each commodity in trade. In the case of wild birds, specimens are taxed at the rate of 6% of their government-established declared value. The value established for each species is reviewed annually and is subject to agreement by the Ministry for Finance and Tax before it becomes official. The Ministry of Finance and Tax collects these taxes.

Total IHH tax income in 1989 was Rp6352 billion (US$3.2 billion), of which Rp4.8 billion (US$2.4 million) was derived from wildlife exports. Of this amount, Rp1.4 billion (US$721,000) was obtained from psittacine exports. Based on these figures, wildlife exports accounted for less than 0.1% of the total taxable exports of forest-related products.

IHH tax revenue is deposited in a Reafforestation Fund. Disbursements from this fund are under the authority of the Minister of Forestry. There is no direct connection between tax income generated by a particular Directorate General and allocations for special requests. Applications to this fund are submitted at the beginning of the year. The status of the fund is reviewed quarterly. In September/October additional allocations may be made if income has been greater than projected. It is normal for PHPA to apply to this fund for special allocations. In the past PHPA has used funds from the IHH to purchase vehicles and to provide a transportation supplement to staff in the Balai, Sub Balai and Sub Seksi offices. While PHPA has not yet done so, it would be possible to request funding for special projects such as field surveys or monitoring of wild populations.

There is no standard for levying taxes at the provincial level on birds that are captured. In the Regencies (= sub-divisions of provinces) of KSDA[27] Irian Jaya II, Rp50 (US$0.03) to Rp500 (US$0.25) is assessed on all psittacines captured, while in KSDA Irian Jaya I no levy is assessed (Nash, 1990). These funds stay in the regional office.

Other Sources of Conservation Support

There are four prominent Indonesian conservation NGOs:

- Wahana Lingkungan Hidup (WALHI): an 'umbrella' group involving a number of local groups.
- SKEPHI: an umbrella group including a number of local NGOs.
- Yayasan Indonesia Hijau (Green Indonesia Foundation): operates the environmental education centre at Trawas, East Java; may be active under a new name. Primary focus is education.
- Biological Science Club: based in Jakarta; has done some research and conservation.

.In addition, there are several hundred small NGOs that are active in local conservation issues. Many are local community development NGOs that promote an awareness of conservation.

There are four international conservation NGOs with offices in Indonesia:

- World Wide Fund for Nature: has a national office in Jakarta and project offices in Bogor (West Java) and Jayapura (Irian Jaya).
- Asian Wetland Bureau: located in Bogor.
- Conservation International: has just started working in Indonesia; projects in Kalimanton and Irian Jaya.
- The Nature Conservancy: has just started working in Indonesia; activities are not known.

TRAFFIC intends to open a national office in Indonesia in 1992. This office will be coordinated through TRAFFIC Southeast Asia, which was established in Kuala Lampur, Malaysia, in October 1991.

The Director General of PHPA reported that there is considerable need to provide Indonesia, particularly PHPA, with technical assistance in regards to establishing wild population monitoring systems. He also noted that it would be helpful to Indonesia if technical advice and assistance were provided for the development of the captive breeding and possibly ranching of psittacines.

CONSERVATION AND TRADE CONTROLS

Land Ownership and Habitat Status

There are 192 million hectares of land in Indonesia, spread over 13,000 islands. Of the total land area, 143 million hectares are forested, and 23 million hectares have been designated as 'critical lands'. Forest

[26]Exchange rate: 1985 Rupiah for US$1 (06/91).

[27]Konservasi Sumber Daya Alam (KSDA) refers to a Division of Natural Resource Conservation.

lands are divided into four categories. A total of 30.3 million hectares have been declared as 'Protected Forests', 18.7 million hectares as 'Conservation Forests', 64 million hectares as 'Production Forests' and 30 million hectares as 'Conversion Forests' (i.e., for agricultural production). Only 7.5 million hectares of forest have been converted under this latter category thus far.

The Government has developed an Indonesia Forestry Master Plan, based on principles of sustainable use as articulated in the World Conservation Strategy (1980). Under this Plan, the Ministry of Forestry has adopted a goal of using only sustainably-produced wood and non-wood forestry products by the year 2000. To this end the Government intends to have 6.2 million hectares in forest plantations by this time. This is to be accomplished by converting some 15 million hectares of 'bare land' to plantation forests. Natural forests will not be converted to plantations. As of 1991 1.8 million hectares had been established as plantations. IUCN was invited by the Secretary General of PHPA to advise the Government on how sustainable use of wildlife could be integrated into the Forestry Master Plan.

There is considerable outside economic assistance being made available to Indonesia for implementing various aspects of the Forestry Master Plan. The World Bank, Asian Development Bank and major bilateral development assistance agencies are lending, or granting outright, millions of dollars for field actions.

A total of 24 National Parks have been gazetted in Indonesia. Under the 1990 Conservation Act, all existing and proposed National Parks and Protected Areas will be reviewed. Establishment of a National Park or Protected Area is accomplished by Ministerial Decree, in the same manner that certain species are declared 'protected' or harvest quotas are established for each year.

While land can be owned privately, the Government has preeminent rights over all land in the country. Under the Agrarian Law, indigenous people that have occupied land for a long period (e.g. several generations) have rights to that land. In contradiction to this principle, the Ministry of Forestry (under the 1967 Forestry Law) does not recognise private ownership other than that assigned under forestry concessions.

Assessment of Wild Populations and Effects of Trade

The Government has not undertaken any field surveys of species in trade. Wild psittacine populations are severely over-exploited according to some specialists that have communicated their concerns to IUCN.

Quotas

Quotas are established for the capture of wild birds, not for their export. Quotas are established for each species, with specific allotments assigned to individual provinces. The total capture quotas for each species for 1987 to 1991, based on records from PHPA, are provided in Table 1.

According to the Management Authority, capture quotas are based on an evaluation of prior capture records. The average capture rate for the prior three years is calculated for each species. On this basis an 'effective capture effort per unit' is determined. The trend in the effective capture effort is assessed across the three years. Trends in the market value of each species, which is maintained for 93 species in trade, are also assessed. If the capture rate is down and the market value is stable or decreasing each year, then the capture quota is reduced from the prior year. If the capture rate is increasing and the market value is increasing or stable, the capture quota is increased.

In a number of cases, the export volume appears to be dictating the harvest quota [e.g. *Trichoglossus haematodus* (Rainbow Lory); *Psittacula alexandri* (Moustached Parakeet); and *Eos squamata* (Violet-necked Lory). Nash (1990) notes that quotas that are fulfilled one year are likely to be raised the following year. The issuance of revised (increased) capture quotas mid-way through 1989 and 1990 also seems to reflect the tendency of quotas to follow trade.

According to LIPI, PHPA convenes a meeting in late November or December to propose annual capture quotas. The meeting is attended by representatives of the University of Indonesia, Bandung Technical Institute, Bogor Agricultural Institute and the Research and Development Branch of the Ministry of Forestry. LIPI (the CITES Scientific Authority) is usually represented at this meeting by ecologists, mammalogists, ornithologists, herpetologists, entomologists and an ichthyologist (who is also the head of the Scientific Authority). PHPA may circulate proposed capture quotas before the meeting.

During the meeting the quota for each species is reviewed. Participants can propose different quotas. Recommendations from LIPI representatives carry no special influence over the decision-making process. Following the meeting, PHPA prepares draft capture quotas and submits a copy to LIPI for comment. Following this comment period, PHPA prepares the annual decree and the capture quotas become final. As noted above, revised capture quotas were issued several months after annual quotas were established by decree in both 1989 and 1990.

No quotas are provided for species that have been

Table 1. Indonesia capture quotas for psittacine species (1987-1991).

SPECIES	1987	1988	1989	1990	1991
Cacatua goffini	7,000	7,000	8,400	6,000	5,000
Trichoglossus haematodus haematodus	4,000	5,000	5,000	7,500	6,000
Cacatua alba	5,600	5,600	4,250	6,750	4,500
Eos bornea	5,000	5,000	5,750	5,300	5,000
Cacatua sulphurea sulphurea	3,325	3,500	7,625	4,930	5,000
Psittacula alexandri	2,500	3,000	3,500	5,300	5,000
Lorius garrulus	2,600	2,600	5,125	5,900	5,900
Cacatua moluccensis	5,000	5,000	3,000	0	0
Pseudeos fuscata	1,000	1,500	1,500	1,500	1,750
Tanygnathus megalorhynchos	450	1,000	1,000	1,575	2,000
Aprosmictus erythropterus papou	700	1,500	1,500	1,230	1,000
Charmosyna papou goliathina	500	1,000	1,000	1,500	1,500
Eos reticulata	1,000	1,000	1,500	2,000	0
Alisterus amboinensis	350	1,000	1,500	1,100	1,500
Geoffroyus geoffroyi	1,000	1,000	2,500	500	200
Eos squamata squamata	0	0	1,100	2,000	2,000
Psittaculirostris d. desmarestii	500	1,000	1,000	1,100	1,500
Trichoglossus haematodus mitchellii	0	0	0	3,000	2,000
Trichoglossus goldiei	500	1,500	1,000	1,000	1,000
Trichoglossus haematodus forsteni	1,000	1,000	1,000	1,000	1,000
Charmosyna placentis	500	1,000	1,000	1,500	1,000
Neopsittacus musschenbroekii	700	1,500	750	975	1,000
Trichoglossus euteles	60	500	700	2,000	1,500
Eos cyanogenia	500	500	1,500	1,100	1,000
Psittaculirostris desmarestii cervicalis	500	2,000	1,000	600	500
Psittaculirostris edwardsii	500	1,000	1,000	1,000	1,000
Charmosyna josefinae	1,000	1,000	500	825	750
Eos squamata riciniata	800	800	0	2,400	0
Alisterus chloropterus moszkowskii	350	1,000	1,000	780	750
Alisterus chloropterus chloropterus	350	1,000	1,000	700	700
Chalcopsitta sintillata	200	500	1,000	1,000	1,000
Chalcopsitta atra	200	1,000	575	900	1,000
Cacatua sulphurea citrinocristata	600	1,500	0	1,500	0
Cacatua sanguinea	500	2,000	0	600	500
Trichoglossus flavoviridis meyeri	300	1,000	975	600	600
Loriculus galgulus	300	300	900	1,000	750
Psittaculirostris salvadorii	500	500	1,000	600	600
Charmosyna pulchella	150	500	1,000	1,000	500
Psittacula longicauda	0	0	0	2,000	1,000
Chalcopsitta duivenbodei	300	1,000	350	550	750
Loriculus stigmatus	50	500	500	750	750
Loriculus flosculus	400	400	400	700	500
Eos histrio	0	0	0	1,000	1,000
Prioniturus platurus	20	500	550	360	360
Aprosmictus jonquillaceus	75	500	0	500	500
Cacatua pastinator	0	0	1,000	0	500
Trichoglossus iris iris	50	500	200	300	300
Cacatua galerita	0	0	0	0	0
TOTAL	50,930	69,200	74,150	84,425	70,660

Source: PHPA.

declared 'protected' under Decrees issued by the Minister of Forestry. Species for which quotas are not assigned can be captured and exported with permission from the Management Authority, however. Table 2 (from Inskipp, 1986) lists protected psittacine species. Of these species *Cacatua galerita* (Sulphur-crested Cockatoo) was still being exported from Indonesia in 1989 (1820 specimens). Export permits were issued in conjunction with crop damage mitigation (Callister, *in litt.*, 1991). There was significant documented world trade in *Eclectus roratus* (Eclectus Parrot) up until 1989; however, declared exports from Indonesia were only one to six birds per year between 1984 and 1989.

Permits

Three different permits are issued in relation to wild bird harvests and export: 'Capture Permits', 'Domestic Transport Permits' and 'Export Permits'.

Capture permits are issued by the Conservation Division of the Regional Forestry Offices. Traders (generally middlemen) are required to itemise the number of specimens of each species that they wish to capture. A copy of each capture permit is provided to the appropriate PHPA Balai office.

Domestic shipping permits are required to ship birds between provinces. These are acquired from the appropriate PHPA Bali, Sub Balai or Sub Seksi office. According to government personnel, they are not issued until the birds to be shipped have been inspected by a PHPA officer, and the number to be shipped has been verified to be within the number of birds allotted to the trader requesting the permit. No records are compiled on shipping permits. Nash (1990) notes that such verifications are not made for birds shipped from Irian Jaya, however.

Export permits are issued by the Directorate General of PHPA. They are granted on the basis of the export company's reputation with the Government and its past history.

Licences

Exporters are not required to have a licence, *per se*. Exporters must be registered with PHPA, however, and meet a number of requirements in this regard. All exporters must have a holding facility, which is subject to monthly inspection by PHPA officials. These facilities are also inspected by officials from the Ministry of Agriculture. Stock books and records of transactions, which are subject to inspection by PHPA officials, are required to be maintained for holding facilities. Exporters that wish to export birds to the United States must also have a quarantine facility. These are subject to inspection by representatives of the Ministry of Agriculture. Exporters are additionally required to submit an annual workplan. Finally, exporters have been encouraged to develop a captive breeding facility either in their own right or in collaboration with other exporters.

There are 105 wildlife exporters registered with PHPA, of which 15 are registered for the export of birds.

COMMERCIAL ACTIVITIES

Trapping and Trade

Traders interested in arranging for the capture of birds are required to obtain a capture permit (see **Permits**). Traders usually request permission to capture a number of birds sufficient to keep themselves and their 'agents' (see below) active for three to six months. Traders in Irian Jaya apply for such permits from one to three times per year. In 1990, there were 14 active traders in Irian Jaya who were associated with one or more exporters (Nash, 1991).

Once they have obtained the necessary capture permits, traders retain one or more agents who go to villages to arrange for the capture of the permitted number of birds. The number of villages involved in the capture process will vary between areas and depend on the species to be collected. In general, the fewer the villages involved the better from a trader's perspective, as their intent is to minimise their costs in acquiring birds and transporting them to their facilities.

After birds are purchased from villagers they are transported to the traders' facilities. Traders accumulate birds until they have a quantity sufficient to justify shipping to exporters in Jakarta. Traders must obtain a shipping permit from the appropriate Sub Balai or Sub Seksi office before actually transporting the birds out of the province in which they were trapped.

Exporters accumulate birds from the traders in holding facilities located in Jakarta. According to the exporters, psittacines account for 80% of all birds exported. Birds destined for export to the United States must be held in a quarantine facility, where a veterinarian inspects them for exotic Newcastle disease and issues a health certificate prior to export. According to bird traders interviewed, exporters employ or retain their own veterinarians who inspect the birds and vaccinate them as needed. Birds are given antibiotics and vitamins in their feed and/or water.

Exporters are required to obtain export permits from PHPA prior to actually exporting birds.

Wildlife Exporters Association

There are two traders' associations that involve wild bird exporters: the Indonesian Flora and Fauna Traders Association, which is an umbrella group for all types of wildlife traders, and the Indonesian Bird and Birdnest

Table 2. Indonesian psittacine species protected by decree.

SPECIES	COMMON NAME	DECREE NUMBER
Cacatua galerita	Sulphur-crested Cockatoo	742/12/1978
Eclectus roratus	Eclectus Parrot	327/7/1972
Loriculus exilis	Green Hanging Parrot	757/12/1979
Lorius domicellus	Purple-naped Lory	327/7/1972
Lorius lory	Black-capped Lory	742/12/1978
Probosciger aterrimus	Palm Cockatoo	421/8/1970
Psittrichas fulgidus	Pesquet's Parrot	742/12/1978
Tanygnathus sumatranus	Blue-backed Parrot	757/12/1979
Trichoglossus ornatus	Ornate Lorikeet	757/12/1979

Source: Inskipp, 1986.

Traders Association (IBBTA).

IBBTA was formed in 1990 and has 14 members. There are no membership requirements. IBBTA is trying to develop a fund to finance field surveys by obtaining donations from its members based on the number of birds they export. Mr Frankie G. Sulaiman, president of IBBTA, expressed interest in supporting follow-up monitoring programmes, and in working with the international conservation community to develop programmes that will secure the long-term sustainable use of the wild bird resource.

Exporters have worked very closely with PHPA personnel. Some conservationists believe that the exporters have had undue influence over PHPA, particularly in regards to the setting of capture quotas. It has been reported that some regional PHPA personnel base their quota recommendations on information provided by traders (Callister, *in litt.*, 1991).

Exporters were aware of the movement to stop importation of wild-collected birds into the United States and the EC. In response to Garuda Indonesia Airline's decision to stop carrying live birds (prompted by a letter from a US NGO), exporters and PHPA officials met with airline officials and presented their position. Garuda officials subsequently reversed their decision and resumed carrying live birds.

Export Volumes

Of the 57 species and sub-species reported as exported from Indonesia from 1983 to 1990, 28 account for 95% of the total specimens in trade. Eighty per cent of all exports reported for this period are comprised of just 11 species/subspecies; 20 species/subspecies account for 90% of birds exported. The majority of exports go to the United States and the European Community. Exporters note that trade with Japan, Hong Kong and Taiwan is increasing, particularly in lories and lorikeets with red plumage, such as *Eos bornea* (Red Lory).

Comparison of Indonesian exports and annual capture quotas for 1988 to 1990 are provided in Table 3. In 1988 total exports exceeded the total established capture quota by 3%. In 1989 exports accounted for 98% of the total capture quota; in 1990 exports accounted for only 75% of the total capture quota.

Trade data illustrate a general trend of decreasing exports for those species traded in the largest volumes (Figures 2 to 5). In contrast, export volumes increased for several species, including a number of lory species (e.g. *Trichoglossus* spp., *Chalcopsitta* spp., *Charmosyna* spp.) and several parrots [e.g. *Alisterus chloropterus* (Green-winged King Parrot; *Psittaculirostris desmarestii* (Desmarest's Fig Parrot)].

In 1988, reported exports significantly exceeded the capture quota for 15 species/subspecies, with export volumes equal to from 112% to 312% of established quotas. Exports exceeded quotas for twelve species/subspecies in 1989 (exports 108% to 192% of quotas) and for four species/subspecies in 1990 (exports 106% to 127% of quotas). Since 1989, recorded exports appear to be closer overall to established harvest quotas.

Documented exports of psittacine species for the period 1983 to 1990 are provided in Table 4. A total of 538,590 psittacines were recorded as exported from Indonesia during this period. Species and trade volumes are listed in Table 4 according to the total recorded exports from 1983 to 1990. An additional seventeen species/subspecies, whose ranges include other countries as well as Indonesia, have been documented in world trade in CITES Annual Report import data, but not recorded as exports from Indonesia.

Benefits

It is very hard to quantify the level of benefit realised in Indonesia from the wild bird trade.

PHPA personnel report that income from the tax assessed on exports is important, but it does not contribute a significant amount to their annual operating budget. PHPA has received some funding for special projects and/or activities from the export tax on forest products, through the Reafforestation Fund. As noted above PHPA applies to this fund each year for supplemental funding. Provinces may also realise some revenues through taxes placed on captured birds.

PHPA personnel in Jakarta indicated their desire to have an assessment levied on all wild birds that are captured. They also reported that a large number of rural people are at least partially dependent on income from capturing wild birds.

Mr H. Mohamad Hardi, generally recognised as the largest exporter, reported that he employed 32 people at his three holding, captive breeding and quarantine facilities. He has agreements with eighteen to twenty 'suppliers' (=traders) in the Provinces. Each trader may work with another tier of suppliers (=agents) or directly with an unknown number of villagers who actually capture the birds. Overall, Mr Hardi estimated a total of 2000 people are involved in his business. These include individuals working at his facilities in Jakarta, traders, agents, trappers and those individuals from who he buys feed, cages and various other supplies and services. Assuming that the average family size in Indonesia is five, the total number of people affected through Mr Hardi's operation alone would be on the order of 8000 to 10,000 individuals, according to his figures.

Mr Hardi cited two examples of prices paid at various

Table 3. Comparison of Indonesia psittacine capture quotas and reported exports (1988-1990).

SPECIES	1988				1989				1990			
	QUOTA	EXPORTS	DIFF.	% QUOTA	QUOTA	EXPORTS	DIFF.	% QUOTA	QUOTA	EXPORTS	DIFF.	% QUOTA
Alisterus amboinensis	1,000	1,009	(9)	100.9	1,500	1,505	(5)	100.3	1,100	1,229	(129)	111.7
Alisterus chloropterus chloropterus	1,000	317	683	31.7	1,000	492	508	49.2	700	396	304	56.6
Alisterus chloropterus moszkowskii	1,000	133	867	13.3	1,000	133	867	13.3	780	212	568	27.2
Aprosmictus erythropterus papou	1,500	1,310	190	87.3	1,500	626	874	41.7	1,230	885	345	72.0
Aprosmictus jonquillaceus	500	205	295	41.0	0	120	(120)	—	500	0	500	0.0
Cacatua alba	5,600	6,477	(877)	115.7	4,250	4,922	(672)	115.8	6,750	6,479	271	96.0
Cacatua galerita	0	4,430	(4,430)	—	0	1,155	(1,155)	—	0	0	0	—
Cacatua goffini	7,000	8,840	(1,840)	126.3	8,400	7,241	1,159	86.2	6,000	5,941	59	99.0
Cacatua moluccensis	5,000	6,817	(1,817)	136.3	3,000	4,940	(1,940)	164.7	0	4,614	(4,614)	—
Cacatua pastinator	0	0	0	—	1,000	0	1,000	0.0	0		0	—
Cacatua sanguinea	2,000	423	1,577	21.2	0	666	(666)	—	600	406	194	67.7
Cacatua sulphurea citrinocristata	1,500	2,316	(816)	154.4	0	2,945	(2,945)	—	1,500	1,470	30	98.0
Cacatua sulphurea sulphurea	3,500	5,462	(1,962)	156.1	7,625	6,480	1,145	85.0	4,930	1,470	3,460	29.8
Chalcopsitta atra	1,000	1,123	(123)	112.3	575	1,105	(530)	192.2	900	719	181	79.9
Chalcopsitta duivenbodei	1,000	510	490	51.0	350	448	(98)	128.0	550	519	31	94.4
Chalcopsitta sintillata	500	567	(67)	113.4	1,000	665	335	66.5	1,000	882	118	88.2
Charmosyna josefinae	1,000	60	940	6.0	500	35	465	7.0	825	366	459	44.4
Charmosyna papou goliathina	1,000	831	169	83.1	1,000	1,361	(361)	136.1	1,500	1,033	467	68.9
Charmosyna placentis	1,000	1,443	(443)	144.3	1,000	1,303	(303)	130.3	1,500	864	636	57.6
Charmosyna pulchella	500	1,563	(1,063)	312.6	1,000	755	245	75.5	1,000	412	588	41.2
Charmosyna multistriata	0	40	(40)	—	0	584	(584)	—	0	426	(426)	—
Charmosyna rubronotata	0	1,045	(1,045)	—	0	320	(320)	—	0	366	(366)	—
Eos bornea	5,000	4,477	523	89.5	5,750	7,327	(1,577)	127.4	5,300	5,092	208	96.1
Eos cyanogenia	500	632	(132)	126.4	1,500	1,370	130	91.3	1,100	1,370	(270)	124.5
Eos histrio	0	0	0	—	0	0	0	—	1,000	0	1,000	0.0
Eos reticulata	1,000	1,736	(736)	173.6	1,500	1,664	(164)	110.9	2,000	1,543	457	77.2
Eos squamata riciniata	800	1,535	(735)	191.9	0	1,254	(1,254)	—	2,400	2,146	254	89.4
Eos squamata squamata	0	0	0	—	1,100	0	1,100	0.0	2,000	0	2,000	0.0
Geoffroyus geoffroyi	1,000	0	1,000	0.0	2,500	2	2,498	0.1	500	192	308	38.4
Loriculus flosculus	400	0	400	0.0	400	0	400	0.0	700	0	700	0.0
Loriculus galgulus	300	631	(331)	210.3	900	0	900	0.0	1,000	703	297	70.3
Loriculus pusillus	0	15	(15)	—	0	322	(322)	—	0	188	(188)	—
Loriculus stigmatus	500	225	275	45.0	500	204	296	40.8	750	305	445	40.7
Lorius garrulus	2,600	3,830	(1,230)	147.3	5,125	3,738	1,387	72.9	5,900	4,727	1,173	80.1
Neopsittacus musschenbroekii	1,500	123	1,377	8.2	750	666	84	88.8	975	406	569	41.6
Neopsittacus pullicauda	0	0	0	—	0	0	0	—	0	240	(240)	—
Opopsitta diophthalma	0	855	(855)	—	0	247	(247)	—	0	0	0	—

Table 3. continued

SPECIES	1988				1989				1990			
	QUOTA	EXPORTS	DIFF.	% QUOTA	QUOTA	EXPORTS	DIFF.	% QUOTA	QUOTA	EXPORTS	DIFF.	% QUOTA
Opopsitta gulielmitertii	0	143	(143)	—	0	0	0	—	0	0	0	—
Oreopsittacus arfaki	0	0	0	—	0	0	0	—	0	0	0	—
Prioniturus flavicans	0	0	0	—	0	0	0	—	0	0	0	—
Prioniturus platurus	500	0	500	0.0	550	450	100	81.8	360	145	215	40.3
Pseudeos fuscata	1,500	1,741	(241)	116.1	1,500	1,517	(17)	101.1	1,500	1,595	(95)	106.3
Psittacula alexandri	3,000	2,662	338	88.7	3,500	3,931	(431)	112.3	5,300	4,172	1,128	78.7
Psittacula longicauda	0	0	0	—	0	0	0	—	2,000	30	1,970	1.5
Psittaculirostris d. desmarestii	1,000	123	877	12.3	1,000	666	334	66.6	1,100	406	694	36.9
Psittaculirostris desmarestii cervicalis	2,000	1,063	937	53.2	1,000	1,192	(192)	119.2	600	651	(51)	108.5
Psittaculirostris edwardsii	1,000	490	510	49.0	1,000	751	249	75.1	1,000	396	604	39.6
Psittaculirostris salvadorii	500	443	57	88.6	1,000	850	150	85.0	600	412	188	68.7
Psittinus cyanurus	0	0	0	—	0	15	(15)	—	0	0	0	—
Tanygnathus heterurus	0	0	0	—	0	0	0	—	0	150	(150)	—
Tanygnathus megalorhynchos	1,000	791	209	79.1	1,000	1,114	(114)	111.4	1,575	1,258	317	79.9
Trichoglossus euteles	500	40	460	8.0	700	250	450	35.7	2,000	194	1,806	9.7
Trichoglossus flavoviridis meyeri	1,000	398	602	39.8	975	573	402	58.8	600	760	(160)	126.7
Trichoglossus goldiei	1,500	365	1,135	24.3	1,000	788	212	78.8	1,000	506	494	50.6
Trichoglossus haematodus captistratus	0	0	0	—	0	320	(320)	—	0	0	0	—
Trichoglossus haematodus forsteni	1,000	125	875	12.5	1,000	280	720	28.0	1,000	935	65	93.5
Trichoglossus haematodus haematodus	5,000	3,709	1,291	74.2	5,000	5,439	(439)	108.8	7,500	6,033	1,467	80.4
Trichoglossus haematodus mitchellii	0	0	0	—	0	0	0	—	3,000	130	2,870	4.3
Trichoglossus iris iris	500	185	315	37.0	200	40	160	20.0	300	300	0	100.0
TOTAL	69,200	71,258	(2,058)	103.0	74,150	72,771	1,379	98.1	84,425	63,674	20,751	75.4

Source: PHPA.

Table 4. Reported exports of live psittacines from Indonesia (1983-1990).

SPECIES	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	AVG.	%	CUM. %
Cacatua goffini	14,188	10,796	7,678	10,039	8,356	8,840	7,241	5,941	73,079	9,135	13.6	13.6
Cacatua alba	13,214	11,987	7,144	9,931	10,434	6,477	4,922	6,479	70,588	8,824	13.1	26.7
Cacatua moluccensis	9,604	9,542	8,632	9,173	9,287	6,817	4,940	4,614	62,609	7,826	11.6	38.3
Eos bornea	5,947	11,793	5,116	5,833	5,453	4,477	7,327	5,092	51,038	6,380	9.5	47.8
Cacatua sulphurea sulphurea	6,212	7,680	5,199	6,244	5,127	5,462	6,480	1,470	43,874	5,484	8.1	56.0
Trichoglossus haematodus haematodus	7,496	6,861	3,430	4,353	4,689	3,709	5,439	6,033	42,010	5,251	7.8	63.8
Lorius garrulus	7,836	4,791	2,739	3,158	3,943	3,830	3,738	4,727	34,762	4,345	6.5	70.2
Eos reticulata	7,697	4,630	1,397	1,450	1,374	1,736	1,664	1,543	21,491	2,686	4.0	74.2
Psittacula alexandri	424	1,403	452	1,133	2,033	2,662	3,931	4,172	16,210	2,026	3.0	77.2
Cacatua sulphurea citrinocristata	0	0	0	0	2,259	2,316	2,945	1,470	8,990	1,124	1.7	78.9
Eos squamata	794	726	665	925	934	1,535	1,254	2,146	8,979	1,122	1.7	80.5
Pseudeos fuscata	32	575	410	554	915	1,741	1,517	1,595	7,339	917	1.4	81.9
Cacatua galerita	138	126	143	6	1,301	4,430	1,155	0	7,299	912	1.4	83.3
Alisterus amboinensis	260	1,822	442	392	598	1,009	1,505	1,229	7,257	907	1.3	84.6
Tanygnathus megalorhynchos	419	562	339	509	431	791	1,114	1,258	5,423	678	1.0	85.6
Aprosmictus erythropterus	393	574	592	451	484	1,310	626	885	5,315	664	1.0	86.6
Psittaculirostris desmarestii desmarestii	367	423	135	390	582	1,063	1,192	651	4,803	600	0.9	87.5
Charmosyna placentis	10	340	70	172	591	1,443	1,303	864	4,793	599	0.9	88.4
Charmosyna papou goliathina	100	193	75	200	976	831	1,361	1,033	4,769	596	0.9	89.3
Chalcopsitta atra	714	348	91	191	405	1,123	1,105	719	4,696	587	0.9	90.1
Trichoglossus goldiei	0	1,153	243	328	552	365	788	506	3,935	492	0.7	90.9
Charmosyna pulchella	66	346	90	183	390	1,563	755	412	3,805	476	0.7	91.6
Psittaculirostris edwardsii	186	493	217	262	631	490	751	396	3,426	428	0.6	92.2
Eos cyanogenia	0	0	0	0	10	632	1,370	1,370	3,382	423	0.6	92.8
Trichoglossus flavoviridis	239	515	231	291	171	398	573	760	3,178	397	0.6	93.4
Chalcopsitta sintillata	0	337	99	170	308	567	665	882	3,028	379	0.6	94.0
Chalcopsitta duivenbodei	36	186	178	267	331	510	448	519	2,475	309	0.5	94.5
Loriculus galgulus	195	1	80	210	594	631	0	703	2,414	302	0.4	94.9
Cacatua sanguinea	5	196	411	90	195	423	666	406	2,392	299	0.4	95.3
Neopsittacus musschenbroekii	54	0	0	712	195	123	666	406	2,156	270	0.4	95.7
Alisterus chloropterus chloropterus	0	267	308	87	139	317	492	396	2,006	251	0.4	96.1
Charmosyna rubronotata	0	15	0	0	220	1,045	320	366	1,966	246	0.4	96.5
Psittaculirostris salvadorii	0	0	70	129	33	443	850	412	1,937	242	0.4	96.8
Trichoglossus euteles	53	327	61	60	713	40	250	194	1,698	212	0.3	97.2
Charmosyna josefinae	4	0	0	697	338	60	35	366	1,500	188	0.3	97.4
Trichoglossus haematodus forsteni	0	0	0	0	131	125	280	935	1,471	184	0.3	97.7
Trichoglossus iris iris	685	124	11	0	51	185	40	300	1,396	175	0.3	98.0
Psittaculirostris desmarestii cervicalis	0	0	0	0	195	123	666	406	1,390	174	0.3	98.2

Table 4. continued

SPECIES	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	AVG.	%	CUM. %
Opopsitta diophthalma	0	0	24	126	85	855	247	0	1,337	167	0.2	98.5
Loriculus stigmatus	75	70	40	65	265	225	204	305	1,249	156	0.2	98.7
Aprosmictus jonquillaceus	45	454	149	80	160	205	120	0	1,213	152	0.2	98.9
Charmosyna multistriata	0	0	0	0	20	40	584	426	1,070	134	0.2	99.1
Loriculus pusillus	445	0	0	40	20	15	322	188	1,030	129	0.2	99.3
Prioniturus platurus	46	16	5	40	66	0	450	145	768	96	0.1	99.5
Alisterus chloropterus moszkowskii	0	0	0	0	54	133	133	212	532	67	0.1	99.6
Trichoglossus haematodus captistratus	0	0	0	0	201	0	320	0	521	65	0.1	99.7
Psittacula longicauda	0	286	110	0	0	0	0	30	426	53	0.1	99.7
Tanygnathus heterurus	145	76	40	0	0	0	0	150	411	51	0.1	99.8
Neopsittacus pullicauda	3	0	0	0	0	0	0	240	243	30	0.0	99.9
Geoffroyus geoffroyi	0	0	0	0	26	0	2	192	220	28	0.0	99.9
Opopsitta gulielmitertii	0	0	5	46	20	143	0	0	214	27	0.0	99.9
Eclectus roratus	132	9	16	0	11	0	0	0	168	21	0.0	100.0
Loriculus flosculus	70	70	0	0	0	0	0	0	140	18	0.0	100.0
Trichoglossus haematodus mitchellii	0	0	0	0	0	0	0	130	130	16	0.0	100.0
Prioniturus flavicans	0	15	6	0	0	0	0	0	21	3	0.0	100.0
Psittinus cyanurus	0	0	0	0	2	0	15	0	17	2	0.0	100.0
Oreopsittacus arfaki	1	0	0	0	0	0	0	0	1	0	0.0	100.0
											0.0	
TOTAL	78,330	80,128	47,143	58,987	66,299	71,258	72,771	63,674	538,590	67,324	100.0	

Sources: CITES Annual Report Data (1983-1986); Indonesia CITES Management Authority (1987-1990).

stages of the trade in Indonesia:

- *Eos bornea* -- Villagers are paid Rp5000 (US$2.52) per bird by agents who sell the birds to traders for Rp7500 (US$3.78) each. Traders are paid Rp12,500 (US$6.30) per bird by Mr Hardi in Jakarta.
- *Cacatua galerita* -- Villagers are paid Rp50,000 (US$25.19) per bird by agents who sell the birds to traders for Rp90,000 (US$45.34) each. Traders are paid Rp140,000 (US$70.53) per bird by Mr Hardi in Jakarta.

