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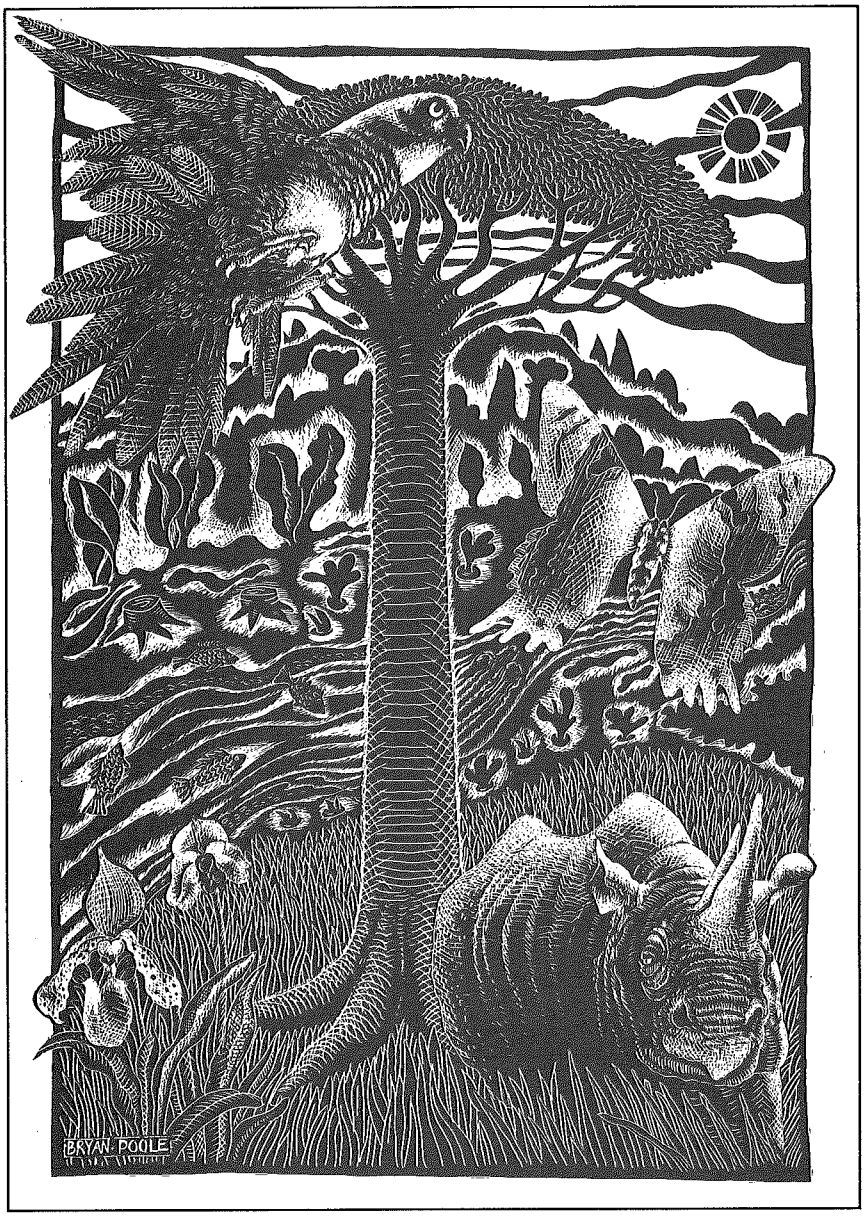
TRAFFIC

BULLETIN



The Journal of the TRAFFIC Network disseminates information on the utilisation of wild animal and plant resources

Uganda in CITES

Uganda acceded to CITES on 18 July 1991, effective 16 October 1991, and became the 112th Party to the Convention.

CITES Secretariat

Bear-gall Bladder Dealer Found Murdered

A Korean-American, Haeng Gu Lee, thought to have been a major dealer in bear gall-bladders, was recently found with his throat cut in his flat in New York, USA; black bear fur was found scattered around his body. The flat, which the victim had turned into a storehouse for animal parts, had been ransacked.

Detectives investigating the murder believe Mr Lee may have been involved in trading bogus bear gall bladders. Studies carried out by the US Fish and Wildlife Service indicate that up to 16% of exported bear gall bladders may actually have come from pigs.

In the USA, American Black Bears are illegally poached for their gall bladders, which are used in Oriental medicinal products, mainly in Asia; one gall bladder can be worth US$45 000. The animals are also poached for their paws and claws. Although licence-holders can cull a restricted number of Black Bears, increased demand from Asia has led to increased poaching.