Additional information regarding the economics of the bird trade in Indonesia may be found in Mulliken *et al.* and Swanson (this volume).

Domestic Market

In principle, birds collected for local trade require a capture permit; if shipped between provinces they would require a shipping permit. Capture permits do not discriminate between national and international trade. No records were available on domestic trade.

It was reported that because of the relatively high value placed on live birds, those in captivity are generally destined for export. Nash (1990) notes that in Irian Jaya local trade for house pets amounts to no more than 5% of the total trade in psittacines. Almost all of the birds in domestic trade are 'protected' species: *Cacatua galerita*, *Eclectus roratus*, *Lorius lory* (Black-capped Lory), *Probosciger aterrimus* (Palm Cockatoo) and *Psittrichas fulgidus* (Pesquet's Parrot). It is common to see these species for sale in town markets.

Captive Breeding

Establishment of captive breeding facilities is a priority of PHPA. It was reported that exporters are being encouraged to develop captive breeding facilities or collaborate with other exporters in the development of such facilities. This is a recent requirement.

Exporters believe that they can be successful in captive breeding; however they believe that it will be more cost-effective to develop such facilities in the United States and other import markets. This argument is based on the cost of supplies, feed, etc. Apparently exporters are not taking into account personnel costs, which would normally be a large part of any such programme and would be considerably less in Indonesia than in the United States or Europe.

FUTURE OF TRADE

Sustainability

PHPA recognises that there is need to provide better management of wildlife resources subject to trade. That said, PHPA personnel point to a number of steps they have taken in the past few years designed to ensure the long-term sustainability of wildlife resource utilisation: more rigorous procedures for establishing harvest quotas; annual review of export with capture quotas; establishment of a shipping permit requirement; establishment of additional requirements for exporter registration, etc. PHPA believes that with more rigorous controls in place the harvest of wild birds can be sustainable.

Consequences of Trade Bans

If imports of wild-caught birds were banned in consumer countries, the value of species in trade in Indonesia would undoubtedly decrease. There is concern that as a result PHPA would lose an important argument in influencing provincial authorities to conserve habitat. Furthermore, PHPA would lose control over the trade because such bans would encourage illegal trade. Finally, PHPA has adopted a policy of encouraging the 'sustainable use of wildlife' as a means of conserving habitat and it is felt that the Agency, and particularly PA, would lose credibility in the Government in general if trade were banned. PHPA expressed concern that individuals in importing countries that had captive breeding stock would benefit inordinately from such a ban at the expense of the species' range states.

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INDIVIDUALS INTERVIEWED

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Ronald Petocz, Consultant, World Wide Fund for Nature Indonesia Programme

Dewi M. Prawiradilaga, Indonesian Institute of Sciences

Widodo S. Ramono, Head of the Sub-Directorate of Nature Conservation, Directorate General of Forest Protection and Nature Conservation, Ministry of Forestry

M. Ari Sudarsono, Secretary, Directorate General of Forest Protection and Nature Conservation, Ministry of Forestry

Frankie G. Sulaiman, Chairman, Indonesia Bird and Birdnest Traders Association

Effendy A. Sumardja, previously Director of Nature Conservation, Directorate General of Forest Protection and Nature Conservation, Ministry of Forestry, Gedung Pusat Kehutanan; currently Head of the Bali Regional Forest Office, Ministry of Forestry

Sutisna Wartaputra, Director General of Forest Protection and Nature Conservation, Ministry of Forestry

Suwita Widjaya, wildlife exporter

Soetikno Wirjuatmodjo, Director, Indonesia Institute of Sciences

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Mr Romano Widodo of the CITES Management Authority provided data and helped arrange meetings with Sutisna Wartaputra, Director General of PHPA. The WWF Indonesia Programme, and especially Dr Russell Betts, provided administrative support, helped arrange meetings with exporters and generally assisted our work in the country. Exporters provided useful information, responding to questions and giving tours of their holding facilities. Mr Frankie G. Sulaiman, Chairman of the Wild Bird Traders Association, was especially helpful.

Figure 2. Trade in *Cacatua goffini* (1983-1991).

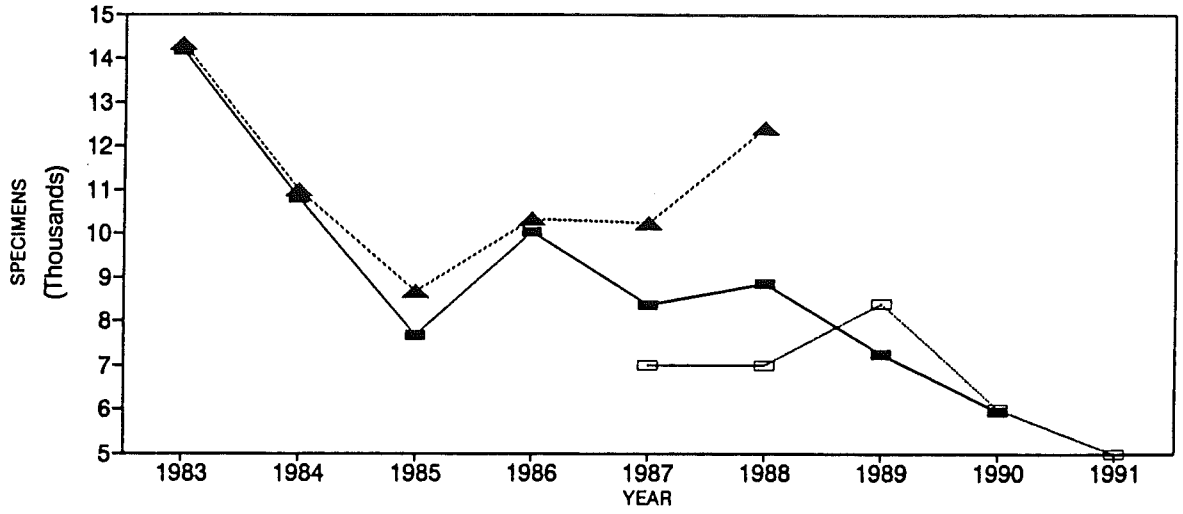


Figure 3. Trade in *Cacatua alba* (1983-1991).

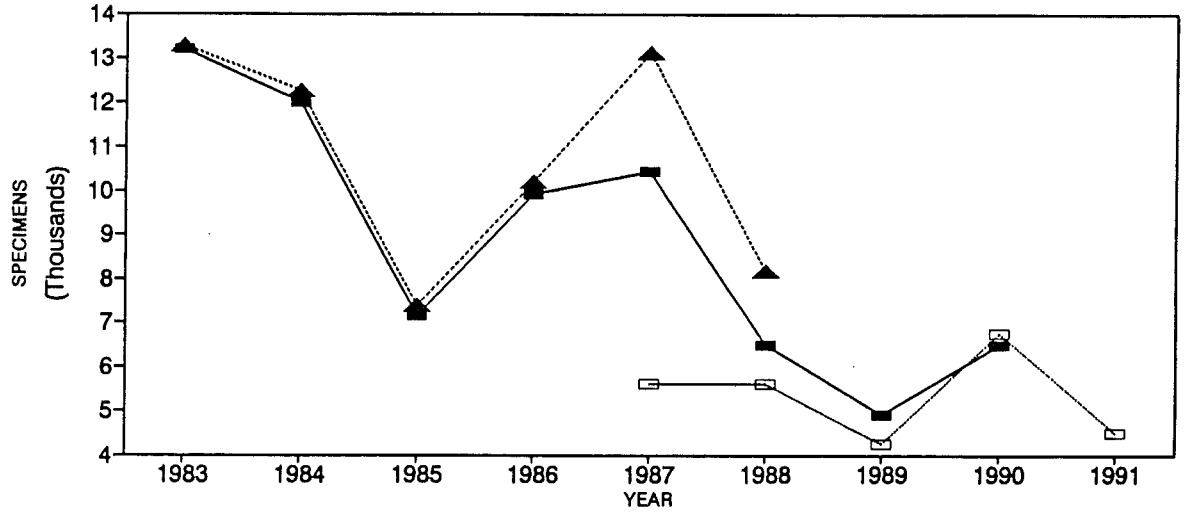


Figure 4. Trade in *Cacatua moluccensis* (1983-1991).

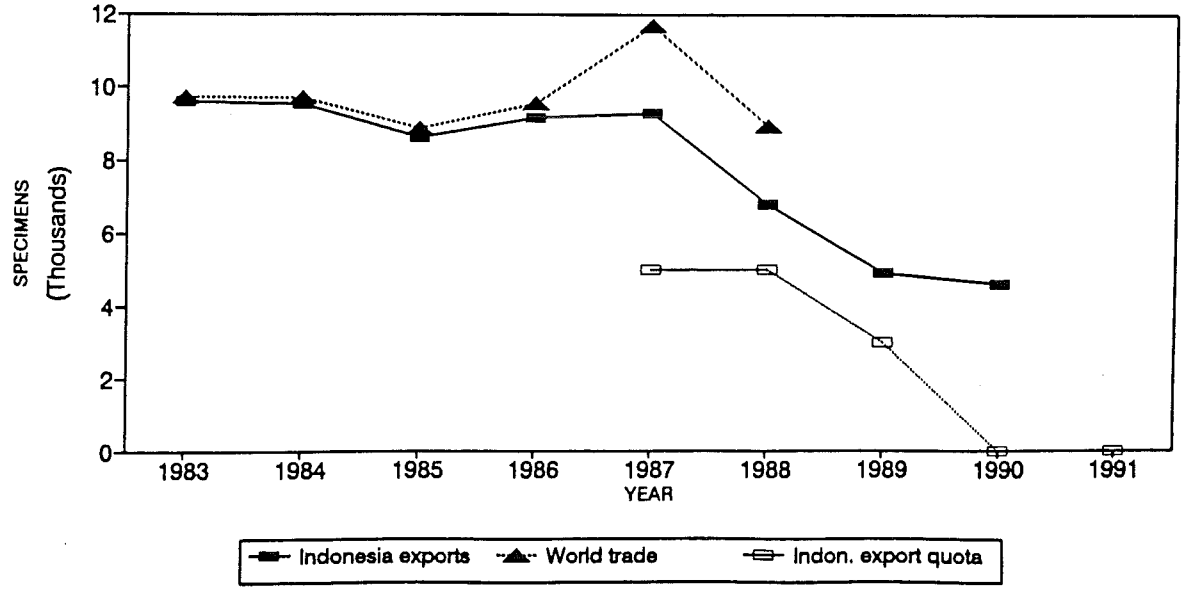


Figure 5. Trade in *Eos bornea* (1983-1991).

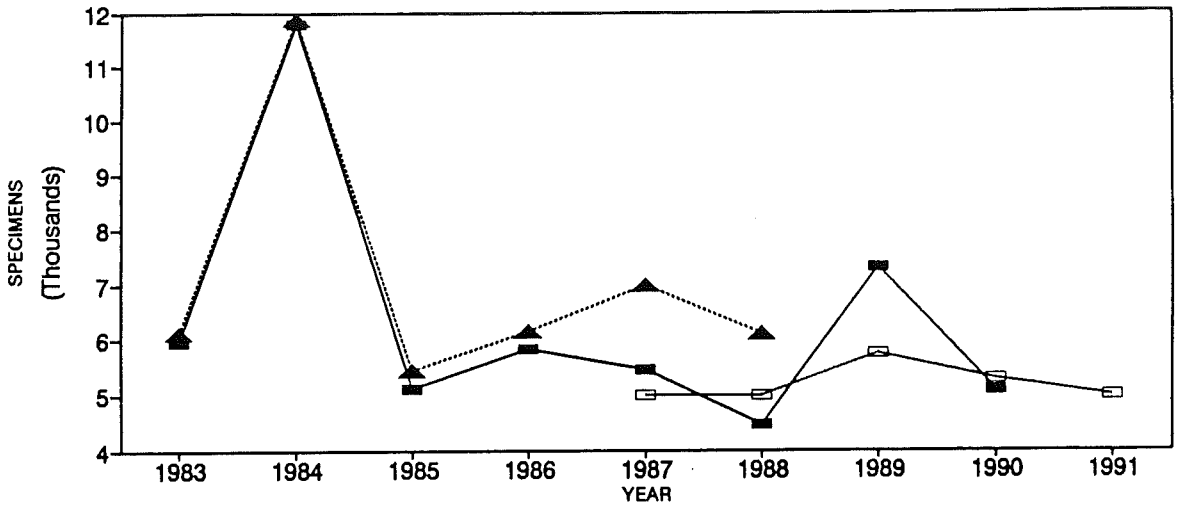


Figure 6. Trade in *Cacatua sulphurea* (1983-1991).

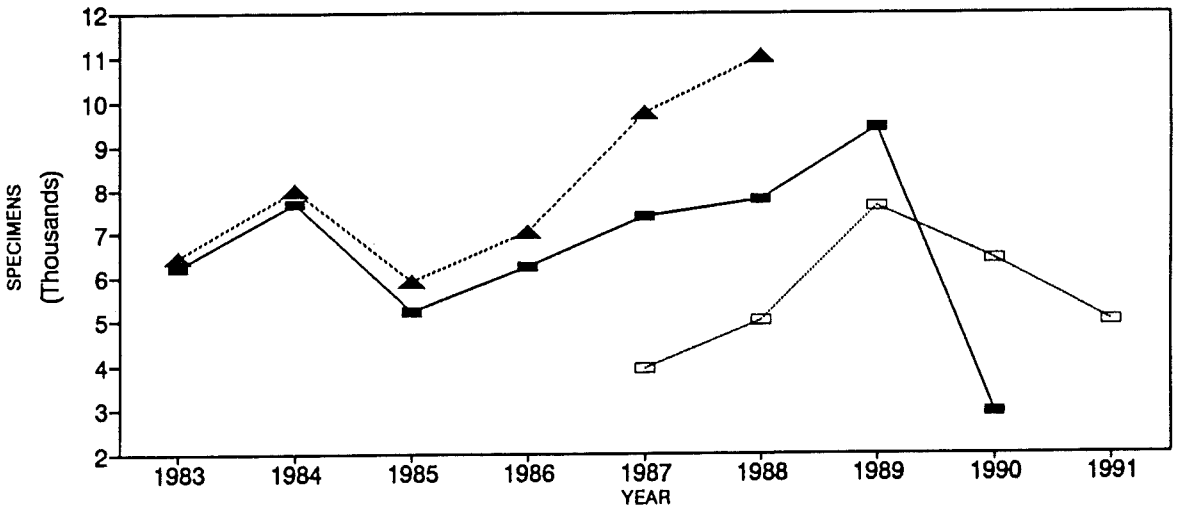


Figure 7. Trade in *Trichoglossus haematodus* (1983-1991).

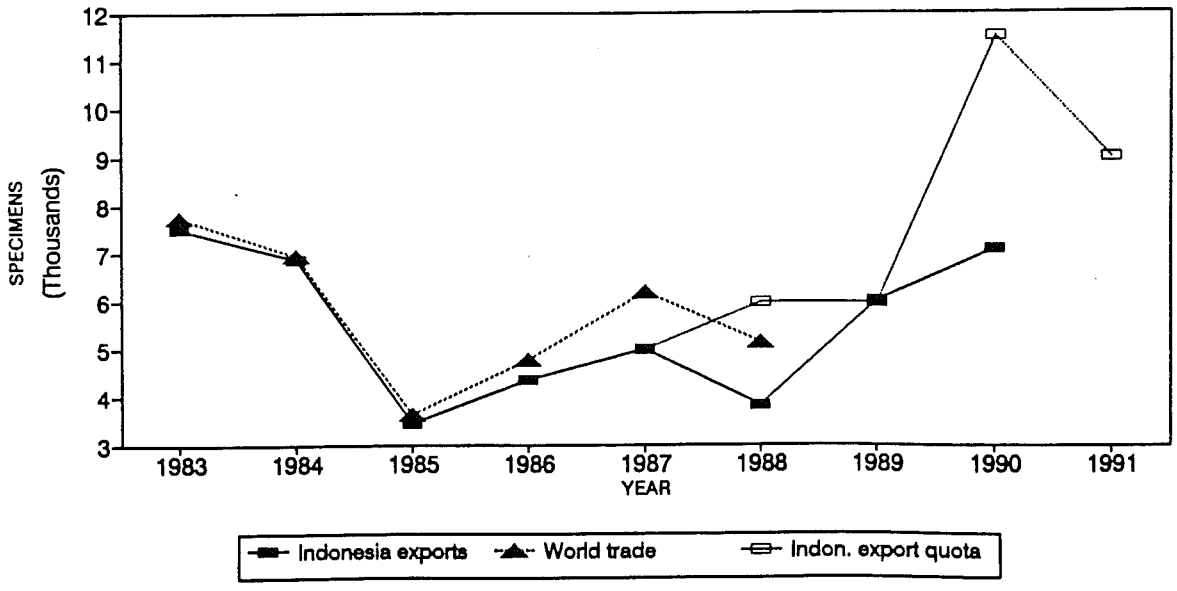


Figure 8. Trade in *Lorius garrulus* (1983-1991).

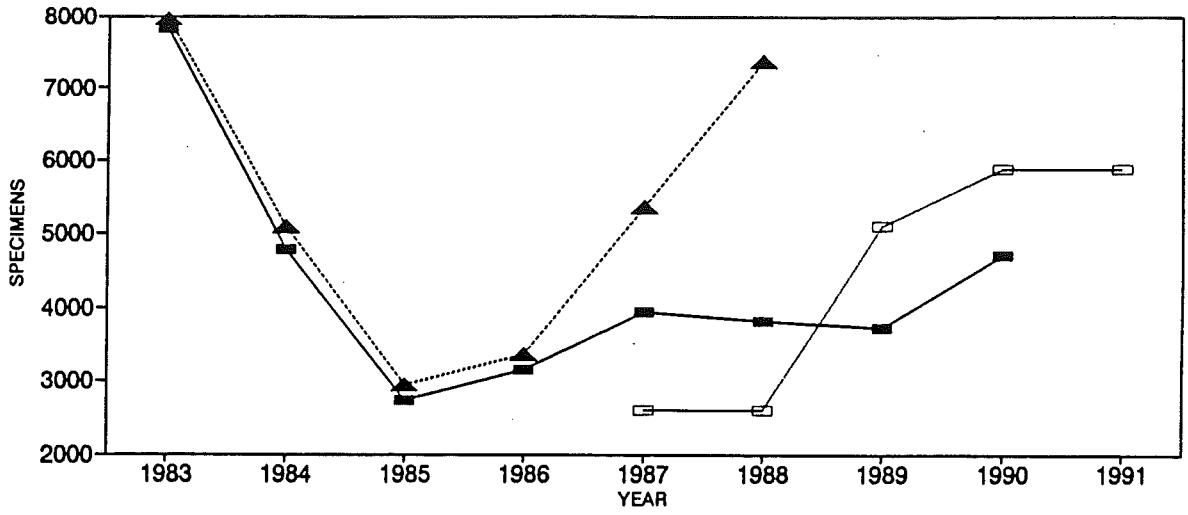


Figure 9. Trade in *Eos reticulata* (1983-1991).

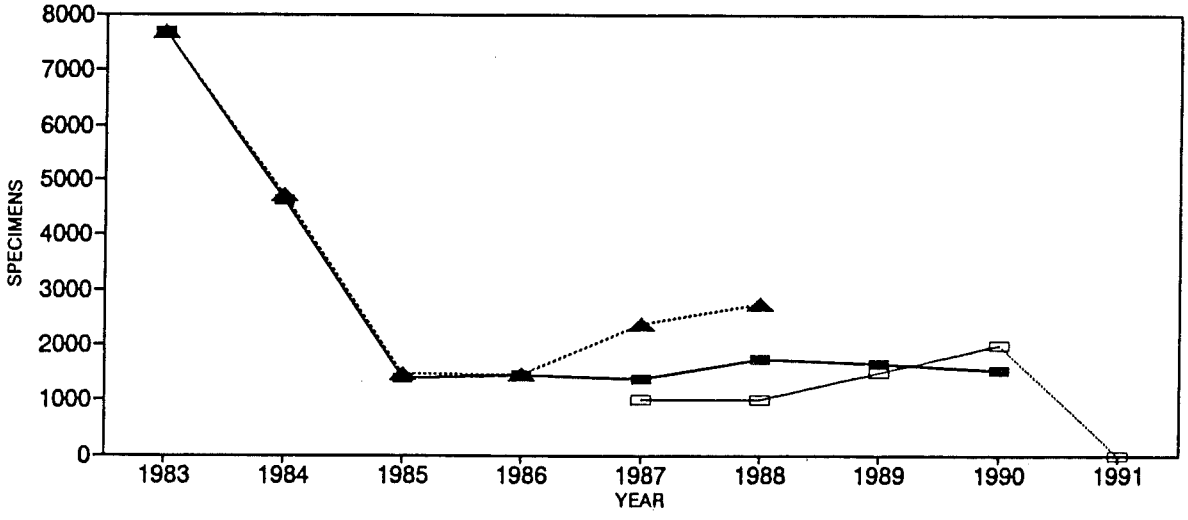


Figure 10. Trade in *Psittacula alexandri* (1983-1991).

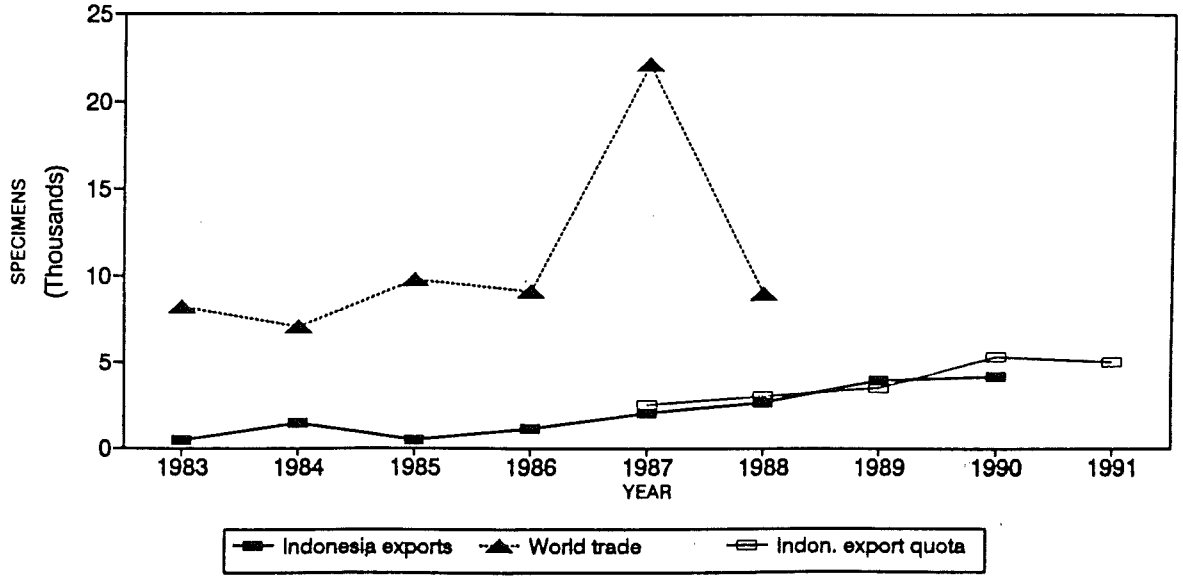


Figure 11. Trade in *Eos squamata* (1983-1991).

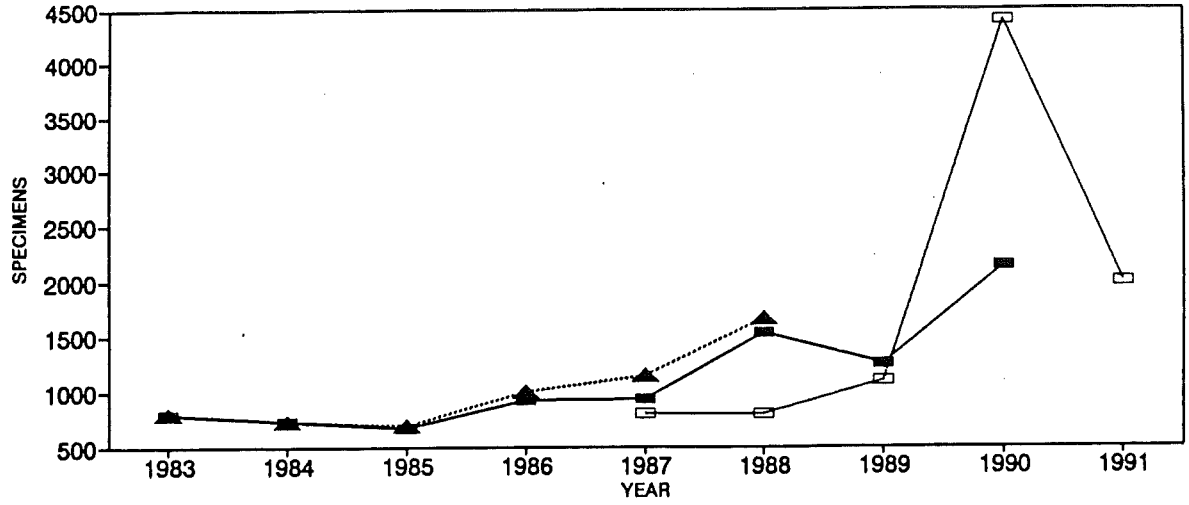


Figure 12. Trade in *Pseudeos fuscata* (1983-1991).

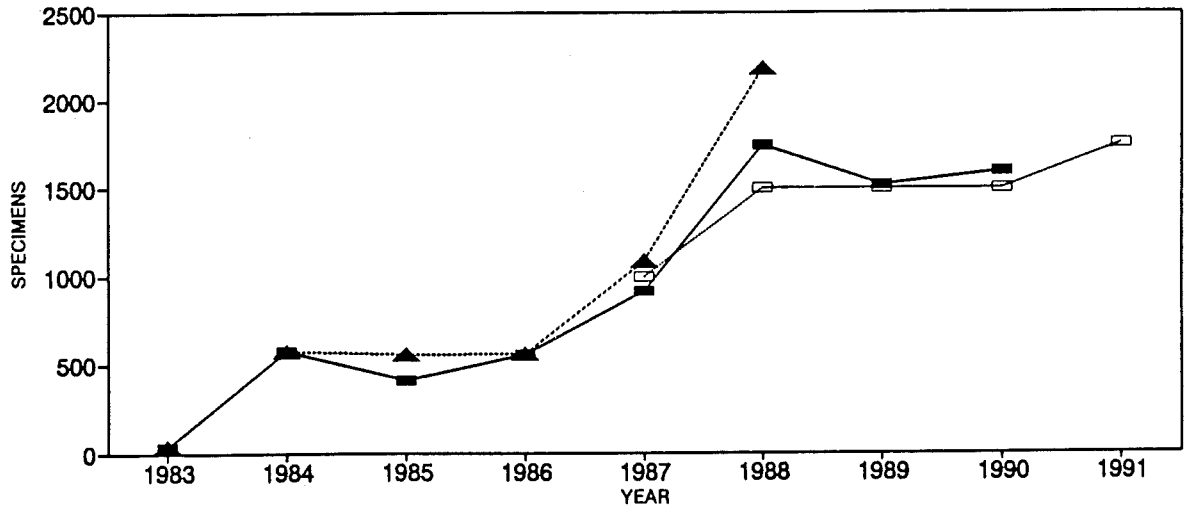


Figure 13. Trade in *Cacatua galerita* (1983-1991).

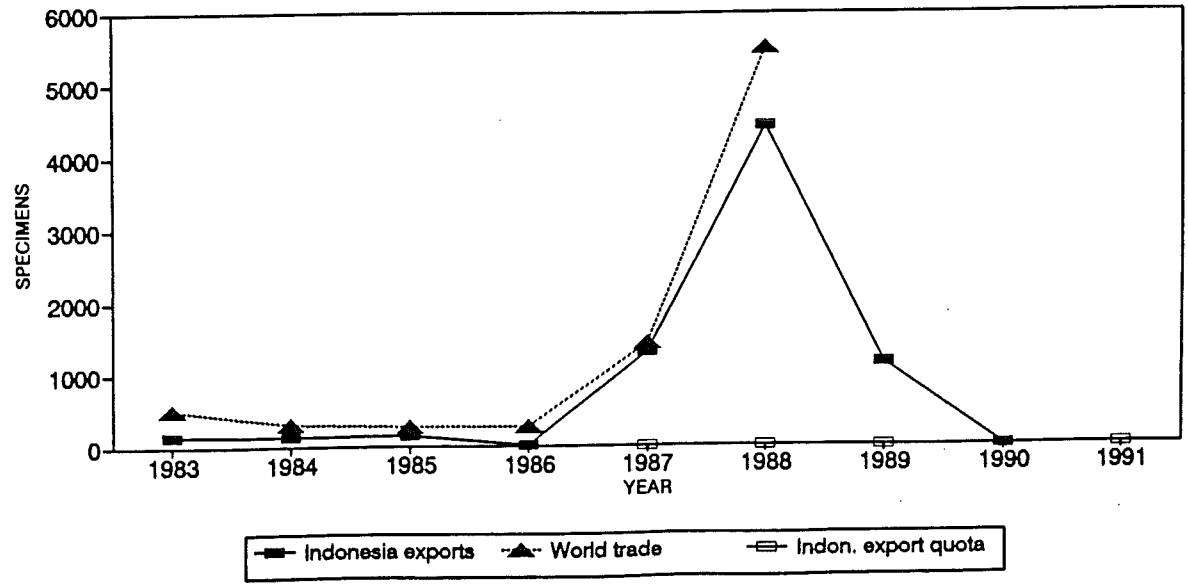


Figure 14. Trade in *Alisterus amboinensis* (1983-1991).

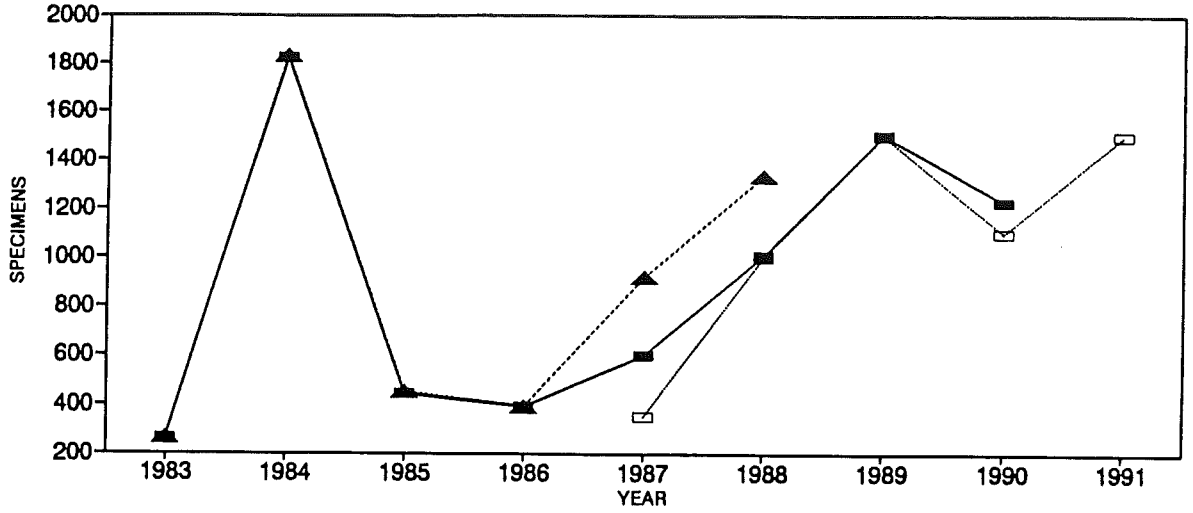


Figure 15. Trade in *Tanygnathus megalorhynchus* (1983-1991).

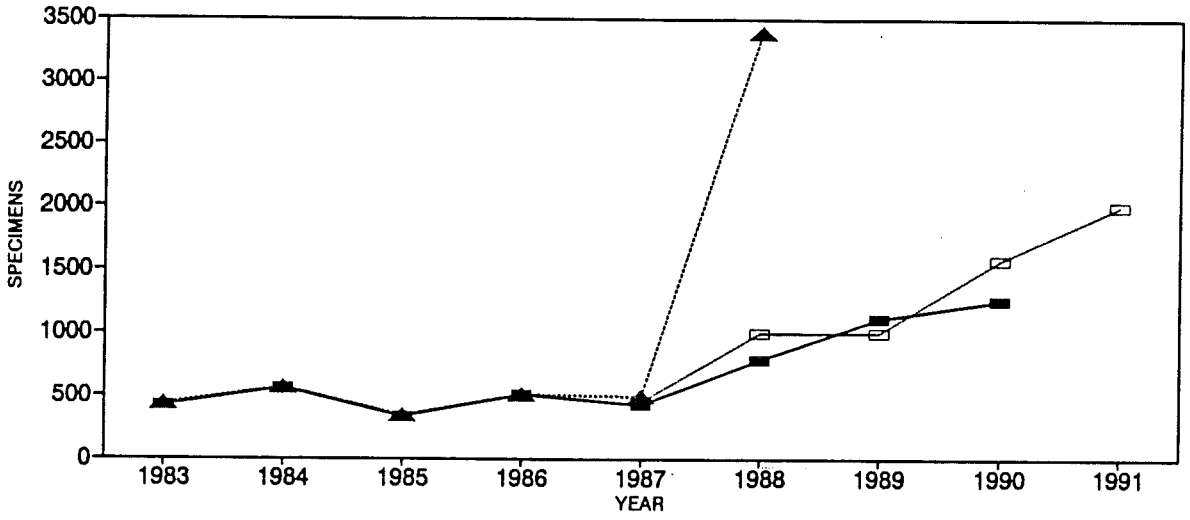


Figure 16. Trade in *Aprosmictus erythropterus* (1983-1991).

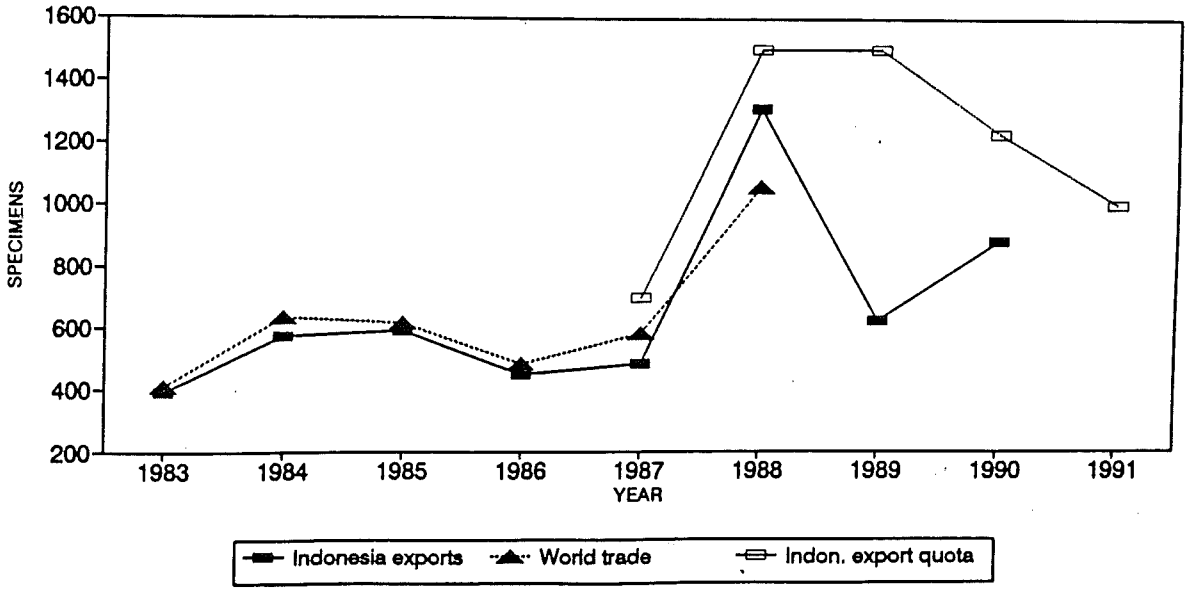


Figure 17. Trade in *Psittaculirostris desmarestii* (1983-1991).

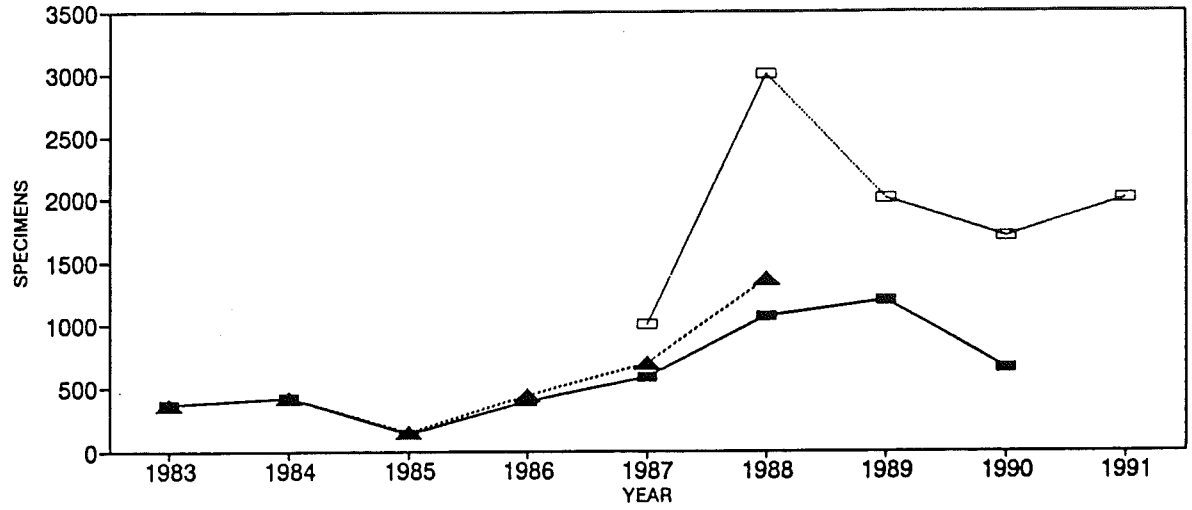


Figure 18. Trade in *Charmosyna placentis* (1983-1991).

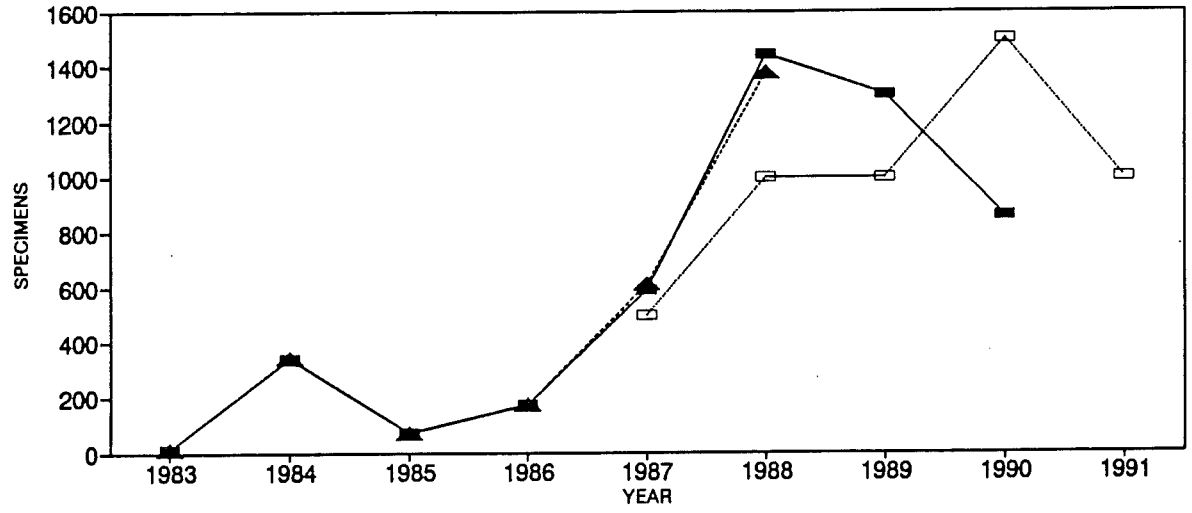


Figure 19. Trade in *Charmosyna papou* (1983-1991).

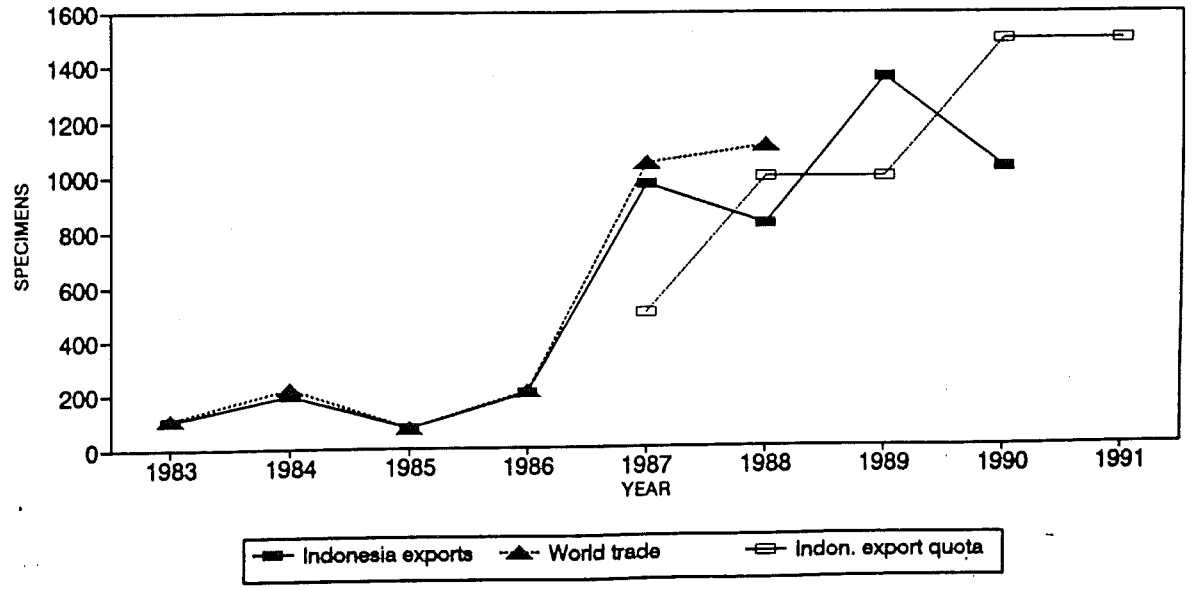


Figure 20. Trade in *Chalcopsitta atra* (1983-1991).

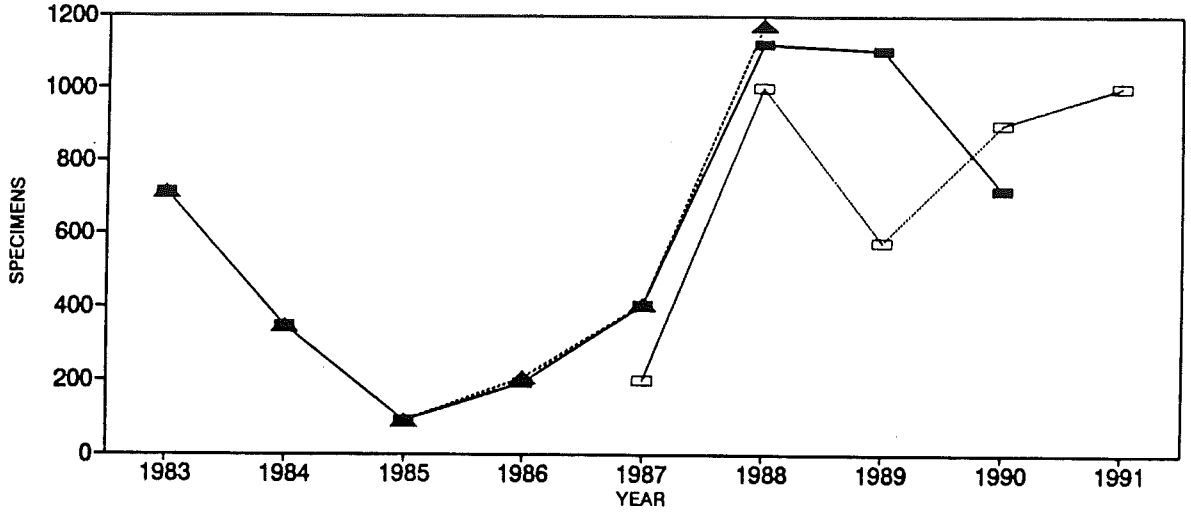


Figure 21. Trade in *Trichoglossus goldei* (1983-1991).

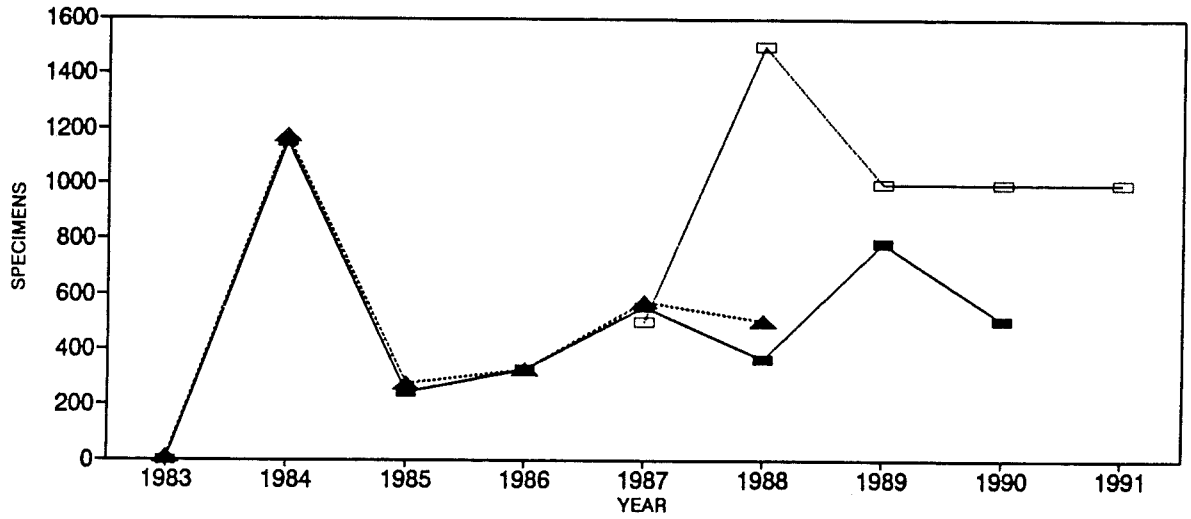


Figure 22. Trade in *Charmosyna pulchella* (1983-1991).

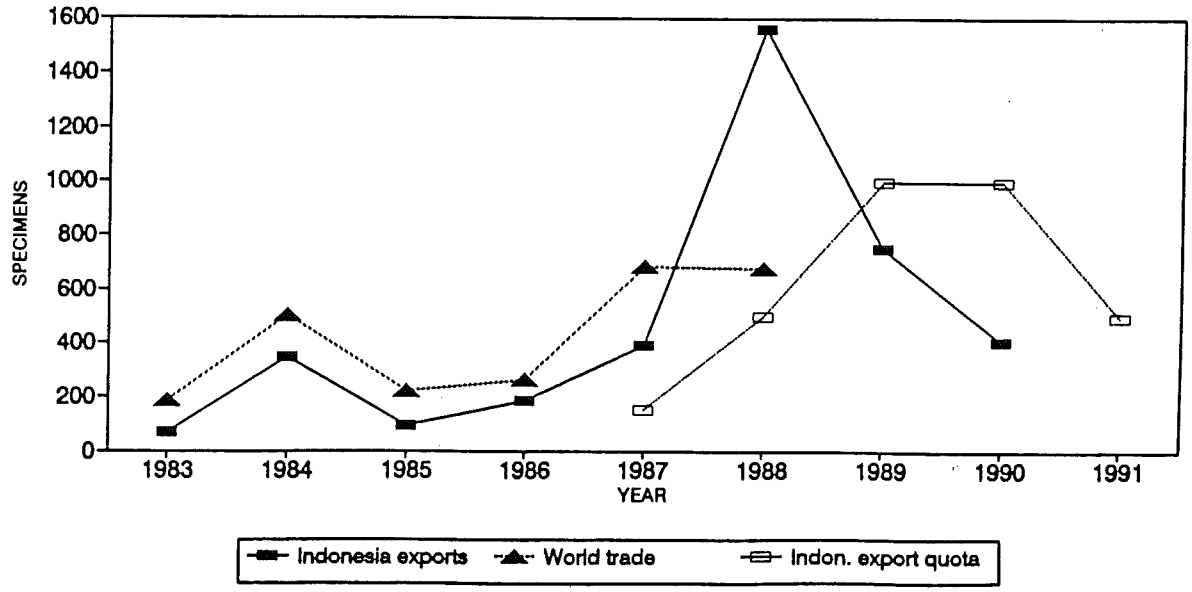


Figure 23. Trade in *Psittaculirostris edwardsii* (1983-1991).

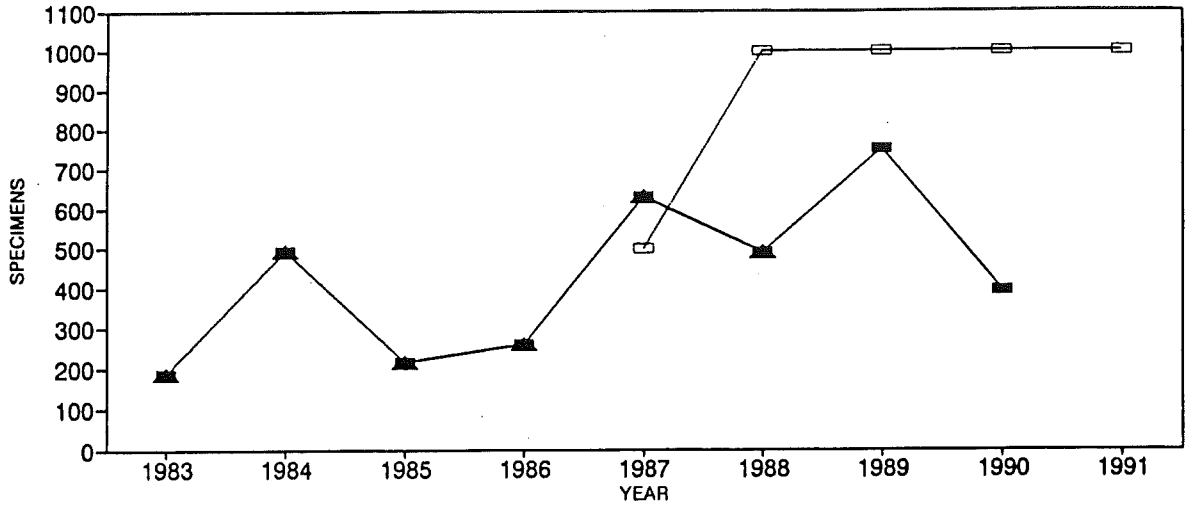


Figure 24. Trade in *Eos cyanogenia* (1983-1991).

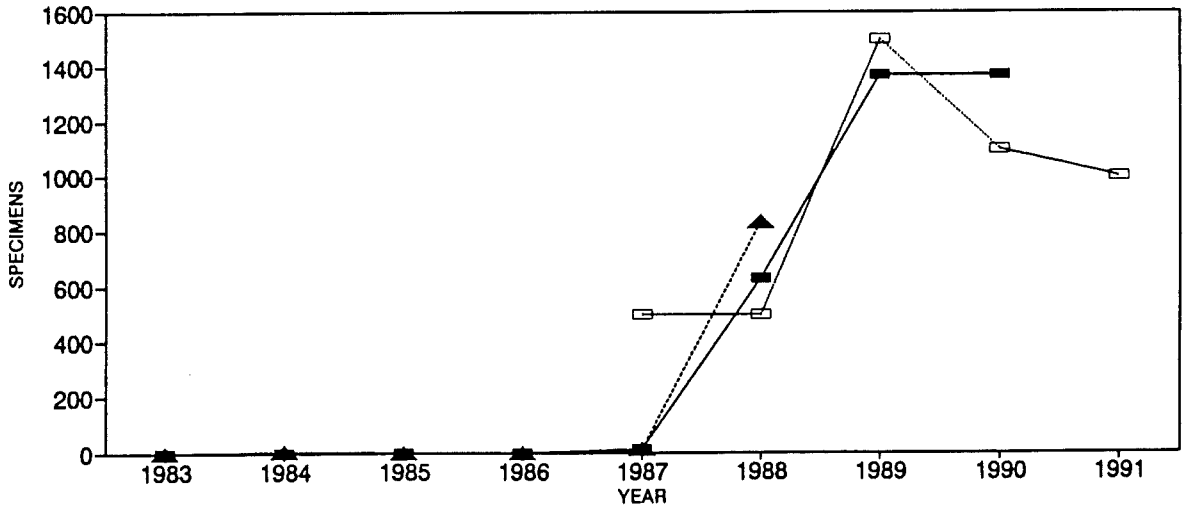


Figure 25. Trade in *Trichoglossus flavoviridis* (1983-1991).

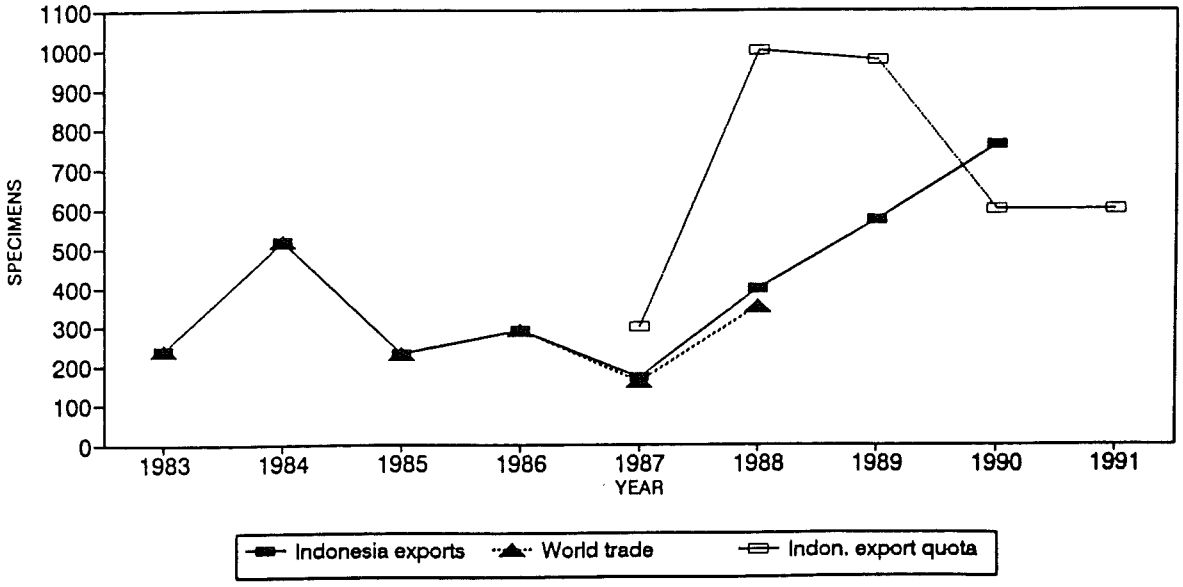


Figure 26. Trade in *Chalcopsitta sintillata* (1983-1991).

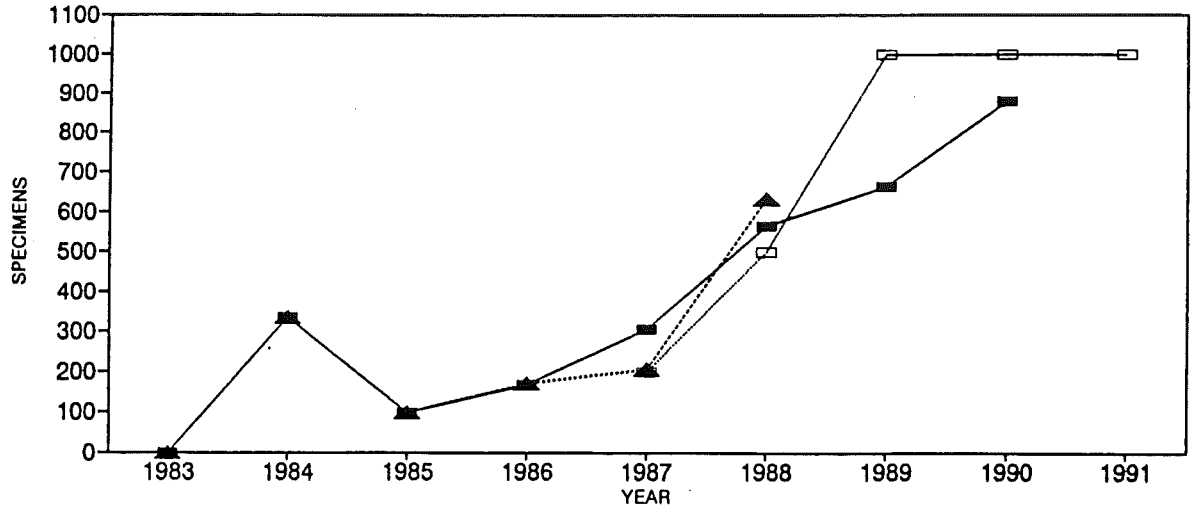
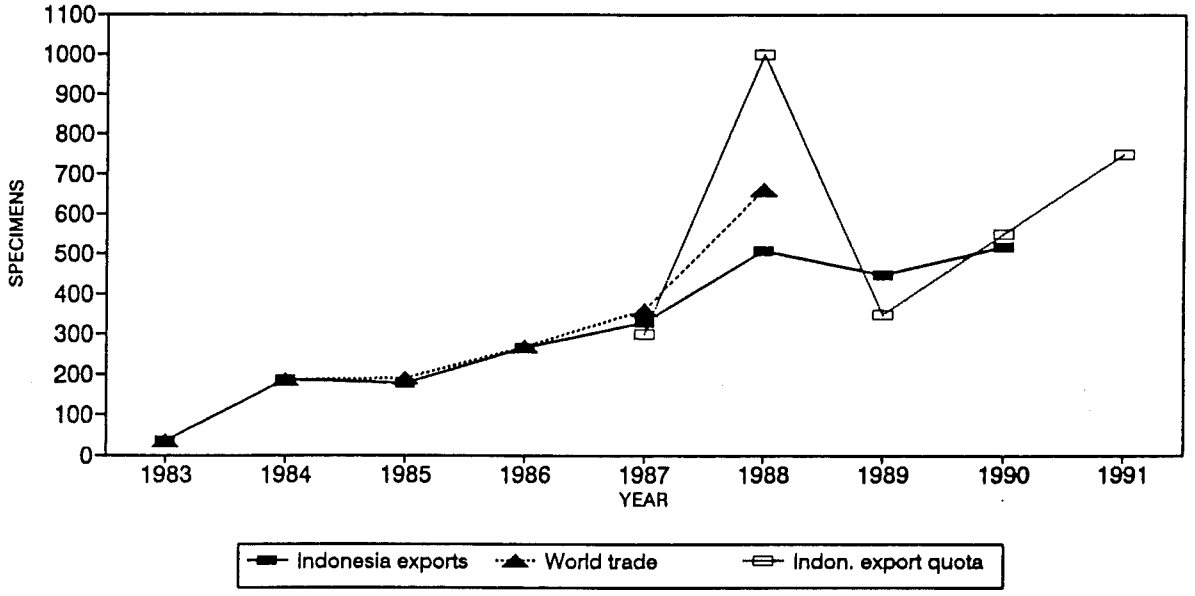


Figure 27. Trade in *Chalcopsitta duivenbodei* (1983-1991).