Because of the similarity of appearance of the species' parts to those of the threatened Asian bear species, which are similarly exploited, a proposal to include the Black Bear *Ursus americanus* in CITES Appendix II has been submitted by Denmark for consideration at the eighth meeting of the Conference of the Parties to CITES, in March 1992. Most of the Asian species are listed in CITES Appendix I, but trade in their parts is extensive, much of it disguised as originating from the American Black Bear.

The Yukon government in Canada has set up a free telephone 'hotline' for tip-offs to halt the growing slaughter of Grizzly Bears *Ursus arctos* and other big game. Cash rewards will be offered for confidential information on illegal hunting. At present, less than 5% of poaching offences are reported or detected.

TRAFFIC International; The Daily Telegraph (UK), 24 October 1991

Airlines Ban Wild Birds

Over 40 private and government-owned airlines are refusing to transport wild birds in response to a campaign by conservation and animal welfare organisations seeking to restrict the trade in wild-caught birds. Charging that mortalities associated with international transport of live birds were unacceptable, several US and UK groups convinced Lufthansa, previously the most important carrier of birds between Africa, Europe and the USA, to stop accepting wild bird shipments in November 1990. KLM, second only to Lufthansa with respect to the number of birds carried, responded to the campaign by hosting a meeting in April 1991 to discuss methods to reduce transport-associated mortality. Although at the time KLM announced that they would continue to transport wild birds, they apparently reversed their position in July, and suspended transport until such time as government controls regarding preparation of birds for transport were improved. Garuda Indonesia also announced in July 1991 that it would no longer transport wild birds, but reversed this decision several weeks later.

The number of airlines banning transport increased rapidly throughout 1991, with both passenger airlines and cargo companies refusing to ship wild birds. Although trade data are not available, some sources indicate that the transport bans have succeeded in significantly reducing the number of birds in international trade. Exporters are seeking alternative routes and carriers in an effort to move birds to the major consumer markets of Europe and the USA. The decision by airlines also appears to be affecting shippers of zoological specimens and captive-bred birds. Airline policies with respect to captive-bred birds are unclear. Personnel working for those carriers that have agreed to carry captive-bred birds may lack the ability to discriminate between these and wild-caught birds.

Teresa Mulliken, Research Officer, TRAFFIC International

TRAFFIC Network Expands

The TRAFFIC Network has four new offices.

Two regional offices were established in September 1991. TRAFFIC East/Southern Africa, based in Lilongwe, in Malawi, will cover Angola, Botswana, Djibouti, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Somalia, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

TRAFFIC Southeast Asia, based in Kuala Lumpur, Malaysia, will be monitoring activities in the following ten countries: Myanmar, Thailand, Malaysia, Singapore, Indonesia, Brunei, Laos, Cambodia, Viet Nam and the Philippines.

Two national offices have been set up in the last few months - TRAFFIC Taipei, in Taiwan, and TRAFFIC India, based in Delhi.

A full list of all TRAFFIC addresses is given on the inside back cover.

African Elephant Review

When the African Elephant *Loxodonta africana* was transferred from CITES Appendix II to Appendix I at the seventh meeting of the Conference of the Parties to CITES in 1989, the Parties adopted the so-called Somali amendment (Doc 7.43.8) which set out a mechanism whereby populations of the species could be re-transferred to Appendix II. The procedure called for the review of any such proposals, according to terms of reference defined in Resolution Conf. 7.9, by a panel selected by the CITES Standing Committee from experts nominated by IUCN, TRAFFIC and UNEP.

The first country to submit a proposal to have its population of elephants transferred to Appendix II was South Africa, as early as April 1991. The Standing Committee selected four members for the panel each having different areas of expertise, as defined in Resolution Conf. 7.9: Jonathan Barzdo (establishment and operation of trade regimes), Dr Richard Bell (elephant biology and population biology), Dr Peter Dollinger (security aspects of elephant products and/or wildlife law enforcement) and Dr Richard Luxmoore (monitoring of trade in elephant products). The fifth panel member, Dr Anthony Hall-Martin, was nominated by South Africa. A sixth member nominated by the Standing Committee was unable to attend and it was decided to proceed with only five.

The Panel met in South Africa in June to assess the proposal and again in Switzerland the following month to prepare its report for submission to the Standing Committee. The report, which has now been circulated to all Parties, concluded that the biological status and management of the elephant population in South Africa was satisfactory and met the criteria laid down by Resolution Conf. 7.9. The mechanisms for controlling trade contained in the original proposal were not sufficient to meet the criteria without modification. South Africa has since submitted a revised proposal which will be considered, along with the report of the Panel, at the eighth meeting of the Conference of the Parties, in Kyoto, Japan, in March 1992.