Sources:

Quotas	PHPA.
Exports	CITES Annual Report Data (1983-1986); PHPA (1987-1990).
World Trade	World Conservation Monitoring Centre.

WILD BIRD TRADE: PERCEPTIONS AND MANAGEMENT IN THE REPUBLIC OF SENEGAL

Stephen R. Edwards and Mamadou Biteye[28]

LEGAL/ADMINISTRATIVE STRUCTURE

Government Policy

The Government of Senegal embraces a policy of "exploiting Senegal's wildlife resources for the benefit of the population" according to M Sall, the Director of the Directions des eaux, forets, de la chasse et de la conservation des sols (Directorate for Water, Forests, Hunting and Soil Conservation) and designated head of Senegal's CITES Management Authority. Because none of the bird species harvested for export is perceived as endangered, it is believed that the bird trade is sustainable.

The Government believes that the wild bird trade is benefitting rural populations, and therefore does not wish to stop this trade. Recognising that there may be problems in how the trade is controlled in Senegal, the Government is prepared to revise its procedures to address these problems. The Government was quick to point out, however, that heretofore it had not received concrete recommendations on how the trade could be better managed. When the authors of this report asked if the Government would consider taking the initiative to suspend wild bird exports to allow time to prepare a more rigorous control system, they were told that the Government would take such action if help were available.

Legal Framework

The *Hunting and Wildlife Protection Act*, adopted by the President of the Republic in 1967, establishes the general principles for wildlife hunting and conservation and is referenced as the authority for subsequent degrees. In the same year the Game and Wildlife Protection Regulations were established by Presidential Decree. Amendments to the Regulations were adopted by Presidential Decree in 1969, (69-1375), 1973 (73-068), 1980 (80-445) and 1981 (81-1103). The 1981 Decree established the Haut conseil de la chasse (High Council for Hunting) and defined its membership. It was reported that Senegal ratified its participation in CITES through Presidential Decree.

A 1986 Presidential Decree (86-844) established a list of 'totally protected' species and a list of 'semi-protected' species subject to specific regulations. A 1987 Presidential Decree (87-038) defines classes of wildlife permits and establishes the fees for each. In 1988 the Decree establishing the High Council for Hunting was modified by Decree 88-914.

The Game and Wildlife Protection Regulations provide the statutory code defining the types of licences required for hunting, commercial capture, rules for issuing licences, etc. They also provide a list of fully protected species and prohibit their capture (including eggs or young) without a Scientific Permit. This list is revised periodically by the High Council for Hunting. Under the Regulations, possession or export of live animals or trophies is not allowed without a certificate of ownership. In regards to live bird trade, the capture and possession of unprotected birds for the purpose of selling or exporting them is prohibited without a licence. The taking of waterfowl also requires a licence. The Regulations also provide conditions for destruction of animals that are causing damage.

In 1982, The Minister of Commerce and the Secretary of State of the Ministry for Water and Forests (now incorporated into the Ministry of Rural Development), issued an Inter-Ministerial Order listing the birds that may be traded, and established the maximum allowable export quotas for each species. The list references thirty-five taxa, including thirty-two species and three genera (Table 1). The Order also provides for a Commission to establish export quotas for each species. This Commission has not met since it convened to establish quotas in 1982. Those quotas remain in effect today.

Each year, the Ministère du tourisme et de l'environnement (Ministry of Tourism and Environmental Protection) issues a Ministerial Order establishing the sport hunting seasons for mammals and game birds. The Order establishes bag limits for tourists and residents for taking of waterfowl in general. It also establishes bag limits for two species [*Alopochen aegyptiacus* (Egyptian Goose) and *Plectropterus gambensis* (Spur-winged Goose)] and the genus *Francolinus* (Francolin). Some mammal species have also been given protection in certain areas under these Ministerial Orders.

Finally, a draft Presidential Decree has been submitted to the Council of Ministers for approval that will revise the fees for bird capture permits and the fees for entering certain areas for small game hunting (Ministère du développement rural et de l'hydraulique, *in litt.*, 1991).

Allocation of Government Responsibility

Two Ministries share responsibility for conservation and management of wildlife in Senegal: Ministère du développment rural et de l'hydraulique (Ministry of Rural Development and Hydraulics) and Ministry of Tourism and Environmental Protection). The former Ministry includes: Directorate for Water, Forests, Hunting and Soil Conservation; Direction de l'agriculture (Directorate for Agriculture); Direction de la protection des végétaux (Directorate for Plant Protection); and Direction de l'hydraulique (Directorate for Hydraulics). The latter Ministry includes three Directorates: Direction de tourisme (Directorate for

[28]Consultant, IUCN Regional Office, Senegal.

Table 1. Taxa authorised for capture and export (1982 Interministerial Order 82-754).

COLUMBIDAE	ESTRILDIDAE	PLOCEIDAE
Oena capensis	*Amandina fasciata*	*Euplectes afer*
Streptopelia senegalensis	*Amandava subflava*	*Euplectes hordeacea*
Turtur abyssinicus	*Estrilda caerulescens*	*Euplectes macrourus*
Turtur afer	*Estrilda melpoda*	*Euplectes nigroventris*
	Estrilda troglodytes	*Euplectes orix*
PSITTACIDAE	*Lagonosticta spp.*	*Passer luteus*
	Lonchura cucullata	*Ploceus cucullatus*
Poicephalus senegalus	*Lonchura malabarica*	*Ploceus melanocephalus*
Psittacula krameri	*Pytilia spp.*	*Quelea erythrops*
Psittacus erithacus	*Uraeginthus bengalus*	*Quelea quelea*
		Vidua chalybeata
FRINGILLIDAE		*Vidua macroura*
		Vidua orientalis
Serinus leucopygius		
Serinus mozambicus		**STURNIDAE**
		Lamprotornis spp.
		Lamprotornis caudatus
		Spreo pulcher

Source: Directorate for Water, Forests, Hunting and Soil Conservation.

Tourism); Direction de l'environnement (Directorate for Environment); and Direction des parcs nationaux (Directorate for National Parks).

The Directorate for Water, Forests, Hunting and Soil Conservation is responsible for Senegal's requirements under CITES, with the Director (M Sall) designated as the head of the Management Authority (Figure 1). Within the Directorate, the Division de la chasse (Division for Hunting) serves as the agency responsible for day-to-day implementation of the Convention. The Division includes a Bureau of Licences and Permits and a Bureau of Wildlife Management, whose functions are not limited to CITES-related activities.

The Chief of the Division for Hunting is largely responsible for administration of the Management Authority. Four people have been appointed to this position in the past two years. The current Chief, M Cheikh Dumar Diop, was appointed in March 1991. In relation to CITES matters, M Diop has been designated to act on behalf of M Sall in his absence. There are two additional professional personnel within the Division for Hunting that are responsible for CITES implementation. M Diop's assistant for CITES administration is perhaps the only individual within the Division that exclusively deals with CITES issues. An individual within the Bureau of Licences and Permits handles CITES-related permits in addition to other responsibilities. In theory, additional assistance in implementing CITES, particularly in relation to monitoring traffic across the frontiers, is available from Hunting Division staff working throughout Senegal's Administrative Regions.

The Directorate also maintains a Division of Regional Inspections, which has offices in each of Senegal's ten Administrative Regions. Each Regional Office maintains parallel Bureaus. These report to the Chief of Regional Inspections, who in turn reports to the Director of the Directorate. In regards to CITES, the Dakar Regional Office is responsible for monitoring exports at Dakar's International Airport. A CITES office has been maintained at the airport since 1982. Three staff are assigned to this office, each working an eight-hour shift. Until recently, they reported to the Chief of the Division for Hunting. At the request of the Dakar Regional Inspector, they now report directly to him. Nevertheless, there are regular communications between the CITES staff at the airport and the Chief of the Division for Hunting.

There is no regular contact between the Customs Directorate (in the Ministry of Planning, Economics and Finance) and the CITES Management Authority.

Responsibility for reviewing the status of Senegal's wildlife species is delegated to the High Council for Hunting. This Council is responsible for revising the national list of protected species as determined appropriate, e.g. following a CITES meeting.

The CITES Management Authority serves as Senegal's Scientific Authority. It was reported that if problems arise, the Management Authority seeks advice from universities and other professional institutions in Senegal. Normally a Commission is formed to address these problems, as in the case for establishing species quotas. In regards to 'non-detriment' findings for CITES-listed species, the Management Authority relies on the quotas established in 1982 by the Commission created for that purpose.

There are no regularly scheduled inter-Ministerial meetings between the offices responsible for wildlife conservation and management in the Ministry of Rural Development and Hydraulics and the Ministry of Tourism and Environmental Protection. However, personnel in the two Ministries do consult each other as needed. In addition, staff of each Ministry meet when Commissions or other bodies, e.g. the High Council for Hunting, are convened.

Budget and Revenues

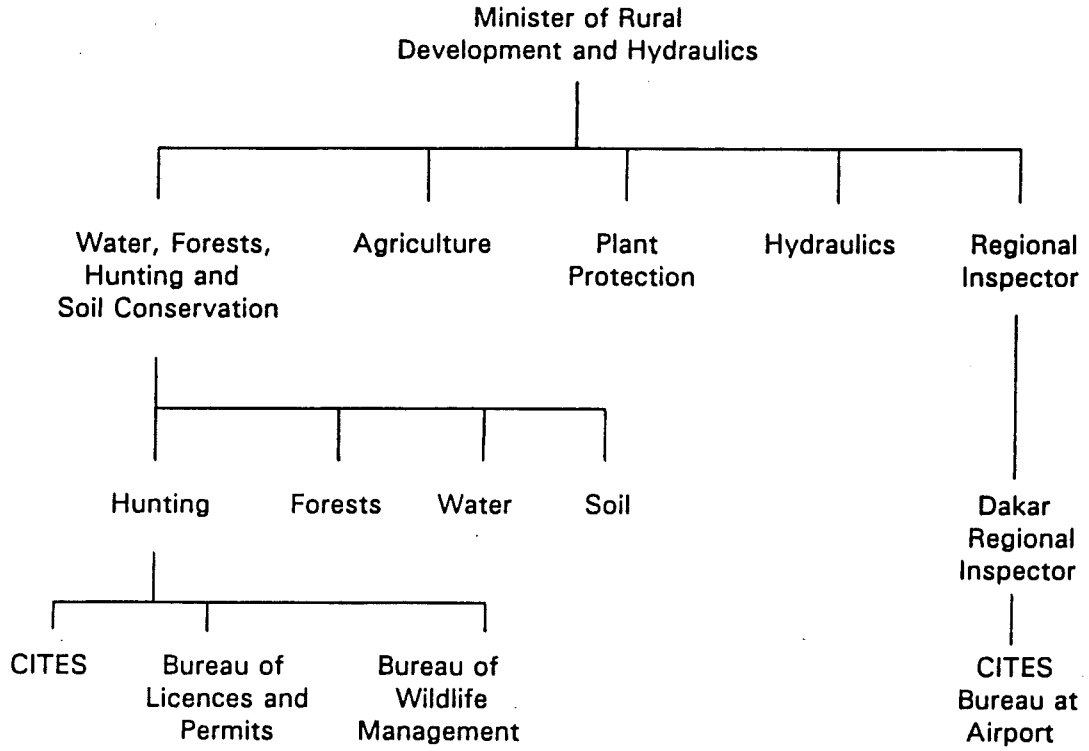
The Division for Hunting receives its operating budget under the annual budget of the Ministry of Rural Development and Hydraulics. No figures were available for CITES-related expenses.

In addition, the Division can apply for funds from the National Forest Fund. Seventy-five per cent of the tax, licence and permit fees assessed on forest-related products and hunting activities is placed in this Fund (the remaining 25% goes to the Treasury). Funds collected in relation to bird exports include a 'Bird Permit' fee of CFA70,000 (US$255)[29] for the capture of 5000 pairs of birds (see **Permits**). In 1990 approximately CFA9.3 million (US$33,688) was collected from the issuance of bird permits (based on exports of 661,726 pairs of birds, and taking into account that exports of parrots are based on individual specimens). The Government also collects a tax charged to bird permit holders for each field collector they employ (see **Permits** and **Trapping and Trade**). No funds are received for issuance of CITES or other export permits.

The bulk of the contributions to the National Forest Fund come from taxes and fees related to forestry products, but revenues from activities related to hunting and wildlife trade are substantial. In 1990, approximately CFA500 million (US$181,818) was

[29]Exchange rate: 275 Senegalese francs (CFA) per US$1 (07/91).

Figure 1. Organisation of Ministry of Rural Development and Hydraulics, with offices responsible for CITES implementation.



Source: Ministry of Rural Development and Hydraulics.

deposited in the National Forest Fund. Of this amount, between CFA130 million (US$47,273) and CFA150 million (US$54,545) was provided by hunting and related licence and permit fees collected during that year. Based on the figure given above, a minimum of CFA6,947,000 (US$25,266) would have been provided to this fund from bird permit fees.

The Division has received support from the National Forest Fund for special projects that have been, thus far, oriented toward enhancing the Division's infrastructure and equipment (e.g. purchase of vehicles and supplies). Application for funding of baseline surveys and monitoring programmes of species in trade could be made to the National Forest Fund, according to M Diop.

Other Sources of Conservation Support

IUCN is the only international conservation body with an office in Senegal. IUCN has a good working relationship with the Senegal Government. In the past, IUCN has undertaken field surveys of game species in the national parks. IUCN has also helped the Government develop a management plan for Parc national du Djoudj, assisted in an evaluation of Parc national du Sine-Saloum, and is presently advising the Government on needs for management of national parks and protected areas.

Messrs Sall and Diop expressed their desire to work with the international community (e.g. IUCN, CITES Secretariat and TRAFFIC) to develop a more rigorous control programme for wild bird exports.

There is one national conservation organisation in Senegal, l'Association senegalaise des amis de la nature (ASAN; Senegal Association of the Friends of Nature) ASAN has little influence on the Government. The ENDE-Tiers-Monde, an international NGO which specialises in environment and development (primarily agricultural) issues, is also active in the country.

CONSERVATION AND TRADE CONTROLS

Land Ownership and Habitat Status

There has been considerable loss of forest habitat due to active deforestation and the overall change in climate in Senegal. Agriculture has shifted away from peanuts to cereal crops, which require more acreage in cultivation to produce the same income. This, combined with the large average family size (ten plus), has resulted in additional land being converted to agriculture. Whatever the cause, there is a continuing loss of habitat that is important to the long-term survival of bird populations.

Assessment of Wild Populations and Effects of Trade

No field surveys have been undertaken for any species and no population monitoring programmes have been instituted. There is no information regarding population trends of species in trade, and no evidence to indicate whether harvests for trade are affecting the status of wild bird populations in Senegal.

The issue of 'pest species' management must be considered in conjunction with the status of wild populations and harvest for export. Several bird species have been designated by the Government as agricultural pests. 'Unlimited' export quotas have been established for these species (see Table 2a). In addition, these species are targeted for eradication by the Ministry of Agriculture. It was reported that flame throwers and poisons were commonly used to destroy these birds. Neither technique discriminates between 'pest' and 'non-pest' species. According to the exporters, the eradication programme has sensitised farmers to kill all birds. This is done by destroying eggs and nests during the breeding season. The increasing use of pesticides to kill insect pests is also affecting wild populations of insectivorous birds.

Quotas

As mentioned above, an export quota system for wild birds was initiated in 1982. Export quotas were established that year by a government Commission. The Commission has not met to review the quotas since that time, and the original export quotas remain in effect. These are to be reviewed by the Commission in 1991, however.

When initially established, quotas were evenly divided among bird dealers. This system was determined to be too difficult to manage, however; some dealers were more efficient and collected far more birds than their allotment of the quota allowed, while others had difficulty in meeting their allotment. At present, it appears that each exporter operates independently from the others and organises his harvest in relation to the total quota for each species. Data on the actual exports recorded for each 'authorised' exporter (see **Licences**) in 1990 indicate that three (Amadou Diallo, Viv Amin and Boubou Wade) accounted for 81% of all exports. An additional nine traders were responsible for less than 20% of all birds exported from Senegal.

A total of 32 species or genera of non-psittacines are authorised for capture and export (Table 2a). Five of these species are designated as crop pests [*Quelea quelea* (Red-billed Quelea); *Quelea erythrops* (Red-headed Quelea); *Passer luteus* (Golden Sparrow) *Ploceus cucullatus* (Village Weaver); *Ploceus melanocephalus* (Black-headed Weaver)] and unlimited capture and export is therefore authorised. These species have also been the target of large-scale eradication campaigns. The Government, supported by the United Nations Food and Agricultural Organisation,

Table 2a. Comparison of 1990 Senegal non-psittacine export quotas and reported exports (in pairs).

SPECIES	QUOTA	EXPORTS	% QUOTA
Oena capensis	1,500	8,650	576.7
Streptopelia senegalensis	1,000	3,130	313.0
Turtur abyssinicus	500	0	0.0
Turtur afer	500	1,535	307.0
Amadina fasciata	100,000	78,187	78.2
Amandava subflava	12,000	14,974	124.8
Uraeginthus bengalus	90,000	49,455	55.0
Estrilda caerulescens	12,000	17,454	145.5
Estrilda melpoda	80,000	44,256	55.3
Estrilda troglodytes	175,000	66,282	37.9
Lagonosticta spp.	10,000	4,545	45.5
Lonchura cucullata	25,000	15,664	62.7
Lonchura malabarica	50,000	31,251	62.5
Pytilia spp.	2,000	2,771	138.6
Serinus leucopygius	3,000	25,374	845.8
Serinus mozambicus	100,000	113,465	113.5
Euplectes afer	30,000	11,915	39.7
Euplectes macrourus	6,000	0	0.0
Euplectes nigroventris			
*Euplectes hordeacea**			
Euplectes orix	60,000	31,822	53.0
Passer luteus	UNLIMITED	27,479	
Ploceus cucullatus	UNLIMITED	10,155	
Ploceus melanocephalus	UNLIMITED	10,422	
Quelea erythrops	UNLIMITED		
Quelea quelea	UNLIMITED	23,270	
Vidua chalybenta	10,000	11,233	112.3
Vidua macroura	5,000	3,520	70.4
Vidua orientalis	5,000	7,706	154.1
Lamprotornis spp.		12,177	
*Lamprotornis caudatus***	6,000	451	7.5
Spreo pulcher			
Total	784,500	627,143	79.9

*It appears from government documents that the quota of 60,000 pairs may be shared between Euplectes hordeaca and E. orix.

**It appears from government documents that the quota of 6,000 pairs may be shared between Lamprotornis spp. and Spreo pulcher.

Source: Division for Hunting.

Table 2b. Comparison of 1990 Senegal psittacine export quotas and reported exports (individual specimens).

SPECIES	QUOTA	EXPORTS	% QUOTA
Poicephalus senegalus	26,000	38,524	148.2
Psittacula krameri	12,000	13,238	110.3
Psittacus erithacus	8,000	17,405	217.6
Total	46,000	69,167	150.4

Source: Division for Hunting.

has used pesticide sprays and fire to destroy these birds and protect crops.

Of the 35 taxa authorised for export under the quota system, only exports of *Poicephalus senegalus* (Senegal Parrot) and *Psittacus erithacus* (African Grey Parrot) are regulated under CITES (Table 2b). Although *Psittacula krameri* (Rose-ringed Parakeet) and a number of non-psittacine species exported from Senegal are listed by Ghana in CITES Appendix III, this listing does not require Senegal to make non-detriment findings prior to export of this species.

In 1990 (as in 1982), the total export quota was 807,500 pairs of birds. Quotas for a number of species were exceeded during this year (see **Export Volumes**), indicating that the present procedures used to implement trade controls have not been adequate to limit exports to the established quota. Exporters commented that although quotas were adopted under a Presidential Decree, they have never been seriously enforced by the Government.

Permits

All wild bird exporters are required to purchase capture permits, known as 'Bird Permits', from the Bureau of Licences and Permits (Division for Hunting). Each bird permit has a price of CFA70,000 (US$255) for the capture of 5000 pairs of birds (see **Budget and Revenues**). A proposed Presidential Decree will change the fee to CFA7000 (US$25) for 500 pairs of birds, or CFA14,000 (US$50) for 1000 pairs (Ministère du développement rural et de l'hydraulique, *in litt.*, 1991). 'Scientific Permits' are required for the taking of wild birds for research.

Exporters are required to obtain CITES 'Export Permits' (or their equivalent for non-CITES species) for all birds to be exported. These are issued by the Management Authority on request to authorised exporters at no charge.

While there is a technical requirement that anyone holding wildlife should have an ownership permit, it is not generally applied. Recently, however, ownership certificates have been issued to some parrot owners.

Licences

There are no bird exporter licensing requirements *per se*, however the Management Authority has stipulated certain conditions that bird dealers must meet before they are issued bird permits. The issuance of bird permits is therefore in effect the primary means by which the Government authorises exporters to operate.

Dealers are required to have the necessary 'infrastructure' to operate their business, i.e., vehicles, financial capacity, etc., as well as a holding facility that has been inspected by a representative of the Management Authority. Dealers are required to maintain species-specific records on the arrival, departure and mortality of birds in their facilities. They must also show that they have paid their commercial taxes by presenting a 'patent' from the Ministry of Planning, Economics and Finance. In addition, they must have obtained the general import/export licence required for any import/export business.

Twelve companies have been determined by the Management Authority to satisfy these requirements and are therefore issued bird permits. These companies are referred to as 'authorised exporters' throughout the remainder of this section. The Management Authority has not issued permits to prospective new dealers, thereby limiting the number of authorised exporters.

COMMERCIAL ACTIVITIES

Trapping and Trade

Birds are collected from all areas of the country. Exporters reported that some birds exported from Senegal had been captured in surrounding countries; each of four exporters present at a meeting with the authors indicated that their networks of collectors extended to other countries in the region. Birds trapped in neighbouring countries are brought into Senegal and transported through normal methods to Dakar for export.

Individual exporters may have between one hundred and three hundred contacts in rural villages who trap, or arrange for the trapping of, wild birds. These contacts may involve an entire village, or individuals within a village. Exporters reported that they used an average of two hundred trappers. Most trappers are farmers, who trap wild birds during the 'dead' season after their crops have been harvested, according to the exporters and M Diop.

Exporter employees travel to designated points throughout the country to pick up birds that have been collected. Birds are usually sold directly to the exporters' employees. Occasionally, 'middlemen' will buy birds from villagers and sell them to the exporters.

According to exporters, the prices they pay for birds varies by 10% to 15% according to demand and the season in which the birds are collected. In one example, exporters reported that trappers were paid CFA1000 (US$3.64) for each pair of *Poicephalus senegalus*. Middlemen were paid between CFA1200 and CFA1500 (US$4.36 and US$5.45) for each pair. The fact that vendors in the local market (see **Domestic Market**) quoted their purchase price as CFA1500 (US$5.45) per pair for this species could underscore the incentive for dealers to buy directly from the trappers, or indicate that the price they reported was inflated. Prices paid for other psittacine species were not made available. Prices paid to trappers for non-psittacines varied from CFA50 (US$0.18) to CFA1000 (US$3.64) per pair according to the species.

According to exporters, export companies directly employ from as few as two to five individuals, to as many twenty to twenty-five, with an average of fifteen employees per exporter. Exporters' employees are assigned different tasks. In addition to personnel that travel to villages to collect birds, there are employees assigned to cleaning cages, feeding birds and making shipping containers.

While each authorised dealer is required to have a holding facility, there is no pre-export holding requirement. It was reported that holding facilities are inspected periodically by CITES Management Authority staff. Often birds are transported directly from the wild to the airport for shipment, however. A veterinarian from the Directorate for Agriculture is stationed at the airport to issue health certificates. In principle, the birds are inspected by the CITES representative at the airport prior to export.

Exporters noted that a number of airlines were no longer carrying live birds (e.g. Lufthansa, KLM, SwissAir and Air France), forcing them to use other carriers, e.g. Ethiopian Airlines and Senegal Airlines.

Exporters also noted that 20 years ago Senegal was the only country exporting large numbers of birds, but that several countries were now involved in the trade. They expressed concern about the growing competition. They also gave the impression of being concerned about internal competition with each other.

Wildlife Exporters Association

The Wild Bird Exporters Association was established ten years ago, with an original membership of fifteen. There are currently "between eight and ten members". As the Government authorises twelve dealers to export birds, this implies that from to two to four authorised exporters are not members of the Association.

The Wild Bird Exporters Association appears to be a paper organisation, serving as an informal body for traders to meet with each other. It does not have rules for membership and apparently no bylaws. When four exporters attending a meeting with the authors were asked who were the officers of the Association, they did not respond. The Association does not represent the exporters with the Government, and does not appear to have influence over the Government. However,

individual exporters may have considerable influence with specific contacts in the Government.

A meeting was arranged with four members of the Wild Bird Exporters Association, all of whom were authorised exporters. M Boubacar Diallo and M Amadou Diallo acted as the principal spokespersons for the exporters that met with the authors.

These exporters were aware of the campaigns in the United States and Europe to stop the importation of wild-caught birds. They felt that these actions were not taking into account the problems in the exporting countries and the need for such countries to use their wildlife resources as an integral part of their economic development. There was considerable resentment of the fact that Europeans and Americans "who had never been to Senegal were in a position to dictate policies in their country".

Export Volumes

Records of exports are maintained by the Division for Hunting. All records are kept by hand. For all species except psittacines the records are kept on pairs of birds. Psittacine exports are reported in numbers of individual specimens.

Bruggers (1982) provides a table summarising the number of birds exported from Senegal to different importing countries from 1972 to 1978. While there may be some question about the totals for each country (see Editorial Comment following Bruggers' paper), there is little question that the data reflect the general export pattern for the period. Table 3a presents Bruggers' figures for Senegal's exports to EC countries, the United States and 'Other Countries' between 1972 and 1978. The respective percentage of each country's imports with respect to Senegal's total exports is also given. Ninety-one per cent of the birds exported from Senegal during this period went to EC countries.

Table 3b summarises exports to EC countries, the United States and 'Other Countries' for the period 1985 to 1989 using data provided by Senegal's Bureau of Statistics. These data appear to be for pairs of birds exported, as the annual exports reported are, in general, about one-half the figures cited for the period 1972 to 1978. The export figures provided for 1989 are most likely not complete tabulations of exports. The Bureau of Statistics also provided data on the declared export value of birds exported during this period.

Irrespective of discrepancies in the reported number of birds exported, available data show a general trend of decreasing exports to European countries and increasing exports to the United States. The United States 'consumed' only 3.4% of the birds exported from Senegal from 1972 to 1978, importing an annual average of 49,060 specimens. From 1985 to 1989, the United States consumed 17.2% of Senegal's bird exports.

Exports of wild-caught birds are in principle subject to the quotas adopted in 1982. These list the number of pairs of birds of each species allowed to be exported (see **Quotas**). In 1990, the total export quota was 807,500 pairs of birds. Based on records provided by the Management Authority, a total of 1,323,452 birds (627,143 pairs of non-psittacines plus 69,167 psittacines) was exported in 1990 (Tables 2a and 2b). Although exporters claimed that exports of *Oena capensis* (Namaqua Dove) were recorded in trade as single specimens, not pairs, but this view was not borne out by Division for Hunting records.

Three species of psittacines are exported regularly from Senegal: *Poicephalus senegalus* (Senegal Parrot), *Psittacula krameri* (Rose-ringed Parakeet) and *Psittacus erithacus* (African Grey Parrot). In 1990 a total of 69,167 specimens of these three species was exported, accounting for approximately 5% of the total wild bird exports from the country during that year. The quota for these three species totalled 46,000, or approximately two-thirds of the actual number of specimens exported. In 1990, the total number of psittacines exported exceeded the established quota by an average of 150%.

There was a dramatic increase in the number of specimens of *Poicephalus senegalus* exported between 1988 and 1990. Interpreting the relationship between the established quota for this species (13,000 pairs per year) and reported exports is difficult. On the surface, it would appear that the exports always exceeded the quota. However, it could be that for the period 1983 to 1985 both exports and the quota for parrots were cited as pairs of birds while in the following years the exports were reported as single specimens, as is the case now, according to M Diop. This explanation is given some validity by the fact that there was considerable confusion among traders and government personnel regarding whether export data were recorded for specimens or pairs.

Psittacus erithacus does not occur in Senegal and represents harvest from neighbouring countries such as Côte d'Ivoire, Gabon and Togo. Côte d'Ivoire is believed to be the principal source of the birds according to M Diop. M Diop stated that in the future, re-export of *Psittacus erithacus* will only be authorised when proper export permits are available from the country of origin. This decision has been communicated to the CITES Secretariat (Sall, *in litt.*, 1991)

Total reported exports of non-psittacines represented approximately 80% of the total quotas authorised for

Table 3a. Wild-caught birds reported as exported from Senegal, by country of import (1972-1978).

COUNTRY	1972	1973	1974	1975	1976	1977	1978	COUNTRY TOTALS	% TOTAL EXPORTS
Belgium	267,364	237,294	173,258	180,658	101,196	82,482	123,836	1,166,088	11.5
Denmark	14,930	22,510	22,750	22,480	16,240	10,570	9,380	118,860	1.2
France	394,912	431,382	470,248	355,468	279,014	231,398	203,730	2,366,152	23.3
Germany	277,894	243,180	284,386	304,146	323,864	282,548	222,790	1,938,808	19.1
Italy	182,998	189,162	182,414	168,586	125,150	111,916	96,988	1,057,214	10.4
Netherlands	220,930	189,330	207,680	260,482	160,546	150,760	126,210	1,315,938	13.0
Portugal	0	0	0	0	0	600	5,270	5,870	0.1
Spain	60,198	62,790	87,000	118,794	115,748	88,636	78,492	611,658	6.0
United Kingdom	132,490	140,780	137,722	152,084	23,490	32,116	29,380	648,062	6.4
SUBTOTAL	1,551,716	1,516,428	1,565,458	1,562,698	1,145,248	991,026	896,076	9,228,650	91.0
United States	129,820	3,620	5,726	29,390	12,246	51,454	111,162	343,418	3.4
Other Countries	46,102	83,360	89,068	68,010	82,400	61,922	133,272	564,134	5.6
TOTAL	1,727,638	1,603,408	1,660,252	1,660,098	1,239,894	1,104,402	1,140,510	10,136,202	100.0

Source: Bruggers (1982).

Table 3b. Wild-caught birds reported as exported from Senegal, by country of import (1985-1989).

COUNTRY	1985	1986	1987	1988	1989	COUNTRY TOTALS	% TOTAL EXPORTS
Belgium	137,665	92,192	107,167	78,021	26,960	442,005	10.6
Denmark	8,236	6,366	230	1,260	0	16,092	0.4
France	320,136	287,951	172,031	183,059	23,699	986,876	23.7
Germany	159,364	132,812	106,353	89,561	26,088	514,178	12.4
Greece	3,317	380	0	0	0	3,697	0.1
Ireland	0	700	0	0	0	700	0.0
Italy	110,156	73,182	91,733	68,355	18,042	361,468	8.7
Netherlands	195,622	94,465	86,848	44,240	18,484	439,659	10.6
Portugal	11,352	41,541	29,981	22,270	1,170	106,314	2.6
Spain	4,920	3,945	31,298	26,736	1,300	68,199	1.6
United Kingdom	70,915	71,603	70,453	58,268	29,850	301,089	7.2
							0.0
SUBTOTAL	1,021,683	805,137	696,094	571,770	145,593	3,240,277	77.9
United States	235,700	228,770	171,384	49,088	30,916	715,858	17.2
Other Countries	61,820	55,929	53,779	28,757	4,120	204,405	4.9
TOTAL	1,319,203	1,089,836	921,257	649,615	180,629	4,160,540	100.0

Source: Senegal CITES Annual Report Data.

those taxa. Five of the 32 non-psittacine species authorised for capture and export were not recorded in trade. However, reported exports for ten taxa exceeded the authorised quota by percentages ranging from as little as 12% to as much as 850%.

Benefits

Agricultural income in Senegal has declined significantly in the past ten years because of reduced prices paid for crops and because the average land holding per farmer is much less today than it was ten years ago. Based on average land holdings, today a rural farmer's average annual income is only CFA20,000 (US$73), according to a Dutch missionary (Anon., 1991).

In view of the low income of rural farmers, income derived from wild bird harvests could represent a significant contribution to their annual earnings. For example, if a farmer collected 1000 non-psittacines with a value of CFA50 (US$0.18) per pair, he could earn an additional CFA25,000 (US$90.91), an amount that could make a considerable difference in his standard of living. The Division for Hunting and exporters maintain that, in the absence of this income it is highly likely that more land will be converted to agricultural production.

In terms of community benefits, using the figures provided by the exporters, there could be as many as 2600 people in Senegal directly involved with the wild bird trade [(12 exporters) + (15 employees x 12 exporters) + (200 trappers x 12 exporters)]. In addition each exporter pays for a variety of material and services in relation to his business (fuel, cage material, feed, veterinary services, etc.) probably involving as many as 500 more people. Given an average family size of ten individuals, these figures could indicate that as many as 31,000 Senegalese receive some economic benefit from the wild bird trade.

Wild bird exports provide no direct benefit to conservation in Senegal. As was noted previously, significant revenues collected in association with bird permit fees are deposited in the National Forest Fund. While these funds have been used to enhance the capacity of the Division for Hunting, there has been no commitment to use these funds to conserve or manage the species being harvested.

Domestic Market

Two markets in Dakar were reported to sell birds: Village Artisanal and Kermel Market. Both markets were visited by the authors. No stalls offered birds for sale at the Village Artisanal. Vendors indicated that individuals with cage-birds would sometimes come to the market to sell birds on the street. None was present on the day the market was visited.

In the Kermel Market five stalls offered birds for sale. All five stalls had three parrot species for sale: *Poicephalus senegalus*, *Psittacula krameri* and *Psittacus erithacus*. One stall sold songbirds and rabbits (for food) in addition to the parrots. Each stall had one specimen of *Psittacus erithacus* and an average of seventeen specimens of both of the other parrot species combined. Only one vendor was observed selling *Psittacus erithacus* when the market was visited three days later. He had three specimens.

Vendors obtain all their birds from authorised exporters (see **Licences**). Vendors buy *Poicephalus senegalus* and *Psittacula krameri* for CFA1500 (US$5.45) per pair, and sell them for CFA1500 (US$5.45) each. *Psittacus erithacus* is obtained 'on loan' from the dealers with a value of CFA20,000 (US$72.73). Vendors sell this species for CFA30,000 (US$109.10) each. When one is sold the dealer is paid and another bird is 'advanced'. Songbirds were sold for CFA100 (US$0.36) each. The price paid by the vendor was not available (exporters pay as little as CFA50 (US$0.18) per pair for songbirds).

Vendors reported that they sold a monthly average of ten specimens of *Psittacus erithacus* and twelve to twenty specimens of the other two parrot species combined. The principal buyers were tourists (primarily from France) and therefore more birds sold during the peak tourist season (December to April). The stall owners reported that in recent months the number of birds sold had decreased because "tourists reported difficulty in bringing the birds into their home countries".

The ease by which the local vendors obtained parrots was dependent on external demand for the species. If there were a strong demand for export they found it more difficult to obtain birds either because there were not any available or because the price became prohibitive.

The one vendor who sold songbirds reported that Senegalese were the principal buyers. According to the vendors, many people purchased small wild birds in order to release them "as a charity", which appears to be a tradition in Dakar.

Some data were obtained on the cost of maintaining birds prior to sale or export. Local vendors fed all birds a combination of corn and peanuts alternating the food daily. One kilogram of corn costs CFA110 (US$0.40) and 1kg of peanuts costs CFA200 (US$0.73). On average, vendors reported using 500g of peanuts and 300g of corn per day to feed all of their birds.

Captive Breeding

No captive breeding or other types of captive or

controlled management programmes are being contemplated for those species exported for the pet trade. The Government does have a project on captive breeding (domestication) of *Francolinus* spp.

FUTURE OF TRADE

Sustainability

There is no evidence either to support or reject the premise that wild bird harvests in Senegal are sustainable. What is abundantly clear is that the present system does not provide adequate means to monitor the impact of the bird trade on wild populations. Data are not readily available on export numbers; there is some question about whether some of the figures that are available are for pairs or for individual specimens; export inspections are not rigorous; the permit issuance and fee system encourages harvesting over the established quota; there is no required holding period before the birds are exported; birds destined for export through Senegal are harvested throughout the region; and no independent Scientific Authority has been appointed.

Nevertheless, the Management Authority is doing the best it can under extreme handicaps. As noted above, there are only seven individuals in the Senegal Government responsible for CITES implementation, of which six must handle other matters in addition to CITES. Without a strong commitment from the Government to fulfil its obligations under the Convention, with adequate staff and budgetary support, it is doubtful that any wildlife utilisation programme can carry the needed assurances that the programme and wildlife utilisation will be sustainable.

Exporters that were interviewed by the authors noted that they felt that a review of the present trade control system was desirable. They expressed concern, however, about whether the Government was serious with regard to establishing a programme to reorganise trade controls in a timely manner. The exporters' major concern was the fact that they all had ongoing financial commitments to employees and others, and that if the trade were suspended indefinitely, they could not afford it. When the highly probable alternative was explained (i.e., total ban on imports into the United States and Europe), they indicated greater willingness to work with the Government.

Consequences of Trade Bans

According to the Division for Hunting and other sources interviewed, a ban on imports of wild-caught birds into Europe and the United States would have serious repercussions on the economic status of the farmers who are dependent on wild bird harvests to sustain their livelihood. The Government would lose a significant source of income from taxes and permit fees. And, at a more fundamental level, government officials agreed that more land would potentially be converted for agricultural purposes.

The present move in the importing countries to ban imports of wild-caught birds has prompted the Government to review the current situation. The Government recognises the need to revise the present system of management controls. If the ban on imports were instituted the motivation to revise the present system would be lost. Messrs Sal and Diop both noted that in the long term conservation of Senegal's natural resources will depend on the actions of the people of Senegal and its Government -- not on decisions taken in developed countries.

Finally, while the Government and traders recognise that there are serious problems that must be addressed to adequately conserve the wildlife of Senegal, there is considerable resentment over the fact that a relatively small number of persons in the importing countries could dictate policies in their country -- particularly when those individuals have little, or no, understanding of the vast array of problems the country is striving to resolve.

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INDIVIDUALS INTERVIEWED

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Cheichna Fall, bird exporter

Boubou Wade, bird exporter

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WILD BIRD TRADE: PERCEPTIONS AND MANAGEMENT IN THE UNITED REPUBLIC OF TANZANIA

Stephen R. Edwards and Steven R. Broad

LEGAL/ADMINISTRATIVE STRUCTURE

Government Policy

According to Tanzania's Director of Wildlife, the Government's policy is 'sustainable use of wildlife'. To this end, the Government has established a number of control mechanisms and procedures designed to provide for sustainable harvest of wild species of birds for international trade (see CONSERVATION AND TRADE CONTROLS). The Wildlife Department is strongly committed to conserving Tanzania's wildlife for Tanzanians and for the larger world community. However, there is equally strong desire to use wildlife resources as a means of generating foreign exchange to finance wildlife management programmes. The Government has no desire to stop exports of wild-caught birds.

Government officials reported that even a few years ago, wildlife conservation was not considered a high priority within Government, but that there is now a broad base of support. While not stated, the implication was clear that to some extent wildlife was a means of earning foreign exchange, which is desperately needed, from tourism and hunting fees. There is a general public awareness of the importance of wildlife and concern for conserving the environment.

Legal Framework

The *Wildlife Conservation Act* of 1974 provides the legal authority for Tanzania's implementation of CITES. This Act also introduces rules regarding transport conditions for live animals, including cage size standards and other requirements. While the Act pre-dates the country becoming a signatory to the Convention, it specifically delegates authority for wildlife to the Director of the Wildlife Department and the Minister of Tourism, Natural Resources and Environment. Functionally, changes in the Convention, such as new listings of species, are accommodated under the law by the issuance of a 'Government Notice'. Such notices are prepared by the Director, passed to the Minister, and, with his endorsement, circulated to the Cabinet for final approval. Once approved, they serve as law.

Allocation of Government Responsibility

Government authority for management and conservation of wildlife is vested in the Wildlife Department in the Ministry of Tourism, Natural Resources and Environment (Figure 1). The Ministry includes four other Departments in addition to the Wildlife Department: Fisheries (both freshwater and marine); Forestry; Environment; and Tourism. The Environment Department was added in November 1990. Prior to that time it had been organised as an independent Commission. The Directors of the five Departments meet regularly to ensure coordination and resolve conflicts of authority in implementing government policies. The Director of the Wildlife Department is Mr Constantius Mlay.

The Wildlife Department is divided into six Sections: Licensing; Research, Training and Extension; Development and Management; Tourist Hunting; Preventive Actions (including the Anti-Poaching Unit); and Administration and Finance. The Wildlife Department employs a total of 4700 people. However, only 40 are located at headquarters in Dar es Salaam. Further, 1905 Wildlife Department employees located in individual districts are presently required to report to their individual District Executive Directors, appointed by the President. It was reported that steps are being taken to change the present reporting system, and that in the future it is hoped that Wildlife Department employees in the districts will report directly to the Wildlife Department.

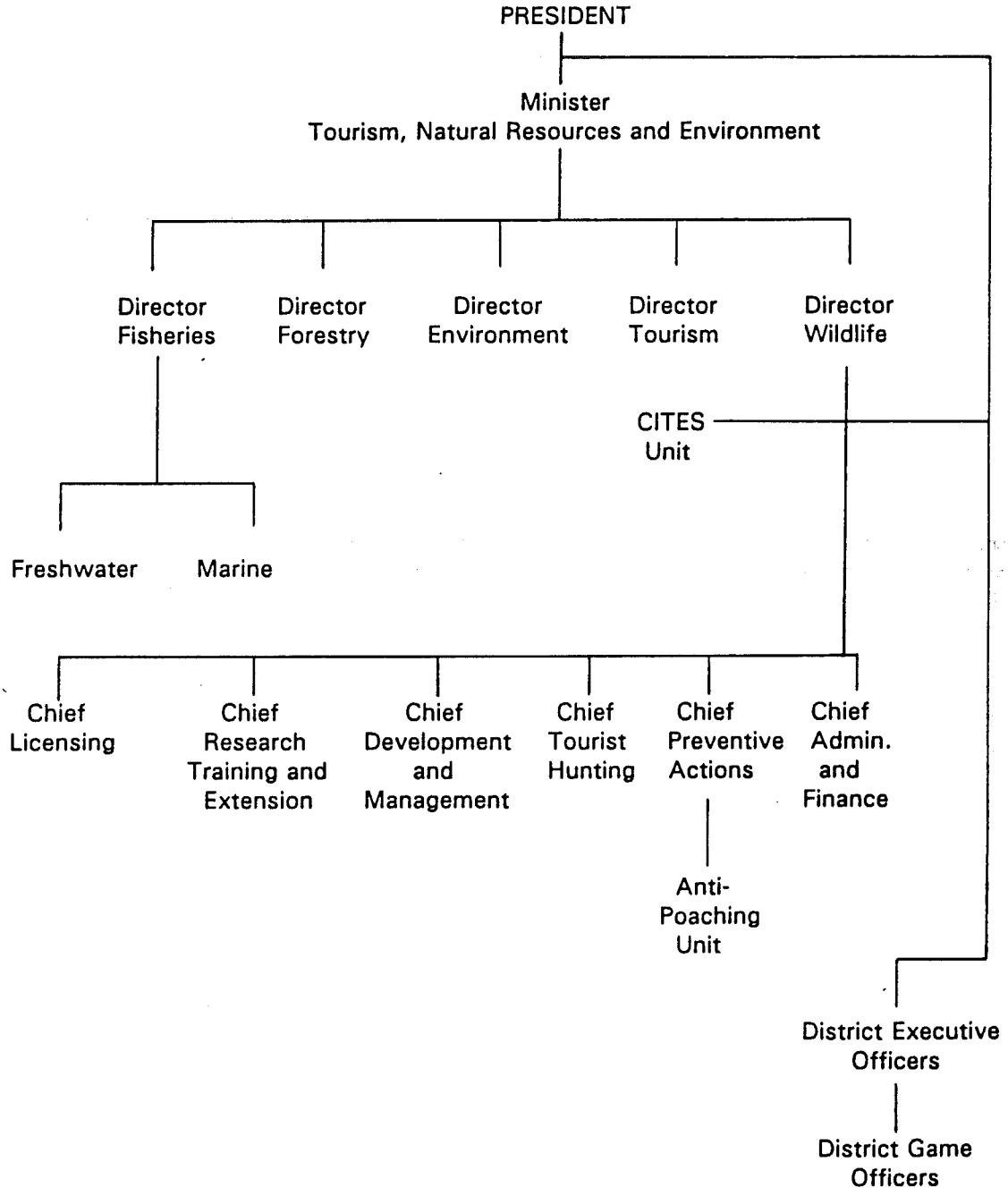
The Wildlife Department is the designated CITES Management Authority. Mr Mlay is the head of the Management Authority, with a CITES Unit reporting directly to him. There are two CITES offices in Tanzania, one in Dar es Salaam, and one in Arusha. The Arusha office reports to the office in Dar es Salaam.

The CITES Unit is responsible for all licensing of wildlife capture and export (whether of CITES-listed species or not). In the future, Mr Mlay hopes to establish an investigative arm of the CITES Unit to ensure that licence holders are operating within new regulations for sustainable wildlife use currently being developed.

The Ministry of Agriculture and Livestock Development and the Ministry of Finance (which includes the Customs Department) also have some dealings with wildlife-related matters. If there were a conflict between the Ministry for Agriculture and Livestock Development and the Wildlife Department, the latter would reportedly have precedence. This precedence appears to stem from the fact that it was the Wildlife Department that took the lead in seeking Tanzanian membership in CITES. Such precedence might be important, for example, with respect to a CITES-listed species that was considered an agricultural pest. Even if a non-CITES species were involved, the Wildlife Department would be contacted before a decision were taken by the Ministry for Agriculture and Livestock Development. However, if a non-CITES species were being considered for notification as an agricultural pest it would be difficult for the Wildlife Department to argue for its continued protection unless the species were to have some export value.

At present, the Wildlife Department in Tanzania can best be described as being in a state of transition.

Figure 1. Organisational relationships and reporting lines of personnel within the Wildlife Department, Ministry of Tourism, Natural Resources and Environment.



Source: Department of Wildlife

Considerable effort is being directed at acquiring the technical capacity to better manage wildlife resources. Until the Department has the technical basis for implementing more rigorous controls, it is taking what steps it can to provide the best controls possible within the context of broader government policies.

The Serengeti Wildlife Research Unit, based in Arusha, is the designated CITES Scientific Authority. It does not fulfil functions required by the Convention, however. In the past year, plans have been developed to establish a formal Scientific Authority within the Ministry of Tourism, Natural Resources and Environment. Funds are needed to establish the unit. When formed, the Scientific Authority would advise the Management Authority as well as other Sections and Departments in the Ministry.

Budget and Revenues

The Wildlife Department submits an annual budget to the Minister of Agriculture and Livestock Development. The Ministry budget is submitted to the Cabinet for approval.

The Department may also apply for special project funding from the Tanzania Wildlife Protection Fund. This fund derives its income from a percentage of hunting licence fees and CITES export permit fees, and from penalties paid in cases of non-compliance with wildlife regulations and trade controls. The percentage allocated to the fund varies depending on the activity and source. At present between 10% and 25% of the sport hunting licence fees, depending on the species involved, go to the Fund. In 1990, hunting fee income was approximately TSh565 million (US$2.5 million)[30], of which approximately 25% was deposited in the Fund.

Seventy-five per cent of the CITES export permit fee [TSh600 (US$2.65) per permit] goes to the Wildlife Protection Fund. The total number of export permits issued is difficult to calculate. However, in one example in 1989, 161 permits were issued for export of *Agapornis fischeri* (Fischer's Lovebird), providing TSh96,600 (US$427) income, of which the Wildlife Protection Fund received TSh72,450 (US$320).

All other funds generated through licence and permit fees go to the Treasury. The Wildlife Department is working with the government Planning Commission to try to retain a larger percentage of the funds earned from use of wildlife.

The Tanzanian Wildlife Protection Fund can only be used to support activities related to the conservation of wildlife and the environment. When special needs arise within the Wildlife Department, project proposals are submitted to the Fund's Board of Trustees. Mr Mlay serves as the Chief Executive Officer of the Fund. In the past the Fund has supported purchase of vehicles, training and uniforms for game scouts; field surveys; travel to meetings; and even printing of CITES export permits.

Other Sources of Conservation Support

The actions of the Wildlife Department over the past two years have demonstrated a desire to collaborate with conservation and development organisations where technical assistance is needed. A number of such organisations are implementing programmes in Tanzania. The major organisations are:

- World Wide Fund for Nature (WWF): WWF has recently established an office in Tanzania, based in Dar es Salaam, to oversee the implementation of WWF-funded projects in the country. The WWF Tanzania office is represented on the Steering Committee for a US Agency for International Development (US-AID) project being implemented by the Wildlife Department (see **Assessment of Wild Populations and Effects of Trade**). WWF staff in Tanzania are concerned about the need for improved monitoring of wild bird exports to ensure control and a fair level of income to the country.

- IUCN — the World Conservation Union: IUCN oversee its projects in Tanzania from its regional office in Nairobi. The most important project presently being implemented is in the Selous Game Reserve. This project gives attention to developing mechanisms for sharing revenues from wildlife-use schemes with local villagers.

- African Wildlife Foundation (AWF): AWF is serving as the administrator for the US-AID funding allocated to the Wildlife Department.

- Deutsche Gesellschaft fur Technische Zusammenarbeit: has a large on-going project in the Selous Game Reserve focusing on rural community management of wildlife.

- Frankfurt Zoological Society: supports conservation projects in Tanzania.

- The Wildlife Conservation Society of Tanzania: the Society is the principal national conservation organisation in the country. This organisation has adopted a policy of helping the Wildlife Department to gain better control over wildlife utilisation. However, as noted by the Wildlife Department, the Society believes that the wild bird trade should be subject to a moratorium (Wildlife Conservation Society of Tanzania, *in litt.*, 1991).

[30]Exchange rate: 226 Tanzanian shillings (TSh) per US$1.

CONSERVATION AND TRADE CONTROLS

Land Ownership and Habitat Status

All land is owned by the Government. Individuals are granted rights to use land for specific purposes approved through a government process, and can own structures on the land as well as agricultural improvements. Under Tanzanian law the right to use land can be revoked.

There are four categories of protected lands:

- National Parks. Human habitation is prohibited and total protection is provided to the habitat and all wildlife. Management is directed at protecting the resources and using them for tourism, education and research. Consumptive use of the wildlife is not allowed.

- Game Reserves. These were primarily established to conserve areas with high concentrations of game or that are important for migratory species. Human habitation is prohibited, but tourist hunting is permitted under special licences issued by Wildlife Department headquarters. These lands are managed to promote tourist hunting and, to some extent, wildlife viewing.

- Game Controlled Areas. Both resident and tourist hunting is allowed under licences issued by the Wildlife Department's headquarters. All other forms of land and natural resource use (e.g. agriculture, grazing and logging) are permitted and human habitation is allowed. Wildlife populations are declining in many Game Controlled Areas because of the human impact and loss of habitat. Consideration is being given to 'de-gazetting' some Game Controlled Areas and upgrading others.

- Partial Game Reserves. These are Game Controlled Areas in which Game Reserve status has been applied in regard to certain species that need special protection.

Game Reserves and Game Controlled Areas are under the authority of the Wildlife Department. National Parks are administered as a 'parastatal' organisation. As such they are governed by an independent Board of Directors, of which Mr Mlay is a member. All National Park entrance fees go to the parastatal organisation, which reports its income to the Government and pays taxes as all other businesses.

Wildlife outside these designated areas is the responsibility of the Wildlife Department; however, hunting licences may be issued by District Game Officers.

An additional area with special status, the Ngorongoro Conservation Area, was established and is managed under a special Act of Parliament. The area is managed to conserve the ecosystem, promote tourism and enhance the welfare of the Maasai people. Multiple use of the area is allowed; however, certain activities are prohibited or confined to designated zones.

Assessment of Wild Populations and Effects of Trade

From a scientific and technical standpoint, the Wildlife Department claimed to be taking a number of steps to enhance its capacity to manage wild populations for sustainable harvests.

To correct the deficiencies in the present system and provide a technically sound basis for making decisions about management and harvest of all wildlife in Tanzania, the Wildlife Department is embarking on a three-year Planning and Assessment for Wildlife Management (PAWM) project. Funding is provided by US-AID through AWF. A special unit has been established to report directly to the Director. The wild bird trade figures as a high priority in this assessment; consultants have been retained and work has already begun. This project aims to provide the Department with the data necessary to determine the status of wild populations, and whether trade levels are sustainable.

In 1989, some members of the Tanzanian Wildlife Exporters Association, in cooperation with Regional Game Officers, undertook a survey of *Agapornis personata* (Masked Lovebird) to determine the status of the wild population. That survey concluded that the population was large enough to sustain a harvest. However, in reviewing the survey procedures, Wildlife Department staff decided that the surveys were not sufficiently rigorous; the Department has therefore not reversed its decision to ban harvest and export of this species.

The Wildlife Department convenes an annual meeting of all of the Regional Game Officers at which each reports on the status of wildlife in his region. If a particular species is considered to be threatened by over-harvesting, the Department claimed that it would remove that species from the list for which harvests are authorised. Further, throughout each year, headquarters staff visit most regions and review the situation directly.

The Regional Game Officers and District Game Scouts could possibly provide an effective mechanism for Tanzania to make 'non-detriment findings' as required by CITES Article IV. These Wildlife Department officials are located throughout the country and could play an important role in monitoring the status of wild populations that are harvested for export. Monitoring and reporting procedures would have to be established for such a system to be effective, and would require more sophisticated data management systems than are available to the Department at this time.

Quotas

Species harvest quotas were introduced after a period of large-scale, unregulated trade in the early 1980s. It was reported by the Director of the Wildlife Department that the total quota for each species is established by the CITES Unit in the Wildlife Department and then divided by the number of licensed 'trophy dealers' (see **Licences**). However, public documents stipulating the annual quota show the number of specimens of each species (or taxon) permitted to be harvested/exported per licensed trophy dealer, rather than the total exports allowed per species. The total allowable harvest/export quota may then be calculated by multiplying the number of licensed trophy dealers by the total number of birds authorised per dealer.

Trophy dealer quotas established for 1990 are provided in Table 1. Ninety-three taxa were authorised for harvest during that year, with individual trophy dealers having the potential to export a total of 13,103 specimens. Taking into account that 125 trophy dealers were licensed to export birds in 1990, a maximum of 1,637,875 specimens were authorised for harvest/export during that year.

As currently established, individual dealer quotas provide an unclear picture of the actual allowable harvest. It is difficult to calculate and compare total annual quotas, and to compare quotas with international trade records.

The current quota system does not appear to address biological considerations that might influence the number of birds that could be harvested sustainably. Further, some quotas are established for broad taxon categories such as 'finches', 'waxbills' and 'doves'. The category 'other' is used in some cases, such as 'other plovers'. It is therefore impossible to determine the number of specimens of individual species authorised for harvest/export, and to compare harvest levels from year to year.

Adjustments in the annual harvest quota for individual taxa are reportedly made on the basis of information provided by Regional Game Officers and Game Scouts. As mentioned above, the Wildlife Department has taken action in the past to prohibit harvest of certain species. In 1983, *Agapornis personata* was banned from harvest and export. This decision was communicated to the CITES Secretariat and subsequently to all Parties to CITES requesting their assistance in stopping trade in this species (Notification 283; 15 March 1984). In 1990 the following species were removed from the harvest quota list: *Balearica regulorum* (South African Crowned Crane), *Ardeotis kori* (Kori Bustard), *Mycteria ibis* (Yellow-billed Stork), *Balaeniceps rex* (Whale-headed Stork) and *Sagittarius serpentarius* (Secretary Bird). These prohibitions on harvest and export had not been communicated to the CITES Secretariat at the time of this writing.

Permits

'Capture Permits' are required to trap wild birds. These are issued by the Licensing Section in Dar es Salaam or Arusha upon application by a licensed trophy dealer. Capture permits specify the taxa and number of specimens allowed to be harvested, as well as the areas and times within which birds must be collected.

Trophy dealers applying for a capture permit must specify the taxa (e.g. species, genera, etc., as required) and numbers of each they wish to collect, and provide photos of their trappers. When capture permits are issued, trophy dealers are given a form listing the taxa and the number of birds of each they are authorised to capture. These forms provide the basis for monitoring individual dealer performance over the year. Dealers are also provided with identity cards for their trappers.

Capture permit fees are assessed based on the number of specimens of each species authorised for capture. The amount assessed varies by species. Fees are deposited in the Treasury.

Capture permit holders are required to report regularly to the Regional Game Officers in the areas where they are authorised to capture birds.

Once birds are trapped, they are required to be inspected by a member of the Anti-Poaching Unit. Subsequent to this inspection, trophy dealers are issued 'Ownership Certificates'. Ownership certificates are issued no sooner than seven days after a capture permit has been issued. These certificates are issued for a nominal fee of TSh100 (US$0.44).

Trophy dealers must acquire a 'CITES Export Permit' or an 'Export Certificate' from the Licensing Section prior to exporting wild birds. All birds must be held in trophy dealers' holding facilities for a minimum of 14 days before such permits or certificates will be issued. During this time the birds must be inspected by a veterinarian from the Ministry of Agriculture (who issues a health certificate) and a member of the Anti-Poaching Unit. Export Permits and Certificates are issued upon verification that these requirements have been met. A maximum of seven CITES-listed species may be listed on a single CITES export permit and ten non-CITES species on an export certificate. Exporters are charged an export permit fee of TSh600 (US$2.65) per permit or certificate.

Licences

The basic licence required of all businesses involved in wildlife trade is a 'Trophy Dealer Licence', issued by the Licence Section of the Department of Wildlife's

Table 1. Tanzania 1990 wild bird harvest quotas (per trader).

SPECIES	COMMON NAME	QUOTA
	Finch	4,500
	Other weaver	3,000
Estrildidae	Waxbill	1,500
Agapornis fischeri	Fischer's Lovebird	800
Charadriidae	Other Plover	750
Columbidae	Dove	300
Serinus spp.	Canary	300
Euplectes spp.	Bishop	150
Pycnonotidae	Bulbul	150
Phoenicopterus minor	Lesser Flamingo	100
Capitonidae	Barbet	90
Numida meleagris	Helmeted Guineafowl	80
	Whydah	75
Francolinus sephaena	Crested Francolin	74
Agapornis pullaria	Red-headed Lovebird	50
Nectariniidae	Sunbird	45
Phoenicopterus ruber	Greater Flamingo	40
Colius macrourus	Blue-naped Mousebird	30
Colius striatus	Speckled Mousebird	30
Francolinus afer	Red-necked Spurfowl	30
Lamprotornis chalybaeus	Blue-eared Glossy Starling	30
Platalea alba	African Spoonbill	27
Acryllium vulturinum	Vulturine Guineafowl	22
Apaloderma narina	Narina's Trogan	22
Apaloderma vittatus	Bar-tailed Trogan	22
Francolinus coqui	Coqui Francolin	22
Francolinus leucoscepus	Yellow-necked Spurfowl	22
Francolinus rufopictus	Grey-breasted Spurfowl	22
Alcedinidae	Kingfisher	20
Ciconia abdimii	Abdim's Stork	20
Cinnyricinclus leucogaster	Violet-backed Starling	20
Coraciidae	Roller	20
Corythaixoides spp.	Go-away-bird	20
Cosmopsarus regius	Golden-breasted Starling	20
Creatophora cinerea	Wattled Starling	20
Leptoptilos crumeniferus	Marabou Stork	20
Meropidae	Bee-eater	20
Onychognathus morio	Red-winged Starling	20
Pelecanus onocrotalus	White Pelican	20
Pelecanus rufescens	Pink-backed Pelican	20
Ploceus intermedius	Masked Weaver	20
Ploceus ocularis	Spectacled Weaver	20
Ploceus subaureus	Golden Weaver	20
Poicephalus cryptoxanthus	Brown-headed Parrot	20
Poicephalus gulielmi	Red-fronted Parrot	20
Poicephalus meyeri	Meyer's Parrot	20
Poicephalus rufiventris	Red-bellied Parrot	20
Spreo hildebrandti	Hildebrandt's Starling	20
Spreo superbus	Superb Starling	20
Terpsiphone viridis	Paradise Flycatcher	20
Threskiornis aethiopicus	Sacred Ibis	20

Table 1. continued

SPECIES	COMMON NAME	QUOTA
Himantopus himantopus	Black-winged Stilt	15
Lamprotornis purpuropterus	Ruppell's Starling	15
Lamprotornis splendidus	Splendid Starling	15
Recurvirostra avosetta	Avocet	15
Actophilornis africana	African Jacana	10
Chrysococcyx cupreus	African Emerald Cuckoo	10
Francolinus hildebrandti	Hildebrandt's Francolin	10
Francolinus levaillantii	Red-winged Francolin	10
Francolinus shelleyi	Shelly's Francolin	10
Francolinus squamatus	Scaly Francolin	10
Fulica cristata	Red-knobbed Coot	10
Gallinula chloropus	Common Moorhen	10
Gyps bengalensis	White-backed Vulture	10
Hagedashia hagedash	Hadada Ibis	10
Limnocorax flavirostra	Black Crake	10
Milvus migrans	Black Kite	10
Musophaga rossae	Ross's Turaco	10
Necrosyrtes monachus	Hooded Vulture	10
Picidae	Woodpecker	10
Podica senegalensis	African Finfoot	10
Porphyrio alleni	Allon's Gallinule	10
Porphyrio porphyrio	Purple Gallinule	10
Porzana marginalis	Striped Crake	10
Sarothrura pulchra	White-spotted Pygmy Crake	10
Tauraco fischeri	Fischer's Turaco	10
Tauraco hartlaubi	Hartlaub's Turaco	10
Tauraco livingstonii	Livingstone's Turaco	10
Tockus alboterminatus	Crowned Hornbill	8
Bucorvus caffer	Ground Hornbill	6
Bycanistes brevis	Silvery-cheeked Hornbill	6
Bycanistes bucinator	Trumpeter Hornbill	6
Tockus deckeni	Von der Decken's Hornbill	6
Tockus erythrorhynchus	Red-billed Hornbill	6
Tockus flavirostris	Yellow-billed Hornbill	6
Tockus nasutus	Grey Hornbill	6
Accipter badius	Shikra	4
Aquila rapax	Tawny Eagle	4
Elanus caeruleus	Black-shouldered Kite	4
Scopus umbretta	Hammerkop	4
Upupa epops	Hoopoe	4
Micoparra capensis	Lesser Jacana	
TOTAL		13,103

Source: Wildlife Department.

CITES Unit. There are 18 different categories of activities for which this licence is issued, one of which is 'commercial dealing in live or stuffed birds'. This licence is required of individuals wishing to obtain capture permits for the capture of wild birds. The cost for a trophy dealer licence varies according to the classes of activities authorised. The fee for a licence authorising harvests of wild birds is TSh2500 (US$11.06).

Trophy dealers must meet several requirements before they will be issued a licence to trade in live birds. Applicants must have a holding facility that has been inspected by a Regional Game Officer. They are required to have the minimum capital necessary to sustain their operation, and to provide a copy of their tax return showing that the appropriate amount of foreign exchange generated by previous exports was deposited in the Bank of Tanzania (see **Trapping and Trade**). Applicants must be free from violations of wildlife regulations during the previous year, and provide a photograph of themselves with their application.

Trophy dealer licences are issued annually. The licensing process begins in October when Regional Game Officers circulate application forms to those wishing to apply for a licence. In November, Regional Game Officers submit completed applications and their recommendations to the CITES Unit in Dar es Salaam. Normally, between 300 and 400 applications are submitted each year. The CITES Unit reviews all applications and makes decisions, in consultation with the Licensing Section, regarding who will be issued licences. Failure to meet one or more of the licence requirements stated above is the principal reason for rejecting applications.

In 1988, 282 trophy dealer licences were granted of which 193 authorised harvest of wild birds. In 1989 over 600 applications were received; 184 licences were issued of which 108 authorised wild bird harvests. In 1990 a total of 139 trophy dealer licences were granted for all categories of wildlife utilisation, of which 125 were authorised for commercial activities related to live and stuffed birds. As of the end of July 1991, 166 trophy dealer licences had been granted, of which about 90 authorised harvests of wild birds for export. It is expected that additional licences authorising wild bird harvests will be granted before the end of the year.

During 1990 three trophy dealer licences were revoked because of violations. The Wildlife Department is proceeding with prosecutions of all three trophy dealers.

Export Inspection

There are only two authorised airports for international export: Dar es Salaam and Kilamanjaro near Arusha. CITES Unit personnel often go to the airport when a wildlife shipment is being exported. To assist the Customs Department of the Ministry of Finance, members of the Anti-Poaching Unit inspect all export shipments of wildlife before they are allowed out of the country. A member of the Anti-Poaching Unit is stationed at each airport at all times. Exporters are required to notify the Anti-Poaching Unit of their intent to ship wildlife three days before the date of shipping.

Controls at Kilamanjaro International Airport are reportedly not as rigorous as those at Dar es Salaam. In the past year exporters have found that they can avoid some of the reporting requirements by loading their shipments at Kilamanjaro International Airport for shipment to Europe or the United States. These shipments are considered 'in transit' during their stop-over in Dar es Salaam. The Wildlife Department has addressed this 'loophole' by working with the private company responsible for managing the two airports. Henceforth, company personnel will notify the Wildlife Department of any pending shipments of wild birds (and other wildlife for that matter) and not allow such shipments until the Department has given its approval.

COMMERCIAL ACTIVITIES

Trapping and Trade

According to exporters, each dealer has an average of twenty-five traders from whom they buy birds. Each trader may use between five and ten villagers (trappers) to help him collect the birds. All collecting in the vicinity of villages requires permission from the village organisation.

Exporters provided the following examples of prices paid for birds in Tanzania:

- *Poicephalus meyeri* (Meyer's Parrot): Trappers are paid TSh500 (US$2.21) per bird by traders, and traders are paid TSh700 (US$3.10) per bird by licensed trophy dealers.
- Finches: Trappers are paid an average of TSh40 (US$0.18) per bird; traders are paid TSh70 (US$0.31) per bird.

When birds are collected from the wild they are first transported to a 'way-station'. When sufficient numbers have accumulated at the way station they are transported to the trophy dealer's holding facility. Most holding facilities are located in the vicinity of Dar es Salaam and Arusha, to facilitate compliance with export requirements. However, a few are located in other cities such as Dodoma and Mwarza. In a few cases the Wildlife Department has authorised movement of birds from a dealer's holding facility some distance from the designated ports-of-exit to another dealer's holding facility nearer to the airport. This is only allowed if

there are assurances that the birds owned by the different dealers can be separated.

As noted above, birds must be held in the exporter's holding facility for a minimum of 14 days prior to export. In practice, according to the Wildlife Department, birds are held for a month to six weeks, which is the time required to process export documents, such as export certificates and permits. During this period, the birds must be inspected by a member of the Anti-Poaching Unit and a veterinarian from the Ministry of Agriculture. Exporters are required to notify the Anti-Poaching Unit three days prior to the date of export of any bird shipments.

An immediate concern of the wild bird exporters is the fact that a number of the major airlines, e.g. British Airways, KLM and Lufthansa, no longer accept live bird cargo shipments from Tanzania. This has caused exporters to use alternative airlines such as Egypt Air, Air Tanzania and Bond Air Freight to carry their shipments to the principal markets of the United States and Europe.

Upon receipt of payment for exported birds, trophy dealers are required to deposit all or some of the funds received in foreign currency in the Bank of Tanzania. Under Tanzanian law, an exporter may be approved by the Bank of Tanzania to hold up to 35% of his foreign exchange earnings in a registered foreign bank account. The remainder must be deposited in the Bank of Tanzania. If not authorised to maintain a foreign account, 100% of foreign exchange earnings must be deposited in the Bank of Tanzania. The amount to be deposited is determined by the value of the exports, which are established by the Bank of Tanzania. Normally values are based on the figures provided in the exporter's billing invoice and currency declaration form (CD-3). It appears that exporters are undervaluing their exports, based on figures cited in their own price lists circulated in Europe and the United States.

Wildlife Exporters Association

The Tanzanian Wildlife Exporters Association was formed in 1990. According to its chairman, Mr Lablon Masiaga, the Association does not yet have by-laws or rules of membership, but there are plans to prepare them. The Association has about 200 members. While the Association embraces all forms of wildlife utilisation, Wildlife Department personnel noted that the wild bird exporters were "the most active members" in the Association. In a meeting with four association members, the authors were told that although not all members were active in the bird trade, all had expressed an interest in participating in the trade. Only 90 trophy dealer licences authorising the capture and export of wild birds had been issued as of July 1991 (see **Licences**).

Most traders feel that the Wildlife Department would prefer to have the trade in wild birds stopped, a point that does not appear to be true based on information provided by the Department. The Tanzanian Wildlife Exporters Association has some influence with the Government, and has exerted pressure on the Wildlife Department through the President's office.

The Tanzanian Wildlife Exporters Association had not provided any funding for field surveys or research at the time of this writing. However, a few years ago individual traders contributed funding towards the survey of *Agapornis personata* mentioned above (see **Other Sources of Conservation Support**).

Export Volumes

Export data are sometimes maintained by common name, e.g. flamingos, bee-eaters, etc., which makes comparison with other trade records, such as CITES Annual Report data, very difficult.

Tables 2a and 2b show reported exports of specimens of CITES-listed non-psittacines and psittacines respectively between 1983 and 1990. Data covering 1983 to 1988 are from CITES annual Reports; 1989 and 1990 data were provided by the Wildlife Department.

During this eight-year period a total of 535,399 specimens of CITES-listed birds were exported from Tanzania; 28,629 (5%) of the specimens represented 66 taxa (including species and higher taxonomic groupings) of non-psittacines. Of these non-psittacine exports, 95% were of five species: *Phoenicopterus minor* (Lesser Flamingo), *P. roseus* (=*P. ruber roseus*; Greater Flamingo), *Balearica pavonina* (Crowned Crane), *B. regulorum* and *Struthio camelus* (Ostrich).

Eighteen species of psittacines were recorded as exported from Tanzania from 1983 to 1990. Three, *Agapornis fischeri*, *Poicephalus meyeri*, and *Poicephalus rufiventris* (Red-bellied Parrot), accounted for over 95% of all psittacines exported from 1983 to 1990 (Figures 1 to 3). *Agapornis fischeri* alone accounted for over 85% of psittacine exports. In addition, significant numbers of birds were reported simply as the genus *Poicephalus*. Several species, e.g. *Eos bornea* (Red Lory) and *Poicephalus senegalus* (Senegal Parrot), probably represented re-exports, as neither species occurs in the country. In all cases, the number of specimens reported as exported in 1990 was significantly less than the number reported in prior years. For most species, exports peaked in 1987.

Reported exports of *Agapornis fischeri* in 1990 were less than 50% of those reported in 1987 (Figure 2). Exports of two species, *Agapornis pullaria* (Red-faced Lovebird) and *A. personata*, were stopped in 1988 and

Table 2a. Reported exports of live CITES-listed non-psittacines from Tanzania (1983-1990).

SPECIES	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	AVG.	%	CUM %
Phoenicopterus minor	7	918	834	3,138	2,882	2,822	2,596	1,560	14,757	1,845	51.5	51.5
Phoenicopterus roseus	25	112	843	1,529	1,457	1,421	1,247	799	7,433	929	26.0	77.5
Balearica pavonina	0	20	136	1,080	743	155	0	0	2,134	267	7.5	84.9
Balearica regulorum	20	34	381	296	359	338	60	0	1,488	186	5.2	90.1
Struthio camelus	0	0	0	0	0	0	840	0	840	105	2.9	93.0
Phoenicopteridae	0	280	20	73	25	0	0	0	398	50	1.4	94.4
Sagittarius serpentarius	3	24	94	119	55	7	0	0	302	38	1.1	95.5
Terathopius ecaudatus	18	43	34	48	31	11	0	0	185	23	0.6	96.1
Platalea alba	0	0	0	0	0	0	57	75	132	17	0.5	96.6
Tauraco porphyreolaphus	0	0	0	26	52	53	0	0	131	16	0.5	97.1
Aquila rapax	17	25	41	2	7	8	0	12	112	14	0.4	97.4
Haliaeetus vocifer	10	0	2	35	23	18	0	0	88	11	0.3	97.8
Gyps africanus	0	26	13	14	7	23	0	0	83	10	0.3	98.0
Necrosyrtes monachus	13	0	16	10	7	25	0	0	71	9	0.2	98.3
Gyps rueppellii	22	2	14	15	2	8	0	0	63	8	0.2	98.5
Falconiformes	33	11	0	0	0	0	0	0	44	6	0.2	98.7
Trigonoceps occipitalis	5	8	2	1	7	12	0	0	35	4	0.1	98.8
Torgos tracheliotus	4	0	2	10	5	11	0	0	32	4	0.1	98.9
Neophron percnopterus	5	1	6	11	1	7	0	0	31	4	0.1	99.0
Polhierax semitorquatus	0	0	0	0	25	0	0	0	25	3	0.1	99.1
Buteo rufinus	0	0	0	21	0	0	0	0	21	3	0.1	99.2
Aquila spp.	0	0	12	0	3	3	0	0	18	2	0.1	99.2
Tauraco corythaix fischeri	0	0	0	0	15	0	0	0	15	2	0.1	99.3
Accipiter spp.	0	0	13	0	0	0	0	0	13	2	0.0	99.3
Falconidae	0	0	0	0	13	0	0	0	13	2	0.0	99.4
Milvus migrans	0	0	9	0	2	2	0	0	13	2	0.0	99.4
Falco biarmicus	0	0	0	10	1	1	0	0	12	2	0.0	99.5
Hieraaetus spilogaster	0	0	0	10	0	0	0	0	10	1	0.0	99.5
Gyps bangalensis	0	1	0	0	0	0	0	9	10	1	0.0	99.5
Aquila wahlbergi	9	0	1	0	0	0	0	0	10	1	0.0	99.6
Phoenicopterus spp.	0	0	0	0	0	0	10	0	10	1	0.0	99.6
Gyps fulvus	0	0	8	0	0	0	0	0	8	1	0.0	99.6
Gypaetus barbatus	0	0	8	0	0	0	0	0	8	1	0.0	99.7
Bubo africanus	0	0	0	6	0	0	0	0	6	1	0.0	99.7
Buteo rufofuscus	1	0	0	4	0	1	0	0	6	1	0.0	99.7
Buteo buteo	0	0	5	1	0	0	0	0	6	1	0.0	99.7
Platalea leocorodia	0	6	0	0	0	0	0	0	6	1	0.0	99.7
Pandion haliaetus	0	0	0	0	5	0	0	0	5	1	0.0	99.8
Bubo lacteus	0	0	1	1	3	0	0	0	5	1	0.0	99.8
Accipitridae	0	0	0	4	1	0	0	0	5	1	0.0	99.8
Glaucidium perlatum	0	0	0	4	0	0	0	0	4	1	0.0	99.8
Polemaetus bellicosus	0	0	4	0	0	0	0	0	4	1	0.0	99.8

Table 2a. continued

SPECIES	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	AVG.	%	CUM %
Strigiformes	0	0	0	0	3	0	0	0	3	0	0.0	99.8
Lophoaetus occipitalis	0	0	0	3	0	0	0	0	3	0	0.0	99.8
Bugeranus carunculatus	0	0	0	0	2	0	0	0	2	0	0.0	99.9
Ciccaba woodfordii	0	0	0	2	0	0	0	0	2	0	0.0	99.9
Falco chicquera	0	0	0	0	2	0	0	0	2	0	0.0	99.9
Falco cherrug	0	2	0	0	0	0	0	0	2	0	0.0	99.9
Circus aeruginosus	2	0	0	0	0	0	0	0	2	0	0.0	99.9
Buteo rufofuscus augur	1	0	0	0	1	0	0	0	2	0	0.0	99.9
Tyto alba	0	0	1	0	1	0	0	0	2	0	0.0	99.9
Tyto spp.	0	0	0	0	0	2	0	0	2	0	0.0	99.9
Nyctea scandiaca	0	0	0	0	0	2	0	0	2	0	0.0	99.9
Falco dickinsoni	0	0	0	0	1	0	0	0	1	0	0.0	99.9
Buteo spp.	0	0	0	1	0	0	0	0	1	0	0.0	99.9
Accipiter rufiventris	1	0	0	0	0	0	0	0	1	0	0.0	99.9
Kaupifalco monogrammicus	0	0	0	1	0	0	0	0	1	0	0.0	99.9
Hieraaetus spp.	0	0	1	0	0	0	0	0	1	0	0.0	99.9
Melierax canorus	0	0	0	0	1	0	0	0	1	0	0.0	99.9
Melierax metabates	1	0	0	0	0	0	0	0	1	0	0.0	99.9
Melierax gabar	0	0	0	0	1	0	0	0	1	0	0.0	99.9
Gypohierax angolensis	0	0	0	0	1	0	0	0	1	0	0.0	99.9
Falco rupicoloides	0	0	0	1	0	0	0	0	1	0	0.0	99.9
Accipiter tachiro	0	0	0	0	1	0	0	0	1	0	0.0	99.9
Hieraaetus fasciatus	0	0	1	0	0	0	0	0	1	0	0.0	100.0
Haliaeetus spp.	0	0	0	1	0	0	0	0	1	0	0.0	100.0
TOTAL	197	1,513	2,502	6,477	5,745	4,930	4,810	2,455	28,629	3,578.6		

Source: CITES Annual Report Data (1983-1988); Wildlife Department (1989-1990).

Table 2b. Reported exports of live CITES-listed psittacines from Tanzania (1983-1990).

SPECIES	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL	AVG.	%	CUM %
Agapornis fischeri	43,315	39,332	59,218	71,784	87,566	55,147	33,634	37,879	427,875	53,484	84.4	84.4
Poicephalus meyeri	3,332	3,169	8,374	7,202	11,764	5,555	1,412	1,175	41,983	5,248	8.3	92.7
Poicephalus rufiventris	244	1,980	2,532	4,663	3,918	2,001	237	559	16,134	2,017	3.2	95.9
Agapornis personata	5,077	250	0	0	450	0	0	0	5,777	722	1.1	97.0
Poicephalus cryptoxanthus	0	197	245	702	1,550	1,702	126	466	4,988	624	1.0	98.0
Poicephalus gulielmi	1	390	279	248	379	646	1,575	954	4,472	559	0.9	98.9
Agapornis pullaria	1,000	0	0	200	600	200	0	0	2,000	250	0.4	99.3
Agapornis cana	0	294	0	400	0	0	800	0	1,494	187	0.3	99.6
Poicephalus spp.	50	74	370	191	35	88	38	0	846	106	0.2	99.7
Poicephalus senegalus	0	0	500	0	0	0	0	0	500	63	0.1	99.8
Poicephalus robustus	0	0	0	169	71	102	0	0	342	43	0.1	99.9
Agapornis roseicollis	0	83	20	0	12	0	0	0	115	14	0.0	99.9
Psittacula alexandri	0	0	0	0	88	0	0	0	88	11	0.0	99.9
Polytelis alexandrae	0	46	0	0	0	0	0	0	46	6	0.0	99.9
Eos bornea	0	40	0	0	0	0	0	0	40	5	0.0	100.0
Trichoglossus haematodes	0	35	0	0	0	0	0	0	35	4	0.0	100.0
Psittacus erithacus	5	8	7	6	7	1	0	0	34	4	0.0	100.0
Agapornis spp.	0	0	1	0	0	0	0	0	1	0	0.0	100.0
TOTAL	53,024	45,898	71,546	85,565	106,440	65,442	37,822	41,033	506,770	63,346		

Source: CITES Annual Report Data (1983-1988); Wildlife Department (1989-1990).

1989 respectively. The only psittacine in which exports increased after 1988 was *Poicephalus gulielmi* (Jardine's Parrot), and even exports of this species were significantly reduced in 1990.

In 1990, a total of 323,500 specimens, including CITES-listed and non-CITES species, were reported as exported from Tanzania. This figure reflects approximately 20% of the total authorised harvest/ exports for that year. Sixty-seven different taxa, including species and species groups, were exported, according to information provided by the Wildlife Department (Table 3). Only 15 (or 22%) of these 67 species (or species groups) are listed in the CITES Appendices, with exports of CITES-listed species accounting for less than 15% of total exports.

Nineteen countries were recorded as importing birds from Tanzania during 1990. Four countries alone imported 196,511 specimens, accounting for 60.7% of the total specimens exported: the Netherlands (72,677 specimens), Denmark (59,992 specimens), United States (31,959 specimens) and United Kingdom (31,953 specimens).

Benefits

According to the Wildlife Department, a number of benefits to Tanzania and wildlife conservation in general are linked to the wild bird trade. Government personnel report that the trade provides employment for a large number of people, and through the wages earned a large segment of the population receives direct economic benefits.

According to representatives of the wildlife exporters association, each dealer retains an average of twenty-five trappers and each trapper works with five to ten villagers. Given 100 dealers, that would mean that between 12,500 and 25,000 Tanzanians are directly involved in the wild bird trade [100 x (25 x 5 or 10)]. Taking into account that only about one-third of the dealers appear to be active, a conservative estimate of the number of people directly benefitting would be between 4150 and 8300. Given Tanzania's average family size of ten individuals, it would follow that between 40,000 and 80,000 Tanzanians receive some economic benefit from the trade. These numbers are impossible to verify, but they almost certainly overestimate the actual number of people deriving economic benefits.

Using 1990 export figures and the values for *Poicephalus meyeri* and finches given above, it appears that field collectors earned a minimum of TSh8 million (US$35,400) from exports of these species, and trappers a minimum of TS5.8 million (US$25,700).

The Wildlife Department is cooperating with a number of NGOs to determine the most equitable methods of sharing income from wildlife uses with rural communities. They are also encouraging licensed trophy dealers to invest more of their 'profits' back into maintaining the wild populations.

At present, 75% of the export permit fee goes back to support conservation of wildlife; however, in actual terms the amount of money raised is small, based on the fee of TSh600 (US$2.65) per permit. No money from the other licence and permit fees that are assessed for the wild harvest of birds can be construed as going directly to conservation of wildlife. However, the Wildlife Department is discussing various options with the Planning Commission (which reports directly to the President) under which a percentage of this income could be made available for conservation activities, most likely through the Tanzanian Wildlife Protection Fund.

Table 4 compares the maximum potential value of 1990 exports (i.e., 100% of the authorised harvest/exports) with the potential realised value (i.e., actual exports). Values of the different species are based on published dealer price lists circulated in Europe (FOB Tanzania). Using these figures, if all licensed dealers exported 100% of their authorised quota for each species, the total potential value of these exports would be about US$13 million. The potential value of the actual exports was estimated to be about US$1.7 million.

From the perspective of the dealers, as noted above, in 1990, each of the 125 licensed bird trophy dealers was authorised a harvest quota of 13,103 specimens. The total potential income that could be earned by each trophy dealer would be about US$98,000, if 100% of export quotas were utilised. Based on the estimated value of actual exports, the potential income was approximately US$12,230 per dealer. Only about one-third of the dealers are responsible for the bulk of the exports and therefore their income in 1990 could have been on the order of US$30,000 each. Given the high diversity in taxa and great variation in their value, some dealers are likely to make considerably more money by concentrating on higher-valued specimens. It should be noted that the prices cited in dealer price lists may not be what importers actually pay for birds. Actual prices paid to dealers will be subject to changes in the demand for individual species and the volume purchased.

Domestic Market

There is reportedly very little trade in wild-harvested birds for the domestic market. There are no bird markets in Tanzania and bird-keeping is largely restricted to a small number of non-African residents. If there were any domestic trade, it would be subject to the same capture and ownership requirements applied to birds harvested for export.

Table 3. Wild birds reported as exported from Tanzania, by country of import* (1990).

SPECIES	IT	NL	DE	FR	PR	DK	BE	GB	SE	ES	JP	US	AE	SG
Finch	10,400	48,180	28,600	14,110	4,300	3,800	8,200	16,700	2,800	7,657	4,140	22,100	4,670	9,800
Agapornis fischeri	1,341	6,200	10,440	4,500	3,590	400	2,050	3,100	0	200	300	2,800	570	1,688
Estrildidae	4,200	1,440	5,700	1,400	3,220	0	3,100	6,680	3,100	0	0	4,200	0	0
Ploceidae	0	3,200	5,400	1,260	0	0	4,180	4,100	0	0	1,418	0	0	0
Serinus spp.	0	7,450	0	0	0	0	0	0	0	0	6,000	0	0	0
Euplectes spp.	898	2,400	2,990	870	563	400	0	0	0	0	0	500	0	0
Whydah	460	680	2,140	0	0	300	0	106	0	0	0	300	0	0
Ploceus intermedius	0	900	880	430	300	0	500	50	0	0	200	300	0	0
Phoenicopterus minor	160	0	480	98	200	0	44	135	0	0	12	0	18	94
Spreo superbus	80	280	420	0	92	0	0	0	0	0	0	200	0	120
Poicephalus meyeri	80	219	470	80	45	0	74	84	0	0	0	70	0	33
Poicephalus gulielmi	27	214	320	65	0	20	95	114	0	0	0	64	15	20
Columbidae	0	46	13	0	50	23	60	0	0	0	0	320	0	0
Phoenicopterus ruber	68	141	108	20	35	0	45	30	0	0	28	0	0	150
Capitonidae	0	188	0	0	170	0	0	0	0	0	0	280	0	72
Cosmopsarus regius	100	220	140	0	0	0	0	0	0	0	0	208	0	27
Tauraco hartlaubii	0	0	0	0	280	35	0	0	0	0	50	142	0	130
Nectariniidae	0	0	180	0	0	0	0	451	0	0	0	0	0	0
Charadriidae	286	0	300	0	0	0	0	0	0	0	0	0	0	0
Poicephalus rufiventris	36	110	80	30	20	0	70	68	0	0	0	100	0	45
Threskiornis aethiopicus	0	35	223	0	0	0	0	125	0	81	0	0	0	30
Poicephalus crptoxanthus	30	88	110	38	26	0	48	34	0	0	0	38	0	51
Tauraco livingstonii	48	0	0	0	124	0	0	0	0	0	0	90	0	80
Pelecanus rufescens	46	0	160	26	0	0	3	0	1	0	0	0	30	0
Coraciidae	80	0	124	0	0	0	100	0	0	0	0	0	0	0
Acryllium vulturinum	0	30	20	21	41	0	44	5	0	0	0	0	0	0
Corythaixoides spp.	0	47	0	0	0	0	38	0	30	0	24	0	0	70
Cinnyricinclus leucogaster	25	48	30	0	0	0	0	0	0	0	0	22	0	0
Ploceus subaureus	0	0	80	0	0	0	70	0	0	0	0	0	0	0
Pycnonotidae	0	75	0	0	38	40	0	0	12	0	0	15	0	60
Leptoptilos crumeniferus	35	0	85	45	0	0	0	20	0	0	0	0	0	16
Hagedashia hagedash	0	15	125	30	0	0	0	0	0	60	0	0	0	0
Tauraco fischeri	0	22	0	0	59	0	0	0	0	0	20	54	0	72
Ciconia abdimii	0	20	60	40	0	0	0	0	0	0	0	0	0	30
Colius macrourus	0	35	20	0	52	0	20	0	0	0	0	0	0	53
Colius striatus	0	42	14	20	10	0	0	18	0	0	0	0	0	0

IT Italy, NL Netherlands, DE Germany, FR France, PR Puerto Rico, DK Denmark, BE Belgium, GB United Kingdom, SE Sweden, ES Spain, JP Japan, US United States, AE United Arab Emirates, SG Singapore

Table 3. continued

SPECIES	IT	NL	DE	FR	PR	DK	BE	GB	SE	ES	JP	US	AE	SG
Onychognathus morio	10	40	20	0	0	0	0	0	0	0	0	30	0	50
Numida meleagris	10	22	49	0	0	8	12	8	0	0	0	10	0	0
Spreo hildebrandtii	0	80	22	0	0	0	0	20	0	0	0	20	0	0
Meropidae	0	96	0	44	0	0	0	0	0	0	0	0	0	0
Creatophora cinerea	30	40	40	0	0	0	0	0	0	0	0	0	0	0
Pelecanus onocrotalus	15	8	25	11	10	0	0	10	0	0	4	0	0	10
Francolinus leucoscepus	0	16	10	0	0	0	28	0	0	22	8	0	0	12
Ploceus ocularis	0	0	0	0	0	0	0	58	0	0	0	20	0	0
Bucorvus leadbeateri	0	0	0	30	0	0	6	4	0	4	0	12	0	0
Platalea alba	0	0	38	0	0	0	0	20	0	17	0	0	0	0
Tockus erythrorhynchus	0	0	4	8	0	0	18	3	0	0	0	16	0	0
Francolinus afer	0	0	0	0	0	0	36	0	0	18	0	0	0	0
Scopus umbretta	18	12	6	20	0	0	0	0	0	0	0	0	0	2
Francolinus rufopictus	0	0	8	0	6	0	4	0	0	14	0	0	0	0
Lamprotornis splendidus	0	20	0	0	0	0	0	0	0	0	0	26	0	0
Musophaga rossae	0	0	0	0	0	14	8	0	0	0	0	8	0	4
Lamprotornis purporopterus	0	0	30	0	0	0	0	0	0	0	0	0	0	0
Bycanistes bucinator	0	0	14	0	0	0	0	5	0	0	0	6	0	0
Muscipapidae	0	0	0	0	23	0	0	0	0	0	0	0	0	0
Francolinus sephaena	0	18	0	4	0	0	0	0	0	0	0	0	0	0
Tockus flavirostris	0	0	6	0	0	0	0	2	0	0	0	0	0	0
Bycanistes brevis	0	0	8	3	0	0	4	3	0	0	0	0	0	0
Himantopus himantopus	14	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquila rapax	0	0	0	0	0	0	0	0	0	0	10	2	0	0
Porzana marginalis	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gyps bengalensis	0	0	0	0	0	0	0	0	0	0	2	2	0	0
Actophilornis africanus	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Tockus deckeni	0	0	0	0	0	0	0	0	0	0	0	4	0	0
Alcedinidae	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Agapornis pullaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lamprotornis chalybaeus	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	18,508	72,677	59,992	23,203	13,254	5,040	18,857	31,953	5,943	8,073	12,216	31,959	5,303	12,719

*For all countries recorded as importing 2,000 or more specimens during 1990.

Source: Wildlife Department.

IT Italy, NL Netherlands, DE Germany, FR France, PR Puerto Rico, DK Denmark, BE Belgium, GB United Kingdom, SE Sweden, ES Spain, JP Japan, US United States, AE United Arab Emirates, SG Singapore

Table 4. Estimated maximum and potential values of live birds exported from Tanzania in 1990.

SPECIES GROUP	DEALER QUOTA	MAXIMUM SPECIMENS FOR EXPORT	AVERAGE VALUE (US$) PER EXPORT	MAXIMUM POTENTIAL VALUE (US$)	ACTUAL SPECIMENS EXPORTED	POTENTIAL REALIZED VALUE (US$)	% MAXIMUM POTENTIAL VALUE
Pelicans	40	5,000	80.00	400,000	449	35,920	9.0
Storks	40	5,000	102.50	512,500	428	43,870	8.6
Flamingos	140	17,500	80.00	1,400,000	2,359	188,720	13.5
Ibises	30	3,750	60.00	225,000	724	43,440	19.3
Hornbills	50	6,250	71.88	449,250	212	15,239	3.4
Vultures and Birds of Prey	42	5,250	125.00	656,250	21	2,625	0.4
Francolins	136	17,000	30.00	510,000	22	660	0.1
Doves	300	37,500	5.00	187,500	950	4,750	2.5
Lovebirds	850	106,250	5.00	531,250	37,879	189,395	35.7
Parrots	80	10,000	41.25	412,500	3,154	130,103	31.5
Turacos	40	5,000	66.00	330,000	1,240	81,840	24.8
Finches	4,500	562,500	3.00	1,687,500	185,457	556,371	33.0
Weavers	3,060	382,500	2.75	1,051,875	24,876	68,409	6.5
Waxbills	1,500	187,500	2.50	468,750	33,040	82,600	17.6
Plovers	750	93,750	5.00	468,750	586	2,930	0.6
Trogans	44	5,500	50.00	275,000	0	0	0.0
Canaries	300	37,500	5.00	187,500	13,450	67,250	35.9
Barbets	90	11,250	20.00	225,000	710	14,200	6.3
Mousebirds	60	7,500	20.00	150,000	330	6,600	4.4
Guineafowl	102	12,750	65.00	828,750	424	27,560	3.3
Starlings	180	22,500	15.00	337,500	2,490	37,350	11.1
Whydahs	75	9,375	2.00	18,750	3,986	7,972	42.5
Bishops	150	18,750	3.00	56,250	8,621	25,863	46.0
Other birds	544	68,000	18.50	1,258,000	1,967	36,390	2.9
TOTAL	13,103	1,637,875		12,627,875	323,375	1,670,056	13.2

Sources: Wildlife Department; US bird dealer price lists.

Captive Breeding

Some of the larger licensed trophy dealers have talked about the need to set up captive management facilities for birds. This is actively being promoted by the Director of Wildlife. A few indicated their desire to submit proposals for developing captive breeding facilities as a component of a multiple use plan for agricultural lands. If these dealers are serious about developing such facilities they will no doubt require technical assistance from outside the country.

FUTURE OF TRADE

Sustainability

At present, there are no means for determining if current harvest levels are sustainable or not. The Wildlife Department recognises this deficiency and is moving as quickly as it can to develop a model programme for utilisation.

According to the Director of the Wildlife Department, the PAWM project will permit the Wildlife Department to introduce more rigorous controls over wildlife utilisation schemes to ensure that the species involved are being used sustainably. With regard to the wild bird trade, of particular concern are the need to develop procedures for surveying and monitoring the distribution and status of wild populations used in trade; determining species' biological requirements; clarifying the qualifications for licensed dealers; and developing procedures for establishing and allocating quotas more equitably in terms of dealers' capacities.

The Director of the Wildlife Department feels that the biggest problem he faces today is low departmental morale. His field staff lack uniforms, have not received adequate training and because of the present reporting requirements, many are disillusioned and lack a sense of departmental unity. In addition to addressing the problem of reporting lines the Department is trying to provide meal allowances for field personnel and is recruiting staff from the Tanzania military to provide needed training and discipline.

Mr Mlay is planning a two-day workshop for the wild bird dealers to provide them with instruction in proper handling and shipping of the wild birds. He believes this workshop will educate the dealers about the regulations and the need for such regulations to ensure that use of the wildlife resources is sustainable.

The Department will prepare a position paper for circulation to the principal importing countries in the near future.

Consequences of Trade Bans

Interviews suggest that while a ban on wild bird imports into the principal consumer countries would not have a major impact on the country in strict economic terms, it could have very serious repercussions on the relative status of the Wildlife Department in the Government.

All Government Agencies are obliged to generate foreign exchange. It is understood by Wildlife Department personnel that they must demonstrate to the Treasury that the Department is generating income. The Wildlife Department has argued very successfully that use of Tanzania's wildlife, as an attraction for tourists, for sport hunting and for harvest for export, will provide needed foreign exchange earnings for the country. There is a danger that if wildlife exports for trade, in any form, were banned it would have a negative influence on the Wildlife Department's negotiations with the Treasury and Planning Commission in relation to making some share of wildlife-derived income available for the conservation of wildlife and habitat.

A related concern focuses on the relatively high status enjoyed by the Ministry of Agriculture. At the present time this Ministry is responsible for generating the largest percentage of foreign exchange earnings in the country. Concern was expressed that many of the species that are presently harvested for export could be designated agricultural pests if their numbers increased and they seriously threatened export crops. Today, the Wildlife Department maintains authority over these species because they represent a value to the country. If exports of wild-caught birds were curtailed because of import bans in the principal market countries, Wildlife Department officials believe that they could lose this authority, in deference to the needs of the agricultural community. At the very minimum the Wildlife Department's authority would be limited to only those species listed under CITES. Under any circumstances it is highly likely that a number of the species presently authorised for harvest and export would be targeted for extermination as crop pests.

INDIVIDUALS INTERVIEWED

Enock B. Alilemwa, Director, Expo Alliance Centre, Ltd.

Neil E. Baker, Wildlife Conservation Society of Tanzania

John J. Boshe, World Wide Fund for Nature, Tanzania Office

Julius D. Kibebe, Officer, CITES Managment Authority, Wildlife Department, Ministry of Tourism, Natural Resources and Environment

Vijay S. Kotedia, Silver Curio Shop, Ltd.

Nigel Leader-Williams, Director, Planning and

Assessment for Wildlife Management Project, Wildlife Department, Ministry of Tourism, Natural Resources and Environment

Zablon Masiaga, Chairman, Tanzania Wildlife Exporters Association

H. Mbonde, Tanzania Wildlife Exporters Association

C. Mdoe, Wildlife Department, Ministry of Tourism, Natural Resources and Environment

Constantius Mlay, Director, Wildlife Department, Ministry of Tourism, Natural Resources and Environment

Emmanuel Salehe, Tanzania Wildlife Exporters Association

Hassan Salum, Tanzania Wildlife Exporters Association

E. Severre, Wildlife Department, Ministry of Tourism, Natural Resources and Environment

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Mr Constantius Mlay and Mr Julius D. Kibebe of the Wildlife Department were very helpful in providing trade data and other information. Exporters contacted were very open and provided helpful information about how the trade is conducted in Tanzania.

Figure 2. Trade in *Agapornis fischeri* (1983-1990).

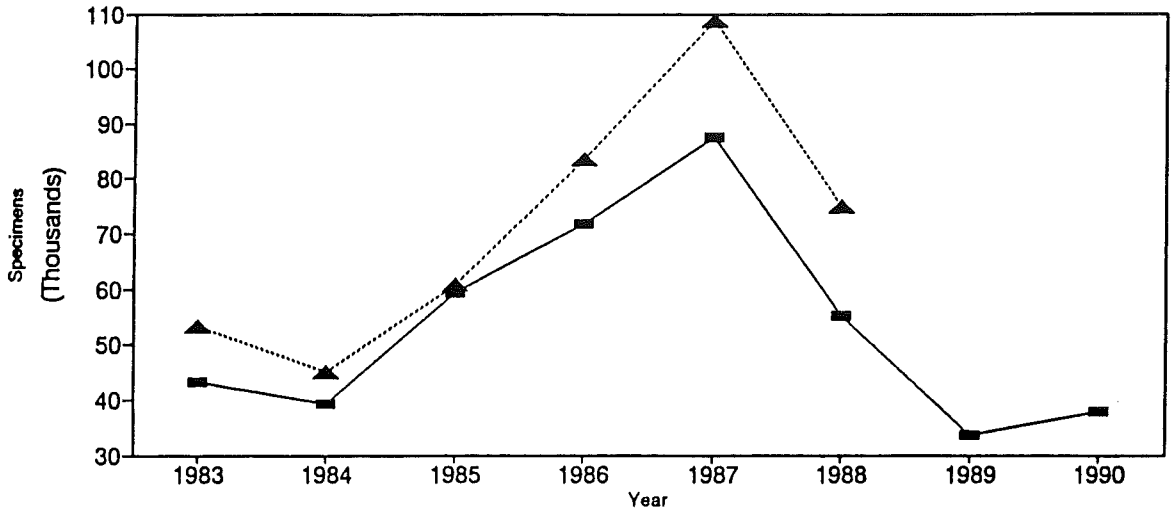


Figure 3. Trade in *Poicephalus meyeri* (1983-1990).

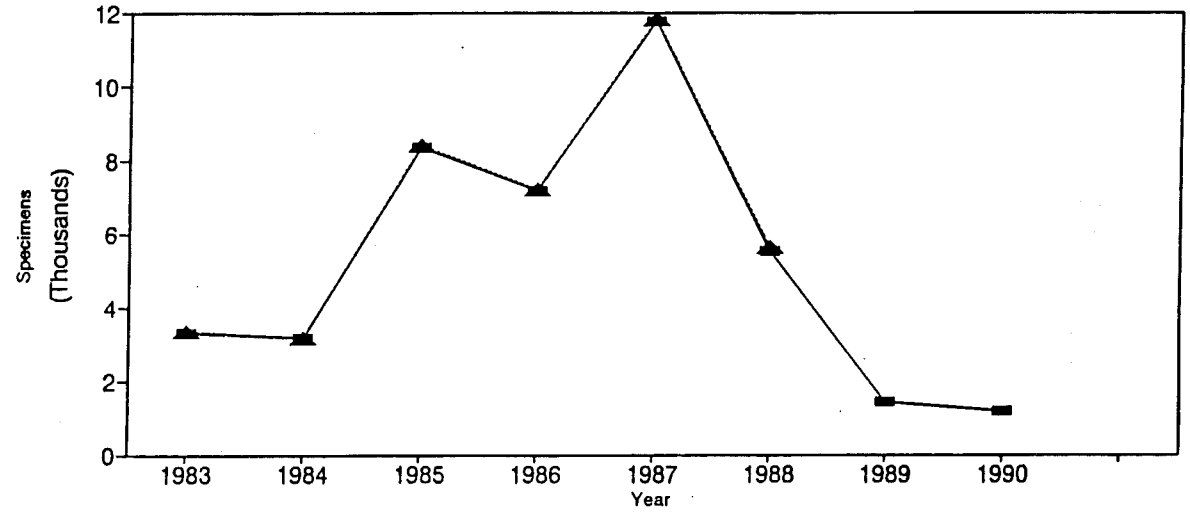
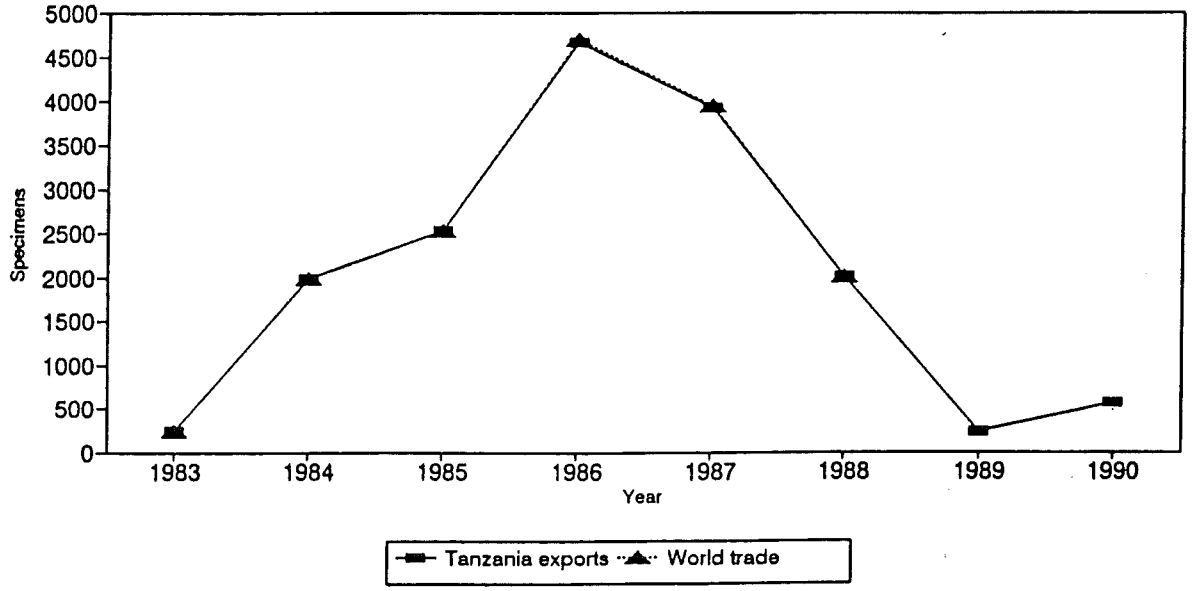


Figure 4. Trade in *Poicephalus rufiventris* (1983-1990).



Sources: Exports CITES Annual Report Data (1983-1988); Wildlife Department (1989-1990).
World Trade World Conservation Monitoring Centre.

A MANAGEMENT FRAMEWORK FOR THE WILD BIRD TRADE

Stephen R. Edwards and Jorgen B. Thomsen

INTRODUCTION

It is clear from the information presented in Part 3 of this volume that techniques for managing wild bird populations must be improved if populations subject to high-volume harvest for trade are to be sustained in the long term. At present, it may be argued, populations of many species in trade are substantial and probably not declining despite high-volume harvest. However, the fact remains that monitoring of both populations and capture effort is poor or non-existent in many of the countries exporting wild-caught birds, including the five countries profiled in Part 3. Thus, it is evident that basic requirements for ensuring that utilisation is sustainable are not being met at present.

Thomsen and Brautigam (1991) determined that in the case of psittacines, a sustainable harvest regime should include at least four major elements: (i) harvest and export quotas, established on the basis of scientific information; (ii) monitoring of trapping and export activities; (iii) a system of pricing and foreign exchange generation; and (iv) a system of profit-sharing with local communities. Consultations with government officials and traders indicate that few countries meet such requirements. However, there appears to be a growing willingness on the part of both governments and traders to strengthen current trade control mechanisms, and to integrate conservation and wildlife management schemes with other government policies. What appear to be lacking are the information, infrastructure and resources necessary to develop and implement such programmes.

Some government agencies argue that exploiting the commercial value of wild bird resources creates incentives for the preservation of natural habitat that otherwise might be converted to purposes such as agriculture, to the detriment of the species exploited and biodiversity in general. This is also the basic premise of mainstream thinking on the sustainable use of wildlife resources. Very little practical evidence is available, however, to prove that there is a clear connection between habitat protection and wild bird exports. While the lack of such evidence does not mean that the connection does not exist or cannot be made to exist, it does indicate that governments have not integrated wild bird harvests for export into broader conservation strategies. Instead, harvests are carried out in isolation from other types of natural resource utilisation, and often without a clear policy establishing the objectives and long-term strategies of such harvests.

The fact that those countries producing the largest number of wild-caught birds for export lack comprehensive management strategies is a testament to the rather *ad hoc* way in which the bird trade is currently conducted. Although the lack of management programmes does not necessarily imply that wild bird populations are being over-exploited, it does serve to draw international scrutiny and criticism to the trade. Unless action is taken by producer countries to better monitor and control wild bird harvests and exports, it seems likely that such criticism will evolve into trade bans.

As the situation is different within each range country, it is not possible to prescribe a universal management programme suitable for all countries choosing to export wild birds. However, it is clear that ideally, management programmes should contain components ensuring habitat and species conservation, benefits to exporting countries and individuals involved in the trade, and appropriate attention to the welfare of the birds harvested for export. The recommended actions that follow are not exhaustive, but, if implemented, could serve as a step towards more effective management of the wild bird trade in light of these objectives.

Certain recommended actions will be more applicable to some countries than to others. The responsibilities that should be shouldered by consumer countries and development agencies are perhaps more uniform; those countries that reap the benefits of the wildlife resources of developing countries must contribute to the conservation of those resources, and share rather than appropriate the economic benefits that accompany their use (see Swanson, this volume).

1. POLICIES AND LEGISLATION

1.1 BIRD TRADE AND GOVERNMENT OBJECTIVES

Determining the objectives of management programmes is central to the subsequent implementation and success of these programmes: management regimes and trade controls must be part of a larger overall government policy for wildlife conservation and utilisation. Governments should determine their priorities, e.g. habitat and/or species conservation, generation of foreign currency, development of employment opportunities, etc. Once identified, these priorities can provide the foundation of government policy, and the general framework within which to develop specific management schemes.

If a government wants to utilise its wildlife resources, in this case wild birds, then it must create a policy under which the citizens involved in such utilisation can operate. This will provide both a sense of legitimacy and of long-term perspective. Objectives for such utilisation should be reasonably flexible but clear.

Action 1.1: *DEVELOP A MANAGEMENT POLICY FOR BIRD TRADE*

Phase one

❑ Establish Context of a Management Policy

■ Suggested Policy Context:
The Bird Trade Management Policy Should be Part of a Broader Policy That Guides all Management Activities That Affect Natural Habitats

Phase two

❑ Establish Objectives of a Bird Trade Management Policy

■ Suggested Objectives:
a) Provide Incentive for Habitat Conservation
b) Ensure Long-Term Sustainability of Populations Harvested
c) Generate Foreign Currency
d) Provide Employment

Phase three

❑ Establish Components of a Management Programme

■ Suggested Components:
a) Biological Monitoring
b) Harvest and Export Control (Quota, Permit and Trade Monitoring System)
c) Animal Welfare Standards
d) Pricing Mechanism
e) Local Community Benefit
f) Hands-on Management (e.g. Ranching, Captive-breeding)

1.2 LEGISLATIVE SUPPORT FOR GOVERNMENT POLICY

Government representatives consulted in Argentina, Guyana, Senegal, Tanzania and Indonesia stated that government policy supported harvest of wild birds for export. However, while each country has, or is in the process of developing, national legislation designed to conserve wild species, in fact none has a regulatory framework adequate to ensure that use of wildlife resources does not contribute to the decline of wild populations.

Argentina's constitution divides authority for wildlife between the federal and provincial governments, resulting in conflicts between the two. While capture of wild birds is controlled and supervised by provincial authorities, inter-provincial transport, export quotas and actual exports are controlled by the CITES Management Authority.

National legislation that would provide the legislative authority necessary to support Ministerial decisions concerning quotas, holding facilities and trader licensing requirements is pending in Guyana. In Indonesia, the recently adopted *Act on Conservation of Living Resources and their Ecosystems* could bring control of wild bird harvests, and is in the process of being implemented through pertinent government ministries. However, the Act does not provide any greater authority to implement CITES-related regulations than existed prior to its adoption.

Senegal's wildlife trade controls are based on a law adopted in 1967. Revisions to this law and adoption of the quota system have been accommodated by Presidential Decrees. Quotas are, in theory, subject to review by the High Council for Hunting; however, this has not happened in practice. Tanzania relies on the *Wildlife Conservation Act* of 1974 as its authority for implementing CITES. Government Notices are used to update domestic regulations following meetings of the Conference of the Parties.

Action 1.2: *PROVIDE LEGISLATIVE SUPPORT FOR POLICY IMPLEMENTATION*

In countries where national policies and/or legislation do not provide the controls and enforcement authority necessary to ensure that wildlife utilisation is sustainable, the CITES Secretariat, governments of other countries, and national and international conservation organisations should provide whatever encouragement and assistance practicable to support

enactment of such legislation.

Bilateral and multilateral assistance agencies should require recipient countries to demonstrate that such legislation is in place before granting or lending funds for activities resulting in wildlife harvests; and, if appropriate, loan or grant funds should be made available to wildlife agencies to develop and provide wildlife trade controls specified by international agreements.

If an exporting government fails to demonstrate progress in developing policies for the sustainable management of wild bird exports, importing governments should take what legal steps possible to suspend imports from that country until such time as the exporting government is capable of demonstrating such progress.

1.3 WILDLIFE MANAGEMENT IN A BROADER GOVERNMENT CONTEXT

In each country, the agency responsible for controlling the bird trade is part of a larger government ministry established to pursue goals that could be in conflict with the principles of sustainable use of wildlife. Under such circumstances, it follows that policy decisions governing the use of wild resources are always 'adjusted' to fit within the larger policy priorities established for these ministries.

Argentina's National Directorate of Wild Fauna is located in the Ministry of the Economy, Sub-Secretariat for Agriculture, Livestock and Fish.[31] In Guyana, the Division of Wildlife Services is located in the Ministry of Agriculture. The Directorate General of Forest Protection and Nature Conservation is part of the Ministry of Forestry in Indonesia. Senegal's CITES Management Authority is located in the Ministry for Rural Development and Hydraulics, Directorate for Water, Forests, Hunting and Soil Conservation; day-to-day CITES implementation is largely handled by the Division of Hunting.

In Tanzania, management and conservation of wildlife is under the Wildlife Department in the Ministry of Tourism, Natural Resources and Environment. Only in this country is there a connection between the overall objectives of the parent ministry and the those of the department responsible for controlling the bird trade and other wildlife utilisation.

Action 1.3: *RAISE THE STATUS OF THE WILDLIFE AUTHORITY*

National and international conservation organisations, in cooperation with the CITES Secretariat, should assist government agencies responsible for wildlife management in achieving greater status within their government structure. Such assistance should only be provided in response to a direct request for assistance from the relevant agencies.

1.4 CITES SCIENTIFIC AUTHORITY

Only one of the five countries profiled, Indonesia, has a CITES Scientific Authority separate from the Management Authority. However, the influence of this office with respect to setting quotas is blunted by the dominant position of the Directorate General of Forest Protection and Nature Conservation (PHPA) and several other government agencies. In the other four countries, Management Authority staff perform the functions of the Scientific Authority.

In no country is the role of a Scientific Authority adequately integrated into the process for establishing quotas.

Action 1.4: *ESTABLISH A SCIENTIFIC AUTHORITY*

In keeping with CITES, all Parties must be strongly encouraged to develop a Scientific Authority with independent standing. Until such time as Scientific Authorities are functional, assistance to Management Authorities should be provided by qualified, independent agencies.

2. POPULATION AND HABITAT MANAGEMENT

2.1 BIOLOGICAL MONITORING

None of the countries profiled in this volume has determined the status of the wild populations of the species they allow to be exported, nor have they institutionalised a programme for monitoring wild populations of the species being harvested. Therefore it could be argued that these countries are not fulfilling their obligations under CITES Article IV with respect to Appendix II species, as they are issuing export permits without first determining whether exports would be detrimental to the survival of the species in the wild. Most CITES Management Authorities argued, however, that by establishing what they believed to be conservative export quotas for Appendix II species, they

[31] A Presidential Decree has established a new Secretariat, the Secretaria de Recursos Naturales y Ambiente Humano (Secretariat of Natural Resources and Human Environment) to become effective December 1991, which will incorporate the National Directorate of Wild Fauna and Flora. This Secretariat will report directly to the President, and therefore will be independent from the Ministry of Economy (Waller, *in litt.*, 1991).

were satisfying the spirit of the Article IV requirement. In fact, export quotas for both CITES and non-CITES species were based on previous export levels, rather than on biological considerations.

Steps are being taken to assess the status of some wild bird populations. Several surveys of *Amazona aestiva* now in progress should provide information on the status of that species in Argentina. Guyana is prepared to initiate a census of its psittacine populations once the Government has selected an appropriate biologist to coordinate the surveys.

In Tanzania, a 1989 survey of *Agapornis personata* was performed by members of the exporters association in collaboration with Regional Game Officers; however, Wildlife Department staff do not believe that the survey procedures used were adequate. The status of individual species is reviewed during an annual meeting of Regional Game Officers in Tanzania. However, these reviews rely on general field observations and do not incorporate any standard survey techniques.

Indonesia has not undertaken any field surveys of species in trade. IUCN, in collaboration with the International Council for Bird Preservation and the Indonesian Government, began a survey of some species of parrot in October 1991..

It is clear that for countries exporting wild-caught birds, priority should be placed on determining the biological capacity for various harvest levels. Harvest rates must be based on biological principles if wild bird populations are to be sustained, and harvests to remain a viable method of producing birds in the long term. Harvests for international trade must be examined on a species-by-species and country-by-country basis to determine whether harvest levels are detrimental to wild populations.

Using general knowledge of species biology and basic census techniques, it should be possible to establish safe harvest quotas without performing extremely detailed studies of each species in trade. Estimates of maximum and minimum population densities across a species' range would take less effort to obtain than actual population counts, and could form the basis of harvest quotas. Censuses should be repeated on an annual basis, with more detailed studies performed every five years. This information should be used to revise quotas as appropriate to ensure that offtake levels are sustainable.

Action 2.1: *ESTABLISH A BIOLOGICAL MONITORING PROGRAMME FOR BIRD SPECIES IN TRADE*

Phase one

- ❑ **Collect Baseline Population Data**

- ■ **Suggested Methodology:**
  - **a) Assess Geographic Distribution of Species**
  - **b) Assess Area of Available Habitat**
  - **c) Perform Censuses to Assess Density in Representative Segments of Range**
  - **d) Compute Upper and Lower Population Levels and Evaluate Reproductive/Recruitment Rates**
  - **e) Compute Annual Capture Quotas, i.e., a Safe Offtake Percentage of the Lowest Possible Population Level**

Phase two

- ❑ **Develop Regular Monitoring Programme**

- ■ **Suggested Monitoring Programme Components:**
  - **a) Annual Censuses (use Game Scouts, Local Communities, University Students, CITES Scientific Authority, etc.)**
  - **b) Annual Monitoring of Capture Efforts**
  - **c) Major Review of Distribution and Habitat Availability Every Five Years**

Phase three

- ❑ **Revise Quotas as Necessary Based on Information Collected Through Regular Monitoring**

International conservation organisations, development assistance agencies and the CITES Secretariat should cooperate in providing the necessary funding and technical assistance needed to undertake baseline surveys of wild populations subject to domestic or international trade.

2.2 SHARING RESPONSIBILITY FOR WILDLIFE UTILISATION

It is apparent that importers, wholesalers, retailers and purchasers of wild birds receive some benefit from wild-caught birds provided by exporting countries. It could be argued that the benefits received far outweigh the true cost of wild-caught birds. Consumers of wild-caught birds are providing little more than a market: they do not contribute toward the cost of regulating harvests and exports, maintaining habitat or other components of the wild bird trade. Similarly, governments of importing countries give little if any support to species conservation and/or trade control programmes in the countries providing wild-caught birds to world markets.

Many bird owners appreciate the importance of conserving wild populations and habitat, and are supporting field surveys, habitat conservation and other programmes.

ACTION 2.2: *CONSUMERS SHOULD SHARE RESPONSIBILITY FOR WILDLIFE UTILISATION*

The governments of countries importing wild-caught birds should offer support for government field surveys and population monitoring of wild birds, increased trade controls and other programmes in countries of export designed to ensure that harvests for export are not detrimental to wild bird populations.

Purchasers of wild-caught birds in importing countries should be made to bear some of the cost of conserving wild bird resources. This could be achieved through government-imposed 'wildlife' assessments on all birds imported, with importing governments allocating revenues raised in this manner to conservation programmes in the countries of export.

Bird owners and aviculturists should be encouraged to use their expertise and other resources to support conservation of wild species in trade.

2.3 SUPPORT FOR TRADE-RELATED CONSERVATION

A number of studies of wild bird species have been supported by NGOs, universities and other institutions. By and large, however, these studies have not been directed toward management of species' wild populations for trade purposes.

Only in Argentina and Guyana do international conservation organisations have a history of collaborating with governments to undertake field studies and to develop effective trade control systems for wild bird species in trade. As mentioned above, in Argentina, TRAFFIC USA/WWF-US, working with TRAFFIC South America, is supporting field studies of a number of species, including one of *Amazona aestiva*.

The Tanzanian Government has begun a programme to review all wildlife utilisation activities including the wild bird trade. In addition, the Government has invited TRAFFIC International to participate in a training programme for wild bird exporters, to include instruction on handling and preparation of wild birds for shipment.

Apparently as a result of the present study, the Government of Senegal has indicated that it will seek assistance in the near future.

ACTION 2.3: *SUPPORT TRADE-RELATED CONSERVATION RESEARCH*

National and international conservation organisations should provide whatever assistance practicable, including funding and expertise, to facilitate the development and implementation of trade monitoring and control programmes.

2.4 HABITAT ALTERATION

Habitat loss is the greatest threat to the survival of most wild bird species, including those in trade. Species whose ranges are limited to Argentina and Indonesia are probably at a relatively higher risk than those found in Guyana and Tanzania, as large tracts of land are being modified for agriculture and other purposes in both of the former countries. Because Indonesia incorporates over 13,000 islands, many bird species native to that country have extremely limited distributions; many of the species in trade are limited to a few islands.

The habitat in Senegal is also changing as a result of significant desertification in that country. The dominant species exported from Senegal are not known to be threatened, however.

Areas from which birds are harvested in Guyana and Tanzania remain relatively isolated, and the habitat is not being converted to agriculture and other purposes at the rates recorded for Argentina and Indonesia.

ACTION 2.4: *COMPENSATE FOR THE EFFECTS OF HABITAT ALTERATION*

Capture quotas, trapping seasons and other management techniques related to harvest must take into account the effects on wildlife populations of habitat alteration. Where possible, sustainable wildlife utilisation should be used as an alternative to habitat conversion for agriculture or other purposes.

2.5 BIRD TRADE AND PRESERVATION OF HABITAT

Government officials frequently cited the value of wild bird exports as a means of protecting natural habitat as the most important reason for their continuing to support this trade. However, no government was actually using this argument to forestall land conversion for agricultural purposes.

In Argentina, the Government is working with landowners to determine the feasibility of harvesting certain wild (non-bird) species as a means of encouraging the maintenance of natural habitat in that country. In the countries visited, only the TRAFFIC USA/WWF-US study of *Amazona aestiva* in Argentina is designed to specifically address the linkage between

the value of a wild bird species and the maintenance of its habitat (Bucher, 1990).

No country is presently providing any education or training to field collectors that might lead to better management of the habitat.

ACTION 2.5: *USE BIRD TRADE AS A MEANS TO PRESERVE HABITAT*

Conservation organisations (both national and international) and development assistance agencies should facilitate scientific studies to determine the relative land-use values of sustainable wildlife utilisation and agriculture in varying habitat types.

Conservation organisations should cooperate with government agencies responsible for wildlife conservation in helping to provide evidence to senior government officials, legislators and private land-owners of the importance and value of wild bird resources, and of the significance of natural habitats in maintaining these resources.

Governments should establish mechanisms to conserve habitat important for maintaining wild populations of species in trade, and provide local communities with incentives and training to conserve such habitat.

2.6 PEST SPECIES

Argentina, Senegal and Tanzania have officially designated some 'pest' species that are allowed to be exported. Argentina and Senegal allow unlimited exports of these species. Tanzania establishes a relatively high quota for them. In Indonesia, farmers complain that wild birds are having considerable impact on the productivity of their crops; however, no species were reported as having been designated as pests as of December 1991. Guyana does not have special provisions for pest species. Nevertheless, some of the species in international trade from both Guyana and Indonesia could be considered threats to agricultural crops and, as such, could be designated as pests.

In those countries where species have been designated as pests, they may be subject to massive extermination programmes involving poisons, flame-throwers and other methods expedient at removing them. Pest extermination programmes are frequently financed by bilateral and multilateral assistance agencies.

Extermination programmes are the antithesis of conservation. They are indiscriminate and they destroy habitat. Extermination programmes also convey to rural people a general lack of respect for wild species: rural farmers, particularly in Senegal and Tanzania, will often destroy all bird nests and eggs they find.

ACTION 2.6: *REVIEW DESIGNATION OF PEST SPECIES*

Governments of exporting countries should be encouraged to ensure that those agencies responsible for conserving wild natural resources participate in any decisions to designate a species as a pest.

Methods of pest control should be researched and limited to those that cause the least environmental damage. Economic assessments of the relative value of pest species should be completed.

Agencies responsible for conserving natural resources should be assisted in teaching rural people to differentiate between pest and other species.

3. TRADE CONTROL MECHANISMS

3.1 QUOTAS

Each of the five countries profiled uses a quota system as a means of controlling trade. Each country's quotas were established on the basis of prior trade levels rather than on assessment of the status of species' wild populations; government officials believe these quotas to be conservative, however.

Quota systems function differently in each country:

- Argentina and Guyana establish annual export quotas for those species approved for export. Exporters receive a portion of the quota for each species, based on their previous export history. Quotas are reviewed annually. Certain species have been removed from the list of species authorised for capture and export.

- Indonesia has a 'harvest quota' based on evaluation of the average capture rate during the previous three years, and an elaborate consultation process with various government and non-governmental agencies. It is not surprising that this procedure has yielded increased quotas for certain species following a year in which harvest/exports exceeded previously established quotas.

- Senegal also uses a 'harvest quota' approach. Quotas were first established in 1982 and have not been revised since. Quotas are established for pairs of non-psittacines, but individual specimens of psittacines, making internal monitoring and comparison with export data difficult. Harvest quotas are allocated to each exporter based on their prior export history.

- Tanzania has a 'trader quota' for each species. Under this system, all licensed exporters are given identical quotas for the capture and export of species

allowed in trade. The system is presently under review.

As the primary purpose of quota systems is limiting offtake, it would appear that capture quotas would be more effective at achieving this goal than would export quotas. However, as has been demonstrated in the case of Indonesia, capture quotas may be much more difficult to enforce than export quotas, owing to the relatively diffuse nature of trapping as opposed to export activities.

Export quotas could theoretically limit the number of birds harvested for trade by limiting the available export market for those birds. However, export quotas do not give any indication of pre-export mortality or the number of birds sold to domestic markets. They are therefore inadequate for the purposes of establishing or assessing total offtake levels.

In order for either capture or export quotas to be an effective component of a broader wildlife management programme, they must be species-specific.

ACTION 3.1: *ESTABLISH CAPTURE AND EXPORT QUOTAS*

Governments of exporting countries should establish an annual capture quota for each species harvested for domestic use or export. Standard procedures for establishing capture quotas that allow for sustainable utilisation of the species in question should be developed with input from qualified scientific experts.

Capture quotas should be allocated and trapping monitored in such a manner that harvests are maintained within established limits.

Capture quotas should be linked to a species-specific export quota to control the number of specimens of each species exported. Export quotas should take into account post-harvest mortality, domestic sale and other factors that reduce the number of birds trapped that are available for export.

3.2 HARVEST AND EXPORT CONTROLS

The effectiveness of the different quota systems in controlling harvests and exports varies between countries, and does not appear to be linked to the type of permit system used to allocate quotas or control trade.

Capture permits are required in Argentina and traders are required to obtain a transit permit prior to removing birds from the province in which they were trapped. Export permits are required to export birds, and will not be issued without presentation of a valid transit permit. Reported exports from this country did not exceed quotas during the past several years, with total exports equivalent to approximately 85% of the sum of the established quotas in 1990. Individual species quotas were similarly not exceeded. Exports in Guyana did not exceed established quotas for individual species, with Guyana's total exports equivalent to only 47% of the sum of the quotas in 1989.

Capture, transit and export permits are required in Indonesia, but this does not prevent reported exports from exceeding established quotas. While total reported bird exports from Indonesia were less than the sum of the quotas for all authorised taxa in 1990 (75%), exports of five taxa exceeded the export quota for that taxon by from 106% to 127%. 1989 exports exceeded quotas by from 109% to 192% for twelve species. The complexity of the current permit system may be the principal cause for the harvest exceeding the quota for so many species. The fact that quotas are established for harvests but harvests are not effectively controlled contributes to this problem.

The Government of Senegal requires exporters to purchase capture permits to trap birds, and to acquire export permits (or their equivalent for non-CITES species) to export birds. Because a majority of the birds exported from Senegal are non-CITES or CITES Appendix III species, and therefore there is no CITES obligation to maintain export data, it is difficult to determine whether exports are maintained within established quotas. In addition, there are no effective means for limiting a particular trader's exports for a particular species to the established quota. Alarmingly, species-specific export data were not available for exports from Senegal prior to 1990. Total reported non-psittacine exports during that year were 80% of those authorised under the quota system; however, exports of nine species exceeded their established quota by from 112% to 846%. Total psittacine exports exceeded the combined export quotas for psittacines by 150%.

The Government of Tanzania requires exporters to obtain capture permits prior to trapping birds, and ownership certificates once birds have been trapped. Export permits (export certificates for non-CITES species) are required to export birds. As the Tanzania quota is allocated and administered on the basis of each exporter, and species (and higher taxa) are often only identified by common name, it is not possible to determine accurately whether the quota for individual species was exceeded or not. It appears, however, that only about one-fifth of the total number of birds authorised for export was actually exported in 1990.

It is clear that in many cases, quotas alone do not provide adequate control of wild-bird harvests and

exports. To be effective, they must be combined with an integrated capture and export permit system.

ACTION 3.2: *IMPLEMENT ADEQUATE PERMIT AND LICENSING SYSTEMS*

Trapping permits identifying the number of birds of each species (and/or subspecies, as appropriate) allowed to be collected should be required for the collection of wild-birds for domestic or international trade. Government offices issuing such harvest permits should ensure that permitted trapping levels do not exceed established harvest quotas.

Exporting governments should require that all wild bird exports, both of CITES-listed and non-CITES-listed species, be accompanied by an export permit listing the species (and subspecies where appropriate) and number of birds allowed to be exported. Trade records should be maintained to ensure that permitted exports do not exceed established capture and/or export quotas.

The governments of importing countries should not accept shipments from countries implementing such a system unless accompanied by appropriate permits.

3.3 INTERNATIONAL COMMUNICATION OF TRADE CONTROLS

Enforcement efforts at the point of import are critical to effective trade control. The governments of importing countries must be aware of trade controls and restrictions imposed by exporting countries if they are to be able to identify shipments exported in contravention of those restrictions. Specific information, such as export permit numbers allocated over a given time-period, may also be useful.

Action 3.3: *NOTIFY THE CITES SECRETARIAT OF TRADE CONTROL MEASURES*

The Management Authorities of exporting countries should inform the CITES Secretariat of export quotas, permit systems and other measures established to control exports. If possible, information regarding valid permit numbers should also be communicated as appropriate. Information regarding specific instances of suspected trade violations, missing permits, etc. should also be communicated immediately to the Secretariat. If possible, this information should be communicated directly to other Parties (and non-Parties).

Governments of non-Parties should be encouraged to notify the CITES Secretariat of trade control policies and/or mechanisms.

The CITES Secretariat should make every effort to circulate such information to both Parties and non-Parties as appropriate.

3.4 TRADE MONITORING AND ENFORCEMENT: INSPECTION

Only in Tanzania do personnel from the government department responsible for trade controls regularly inspect wild bird shipments prior to export. Staff from the Anti-Poaching Unit are stationed at the two airports authorised for wildlife exports, and are required to inspect wild bird shipments prior to export. Exporters are required to inform the Anti-Poaching Unit three days prior to any export of wild birds. In addition, CITES Unit personnel often go to the airport to inspect shipments prior to export.

Inspections in the other countries profiled are generally performed by veterinary staff. SENASA veterinary staff in Argentina inspect all shipments prior to issuance of export permits. In Guyana, the Wildlife Services vet periodically inspects holding facilities used for wild birds. PHPA personnel in Indonesia perform monthly inspections of holding facilities. In addition, government veterinarians inspect birds destined for export to the United States to certify that they are free of exotic Newcastle disease. Inspections in Senegal are similarly performed by veterinary personnel. Veterinarians from the Directorate for Agriculture are stationed at the airport, and issue health certificates prior to export.

It is obvious that traders are much less likely to conform to government trade controls if they believe that there is little likelihood of trade infractions being discovered.

Action 3.4: *INSPECTION OF HOLDING FACILITIES*

Inspection of animal holding facilities and wild bird shipments should be used in conjunction with other trade control mechanisms to encourage compliance. It is important that such inspections are unannounced, and of such frequency that they serve as an adequate deterrant to illegal trapping and trade.

3.5 TRADE MONITORING AND ENFORCEMENT: TRADE RECORDS

Collection, compilation and review of trapping and export data are important components of wildlife management. As CITES incorporates reporting and other requirements for trade in CITES-listed species, records of trade-related activities for these species are generally more comprehensive and readily available than for activities involving non-CITES taxa. Trade in non-CITES species may not be recorded, or may be

maintained under broad categories, e.g. family, order or even class (e.g. US trade data for non-CITES birds). Some countries maintain trade data by common rather than scientific name making subsequent identification of the taxa in trade records extremely difficult, if not impossible.

Developing countries may lack the resources necessary to maintain and compile detailed trade records. For example trade records in Senegal and Tanzania are maintained by hand, and CITES annual reports are prepared on a manual typewriter.

Action 3.5: *MAINTAIN ADEQUATE TRADE RECORDS*

The governments of exporting and importing countries should maintain species-specific records of the number of wild birds in trade. Such records should identify species by scientific name, in lieu of or in addition to, common name.

The CITES Secretariat and conservation organisations should provide governments with whatever assistance practicable in establishing adequate record-keeping and reporting procedures.

3.6 EXPORTER LICENSING

Licensing of exporters can be an important tool for controlling the wild bird trade. All countries require some form of exporter licensing, but each follows a different procedure. Actual export controls stem from a combination of licence and permit requirements, however.

In Argentina, exporters are required to acquire a licence from the National Directorate of Wild Fauna. Exporters are required to meet certain general conditions, e.g. verifying that they do not have a police record, as well as conditions specific to wildlife exports, e.g. having a holding facility. The actual licence is a letter authorising exports of wild birds issued by the Director of the National Directorate of Wild Fauna. Practically, control of wild bird exports derives from the fact that export permits are issued by the National Directorate of Wild Fauna.

Guyana requires exporters to meet more rigorous licensing requirements, e.g. having holding facilities, maintaining records of animals within those facilities, etc. No new licences have been issued since 1983. Licences have only been revoked owing to inactivity over a two-year period and failure to pay government fees. It should be noted that, in the absence of national wildlife laws, implementation of these requirements stems from the extraordinary level of cooperation between exporters and the Wildlife Services Division.

Indonesia requires exporters to be 'registered' with PHPA, subject to a number of requirements, including submission of an annual workplan. Presumably the workplan identifies the particular species that the exporter plans to harvest in a given year, and the areas from which the birds will be harvested. With external supervision this could be used as an effective tool to ensure that harvests were appropriately distributed throughout the country. However, the actual capture of birds is controlled by the issuance of a 'capture permit' by a different branch of the Ministry of Forestry.

In Senegal, authorization of exporters is based on the issuance of a 'capture permit' for a fixed number of pairs of birds. Certain requirements must be met before the government will issue the capture permits. These mirror general government rules for licensing any export business, with the exception of an additional requirement that exporters have a holding facility. In practice, the number of exporters is limited by not issuing capture permits to new exporters.

Tanzanian exporters must hold a Trophy Dealers Licence, issued annually by the Wildlife Department. Licensed trophy dealers must meet a number of conditions, of which only the requirement to maintain a holding facility appears to pertain specifically to wild bird exports. Only licensed trophy dealers may apply for capture permits, which actually authorise harvest.

None of these countries has established professional standards against which exporters are screened before they are granted a licence. Instead, increased technical requirements such as having a holding facility, maintaining records on stock, being active each year and paying licensing fees on time have influenced the number of exporters licensed by the governments.

Trappers of birds are not required to be licensed in any of these countries, although Tanzania requires that photos of trappers are provided with applications for capture permits, and that trappers carry identification cards.

Action 3.6: *REQUIRE WILD BIRD EXPORTERS TO BE LICENSED*

The governments of exporting countries should confer to develop standard requirements for licensing exporters. Such requirements should include the filing of a cash bond by each exporter that would be forfeited if the exporter were convicted of a violation of government regulations. The addresses of all exporters licensed to export CITES-listed species should be communicated to the CITES Secretariat. The addresses of all licensed exporters should be provided to other governments upon request.

Licensed exporters should be required to participate in a short course on the handling of wild species and the importance of maintaining their habitat.

Exporters should be required to identify all traders and trappers associated with their business; these individuals should be registered with the government agency responsible for managing wild species.

3.7 EXPORTERS' RESPONSIBILITY FOR TRADE CONTROL

The number of wild bird exporters in each of the five countries profiled is considerably lower today than it was even five years ago. Furthermore, a relatively small number (e.g. three to five) of the government-approved exporters in each of these countries accounts for the largest share of exports.

Those wildlife exporters that continue to export wild-caught birds appear to be increasingly willing to accept more rigorous controls over their activities. This is probably a response to growing international pressure, rather than an increased understanding of the potential for trade to cause population declines: most exporters interviewed during this study operate under the assumption that wild birds are abundant and that wild populations are not adversely affected by their activities. Nevertheless, exporters in Argentina have helped to fund a survey of the status of *Amazona aestiva* in that country, and exporters in Guyana have expressed interest in cooperating with the Government to perform field surveys of that country's parrot populations.

Action 3.7: *EXPORTERS SHOULD ACCEPT RESPONSIBILITY FOR TRADE CONTROLS*

Governments of exporting countries should ensure that exporters understand that proper trade controls are necessary if exports are to be sustainable, i.e., if wild bird populations are to be maintained, and exporters are to stay in business in the long-term.

Governments of exporting countries should institute mechanisms to ensure that exporters share responsibility for maintaining habitat and conserving wild species subject to domestic or international trade.

3.8 BIRD EXPORTERS ASSOCIATIONS AND SELF-REGULATION

Exporters have formed an association in each country profiled. However, these associations are highly variable in their level of sophistication. In Senegal and Tanzania the associations appear to be social organisations providing a reason for the members to meet with each other periodically. There were indications that associations in these countries will become more formal in the future, in part owing to the international concerns being raised about the bird trade. In Argentina, Guyana and Indonesia, the associations provide a more formal mechanism for exporters to address issues with the government and, in the case of Indonesia, with the national airline. Argentina's exporters association is by far the most advanced, and has established membership rules, including the use of coded shipping labels as a means of self-policing.

In all those instances where the exporters associations provided collective representation to the government, government officials reported that they found it more convenient to work through the association than with individual exporters.

Action 3.8: *USE BIRD TRADERS ASSOCIATIONS TO HELP REGULATE EXPORTERS*

Governments should require all licensed exporters to be members of an association.

Exporters associations should have a role in planning, undertaking and reviewing the results of baseline surveys and ongoing population monitoring programmes.

Exporters associations should be encouraged to adopt membership requirements and to expel any members who violate those requirements.

3.9 TRADE CONTROLS IN IMPORTING COUNTRIES

Reviews of trade control policies and enforcement in importing countries have demonstrated that trade controls are often ineffective at deterring, detecting and prosecuting illegal import cases. The CITES Secretariat and governments of exporting countries have noted that effective import controls are crucial if illegal trade is to be reduced.

Action 3.9: *IMPORTING COUNTRIES SHOULD REVIEW CONTROL PROCEDURES*

The governments of importing countries should re-examine their wildlife trade control policies and enforcement mechanisms, and make every effort to strengthen import controls, in cooperation with the governments of exporting countries and the CITES Secretariat.

Conservation and other NGOs should encourage the governments of importing countries to adopt and enforce more rigorous trade controls.

3.10 DOMESTIC TRADE

Domestic trade in live birds is highly variable and dependent on the local culture and the economic status of the country. None of the countries profiled monitors the sale of wild-caught birds to residents. Senegal reported that they were now issuing 'ownership' permits for parrots.

Only in Argentina does there appear to be an organised trade serving the domestic market. Virtually every house in Guyana has a live wild animal as a pet, many of which are birds, particularly macaws and other parrots. However, there is no organised bird market in Georgetown. Vendors appear to wander the streets with the birds until someone buys them. The trade seems to reflect the proximity of the city to the forests and the relative abundance of the supply.

In Indonesia, the domestic trade in live birds and feathers serves as a substitute for cash, because of the inherent value of these commodities. In the rural parts of the country it is common to use live birds and bird-of-paradise skins and feathers as payment for services. In Senegal, while it is common to see songbirds for sale in the market and along the streets in Dakar, it was reported by the vendors that the majority of the people buying the birds do so to release them. Only Tanzania appears not to have a domestic live bird trade; however it was reported that many of the resident expatriates do have pet birds in their homes.

Action 3.10: *ASSESS DOMESTIC TRADE LEVELS*

Governments and conservation organisations should undertake more detailed assessments of the impact harvests for domestic trade are having on wild bird populations.

In those countries where capture of wild species is serving a domestic market, such harvests should be incorporated into the annual quota system.

4. ECONOMICS

4.1 REVENUES FROM WILD BIRD EXPORTS

It is clear that individuals within producer countries are receiving only a limited percentage of the value of their wild bird exports (see Swanson, this volume). On a larger scale, the producer countries themselves are receiving only a fraction of the value of their wild bird resources, with a subsequent loss in potential foreign currency earnings.

The bird trade is a long-standing tradition in each of the five countries profiled. Some exporters interviewed were the third or fourth generation of a family to be in the business. Exporters have developed strong ties with individual importers. This relationship was, and continues to be, based on considerable trust between the two.

The economic incentives for individuals and businesses to export wild-caught birds (and other natural resources) are linked to national currency regulations and/or relatively high inflation within countries of export. Exporters have found that the bird trade is an easy way to convert a somewhat readily available resource into cash. Like many wildlife commodities, wild-caught birds have greater value outside their countries of origin, and therefore profits can be maximised via export rather than domestic sale. In addition, sale of birds to foreign buyers allows the exporter to be paid in foreign currency that can be held in foreign bank accounts, and/or held as a buffer against inflation.

It appears that government personnel in exporting countries may not be familiar with the value of wild birds in importing countries. Many producer country government officials expressed interest in receiving information regarding the declared values of the birds upon import. It seems likely that at present, exporters are these officials' primary source of such information. As export taxes and other fees are often based on the 'export value' of birds exported, and revenues earned from such exports are often required to be deposited in national banks, it is obvious that from a financial perspective, it is in the exporters' best interests to provide inaccurate information regarding the value of the birds they export.

The governments of two countries -- Guyana and Suriname — are known to have taken steps to resolve this problem in the wild bird trade. Exporters are required to receive a minimum amount of foreign currency for each bird exported, with this amount to be deposited in the exporting country's national bank. No such minimum export values are established in Tanzania. However, exporters in this country are required to deposit a minimum of 65% of the income received from the sale of wild birds in the national bank.

Action 4.1: *MAXIMISE THE VALUE OF WILD BIRD EXPORTS TO EXPORTING COUNTRIES*

The governments of producer countries should research the import, wholesale and retail value of birds exported from their country in various countries of import. Based on this information, minimum export values for species in trade should be established, and exporters required to secure these values for all birds exported.

To assist in the collection of such information, a procedure should be established under the auspices of the CITES Secretariat to periodically circulate to all Parties a summary of values declared upon import for species common in trade.

Exporting governments should require licensed exporters to provide copies of contracts or agreements they have with importers, and upon request, to provide all invoices and other sales/ shipping documents as a condition of receiving a licence.

Governments of exporting countries should develop and enforce monetary policies that ensure that the greatest proportion of foreign revenues earned through wild bird (and all natural resource) exports are cycled into their national economies, rather than deposited and held in foreign accounts.

4.2 USE OF REVENUES IN CONSERVATION PROGRAMMES

All countries profiled collect revenues from wild bird exports through permit fees and/or a tax on exports. As noted above, in most cases taxes are based on a percentage of the 'assessed' value of the species.

Each country has established a government fund for the purpose of supporting conservation-oriented activities. However, none of the governments applied fees or taxes collected in conjunction with the bird trade to fund field surveys or other population monitoring programmes. No country is actively investing in maintaining its wild bird resources and yet each derives some financial benefit from the trade through surcharge and/or licence and permit fees.

In Argentina, none of the taxes collected on wild bird exports is earmarked specifically for the National Directorate of Wild Fauna. Only the fee charged for issuing CITES permits could be seen as accruing to the Directorate. Field studies are financed by exporters' contributions to FUCEMA, a private foundation: such contributions are encouraged by the Government. FUCEMA has also received contributions from NGOs and the CITES Secretariat.

In Guyana, a 'special levy' of 20% of the assessed value of wild-caught birds to be exported is collected by the Government. Government revenues collected via this levy are significant: approximately US$150,000 in 1990 alone. They are deposited in a special account under the authority of the Minister of Agriculture. To date, none of these funds has been used for field surveys; however, the Government has agreed to contribute to the cost of a baseline survey of psittacine populations if a satisfactory researcher for this project is identified. The Minister of Agriculture reported that these funds are presently covering the costs of the Wildlife Services Division, and that if these funds were not available there would be no funds for the Division.

Indonesia assesses a tax of 6% of the declared value of wild-caught birds. In 1989 this tax generated approximately US$720,000. These revenues are deposited in a special 'Reafforestation Fund' administered under the authority of the Ministry of Forestry. Money from this fund has been used by PHPA to purchase vehicles and to provide a transportation supplement to field staff. There is no doubt that adequate funds are received by the Government to implement necessary field surveys and monitoring programmes. Only national policies and priorities within the Ministry of Forestry prevent this.

The National Forest Fund in Senegal receives 75% of the tax, licence and permit fees assessed on forest-related products, including wild bird exports. Some of this money has been used to purchase vehicles and supplies for wildlife management. However, there is no regular commitment by the Government to monitor the status of wild populations subject to harvest.

Only in Tanzania is there no export tax or assessment on the value of the specimens exported. A percentage of hunting licence and export permit fees is deposited in the Tanzania Wildlife Protection Fund. The fund earned approximately US$625,000 in 1990; however, only a very small part came from levies associated with the wild bird trade. The fund has not been used thus far to undertake field surveys or monitoring programmes of wild birds in trade.

Action 4.2: *GENERATE REVENUES FOR CONSERVATION FROM WILD BIRD EXPORTS*

Governments should asses an equitable export tax on all wild bird exports, a percentage of which should be allocated to the government agency responsible for controlling wildlife harvests and exports. Export tax revenues should be used to support wild bird population monitoring programmes and other activities associated with sustainable use of the wild bird resources.

National and international conservation organisations should bring whatever pressure practicable on 'parent' Ministries to dedicate a significant percentage of government revenues generated from wildlife exports to habitat maintenance and the operating expenses of the agencies responsible for conserving natural resources.

Conservation organisations should finance baseline population surveys in countries of export only when governments have agreed to use a portion of wild bird export revenues as a means of financing periodic monitoring of wild bird populations, and of covering the operating costs of agencies responsible for wildlife conservation and utilisation.

4.3 ECONOMIC BENEFIT TO RURAL COMMUNITIES

There has been virtually no information collected regarding the economic benefits of the wild bird trade to people in rural areas. All of the information provided in the five country case studies (Part 3, this volume) was supplied by exporters. This information was generally derived from extrapolation based on the number of licensed exporters and individuals directly in their employ, and the price paid for birds during various phases of the trade. However, such value information was never provided for more than a few species in trade in any given country. In addition, there was no independent verification of the number of people employed, either directly or indirectly, by each exporter.

In view of the almost total lack of information available on this subject, it was decided to present the information provided by the exporters. At best, therefore, the figures presented in the country reports can be viewed as a general indication of potential trade benefits to rural communities. It is clear that additional, more detailed and comprehensive research is needed to determine actual benefits. At present, only Argentina and Tanzania are undertaking formal studies to ascertain the level of economic benefit realised by rural communities from the wild bird trade.

An unknown, but obviously large number of people in each country derive some benefit from the wild bird trade, particularly if family members are factored in. Each licensed exporter is linked to an extensive internal capture and transport network, and is hesitant to divulge too much information about his system. Bird exporters are also likely to be involved with other types of wildlife trade.

The amount paid to rural trappers for birds is only a fraction of what the same birds sell for in importing countries, indicating that rural people are not receiving an equitable share of the birds' value (see Swanson, this volume). However, on the scale of the local economies, income earned from trapping birds can be significant. Using Guyana as an example, a trapper receiving US$5 per bird need only capture 150 birds per year to earn more than an average employee of the Ministry of Agriculture -- with far fewer expenses.

Action 4.3: *ENSURE ECONOMIC BENEFIT TO RURAL COMMUNITIES*

Governments should evaluate the level of economic benefit from the wild bird trade accruing to rural communities.

Governments should consult with licensed exporters and local community leaders to establish price guidelines for species at different stages of trade.

Governments should ensure that some portion of the economic benefits accruing to rural communities are linked to maintenance of habitat or species conservation.

5. WELFARE

5.1 ANIMAL WELFARE STANDARDS IN EXPORTING COUNTRIES

The concept of animal welfare with respect to wild species, including birds, which are generally perceived as being plentiful, is not particularly well-established in the countries profiled. Animal welfare is often viewed as an emotional concern of people in industrialised nations. Consequently, this issue was not taken very seriously by many bird exporters prior to recent NGO campaigns which have convinced many airlines not to carry wild birds, creating the impression of a direct economic incentive for exporters to improve welfare standards.

Animal welfare laws covering wild species are non-existent or not enforced in most of the countries visited. While all countries required licensed exporters to have a pre-export holding facility, only Guyana provided standards for such facilities. Also, while all such facilities were subject to government inspection, this was normally performed by a veterinarian from another agency. No information was available regarding the procedures or records prepared in conjunction with such inspections. Pre-export quarantine requirements in Argentina, Guyana and Indonesia (for birds destined to the United States) are similarly enforced by personnel outside the wildlife departments.

Assessment of pre-export mortality was not an objective of this study. However, pre-export mortality was discussed with government officials and exporters in each country, who generally agreed that it was an issue that deserved additional attention. They all expressed a desire to receive information and training in how to better manage birds to reduce mortality rates.

Many exporters noted that importers only paid for birds that survived quarantine in the importing country, and as a result, they were much more careful in their care of the birds than they would be if this were not the case. Tanzania, in cooperation with TRAFFIC International, will be organising a training workshop for exporters on better handling techniques for wild birds.

Action 5.1: *ESTABLISH ANIMAL WELFARE STANDARDS IN EXPORTING COUNTRIES*

Governments should require that trappers, traders and exporters of wild birds participate in training programmes that address topics including

appropriate trapping and transport techniques and habituation of birds to captive conditions, including a captive diet.

Conservation, animal welfare and avicultural organisations, in cooperation with governments and the CITES Secretariat, should assist in the development and presentation of such programmes.

Generally accepted standards for pre-export holding facilities should be developed and adopted by all exporting countries, along the line of those prepared in Guyana. Licensing and inspection of these facilities should be under the authority of the agency responsible for wildlife. In the event that the inspection must be performed by someone from another agency, a report of that inspection should be filed with the wildlife agency.

All licensed exporters should be required to provide records of mortality during capture, transport and holding within pre-export holding facilities.

5.2 INTERNATIONAL TRANSPORT STANDARDS

Both CITES and the International Air Transport Association (IATA) have adopted a series of requirements with respect to the preparation of live animals for shipment and transport. To date, these requirements have been inconsistently applied and rarely enforced. As a result, live birds have often been ill-prepared for shipment and/or shipped in substandard conditions, with significant transport-associated mortalities as a result.

Animal welfare and conservation NGOs have responded to this situation and other concerns with the bird trade by encouraging airlines to stop carrying live wild birds. This campaign has met with initial success, with most of the major US and European carriers, as well as some South American carriers, refusing to carry wild birds as of December 1991. This situation has almost certainly resulted in a decline in the number of birds moving to the United States and Europe, and has forced exporters to seek alternative carriers and/or modes of transport.

Action 5.2: *IMPROVE INTERNATIONAL TRANSPORT STANDARDS*

CITES Parties should require that live wild animals are shipped in a manner that conforms to CITES transport requirements, including those adopted via Resolutions of Conferences of the Parties.

Exporters should be required to demonstrate that animals will be appropriately prepared and shipped prior to being granted an export permit. If it is determined at the time of export that animals to be exported are not appropriately prepared or packed for shipment, then the export permit should be suspended until such time as the birds are so prepared.

The IATA Live Animals Board should take steps to encourage and enforce member compliance with the IATA Live Animals Regulations.

Importing Parties should take whatever steps necessary to ensure that animals to be imported are appropriately prepared for shipment prior to export. These should include inspection of bird shipments upon arrival, completion of CITES checklists, and communication with the government of the country of export and the CITES Secretariat in the event that a shipment does not conform to CITES transport requirements.

To aid the implementation and monitoring of welfare controls, importing countries should limit the number of ports of entry for live birds. Government-operated holding facilities should be located at all ports of entry, and staffed with veterinary personnel trained in handling wild birds.

6. CAPTIVE MANAGEMENT

6.1 MOVES TOWARDS CAPTIVE PRODUCTION OF WILD BIRDS

The Indonesia Management Authority is strongly encouraging all government-authorized exporters to develop, or participate in the development of, captive breeding facilities. In Guyana the Wildlife Services Division encourages exporters to start captive breeding operations. One Argentine exporter recently established a captive breeding facility, but has not yet produced birds for export.

It is clear that the technology necessary to breed many species in captivity exists, at least within some consumer markets. However, the breeding biology of many species is not well known, and captive breeding of these species is therefore still in an experimental phase. The technical support necessary for successful captive breeding programmes is not available in any of the five exporting countries that are profiled in this volume.

Thus far, only exporters have expressed an interest in, or have been encouraged to, develop captive breeding programmes. Conservation, animal welfare and avicultural organisations have yet to encourage or assist with the development of captive breeding facilities in countries currently exporting wild-caught birds.

Ranching, or manipulating habitat in some way so as to produce 'excess' birds that may be harvested for trade, is not being considered as a means to produce birds for export in any of the five countries. This may stem in part from the need to revise the concept of ranching, which is presently applied primarily to crocodilians. In addition, some countries may lack sufficient personnel to oversee ranching operations.

Action 6.1: *PROVIDE TECHNICAL ASSISTANCE FOR CAPTIVE MANAGEMENT*

Aviculturists and avicultural organisations, in cooperation with conservationists, should provide exporting countries with the technical assistance needed to develop captive breeding programmes.

The potential for ranching as a means of producing birds for export should be explored by the governments of exporting countries, with the support of conservation organisations, universities, trade associations and other institutions concerned with the trade. Research regarding various methods of 'ranching' birds should be initiated as quickly as possible, and the results of such research communicated to government agencies responsible for conserving wild species.

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