In October 1991, four more countries - Botswana, Malawi, Namibia and Zimbabwe - submitted a joint proposal to have their elephant populations, along with that of Zambia, transferred to Appendix II. Botswana independently submitted an additional proposal relating only to its own population. The Standing Committee decided to retain the same panel for the review of these proposals, with the substitution of Dr Holly Dublin in ▷

Zimbabwe Poaching Update

In July 1984, Zimbabwe's Department of National Parks and Wild Life Mangagement set up Operation Stronghold in an attempt to curb the disturbing increase in the poaching of rhinos. Between July of that year and the end of October 1991, poachers had killed 954 rhinos (an average of just over 135 a year) and 258 elephants (an average of just under 37 a year).

During the same seven years, anti-poaching patrols carried out 784 poaching raids, which resulted in 145 poachers being killed and the arrest of a further 83. More than 100 guns were recovered and almost 11 000 rounds of ammunition seized.

National Parks also suffered casualties. A total of four staff - two scouts and two investigation officers - were killed in anti-poaching battles and six more were wounded. During these operations, 289 rhino horns and 146 elephant tusks were recovered.

The success rate of National Parks has been rising over the last two years, with poaching gangs suffering more casualties for fewer rhinos or elephants killed.

	Rhinos killed	Elephants killed	Poachers killed	Poachers captured	Poachers escaped /wounded	Contacts with poachers	Incursions	Weapons recovered	Ammunition recovered	Rhino horns recovered	Tusks recovered	Parks staff wounded	Parks staff killed
Zambezi Valley	631	152	84	35	-	125	500	62	8000	129	50	1	3
Matusadona	60	8	4	7	-	11	30	4	750	31	4	-	-
Chete	72	5	15	6	30	13	23	7	634	22	5	-	-
Chizarira	60	8	13	4	41	15	-	7	283	56	8	-	-
Chirisa	24	1	2	-	22	6	35	1	-	6	8	1	-
Sengwa	21	-	-	-	-	2	11	-	-	-	-	-	-
Hwange	72	34	17	-	-	35	54	11	783	41	18	-	-
Gonarezhou	14	50	10	-	-	14	131	15	481	4	53	2	3
TOTAL	954	258	145	83	202	221	784	107	10931	289	146	4	6

Department of National Parks and Wild Life Management statistics, July 1984 to September 1991; The Herald (Harare), 16 October 1991 *- = 0 or figures not available*

▷ place of Dr Bell who was himself a representative of one of the countries covered by the proposal. Panel members nominated by the proponent countries were Dr Keith Lindsay (Botswana), Dr Malam Lindeque (Namibia), Dr Rowan Martin (Zimbabwe), Francis Mkanda (Malawi) and Gilson Kaveche (Zambia).

Because of time constraints, the Panel decided to review the proposal in two phases, the first mission visiting Zimbabwe, Namibia and Botswana in November 1991, and the second visiting Zambia and Malawi in January 1992. The report is to be finalised before the eighth meeting of the Conference of the Parties.

Although requested by the Conference of the Parties, the report of the Panel has no status beyond advice to the Parties, who must therefore decide in the normal way (i.e., by a two-thirds majority) whether to accept any proposals to amend the Appendices.

Dr Richard Luxmoore, Head, Wildlife Trade Monitoring Unit, World Conservation Monitoring Centre

Chimpanzee Seizures in Europe

In the past year, a total of 11 Chimpanzees *Pan troglodytes* (CITES Appendix I) were seized on two occasions from circus operations in Europe. The cases indicate that demand for young Chimpanzees for the circus trade continues, and the difficulties encountered in effecting seizures reflect serious inadequacies in the CITES-related legislation of some European countries.

The first case dates back to late 1990, when four young Chimpanzees were exported from Uganda to the former Soviet Union. Investigations at that time indicated that these animals were wild-caught specimens, and the permit used to move them was invalid. As no import permit had been issued, the shipment was illegal under CITES and the Soviet authorities imposed a restriction on the movement of the animals (held by a circus operation), including an indefinite ban on their re-export.

In April 1991, a Soviet circus entered Italy from Yugoslavia without required import documents for CITES-listed specimens which included various animals of apparently illegal origin, in particular two gibbons (*Hylobates* spp. (Appendix I) and thought to have been smuggled from Viet Nam), and the four Chimpanzees previously obtained from Uganda The circus moved to Rome in early May 1991, but when it left the city later that month, the gibbons and Chimpanzees were left behind in a warehouse; their actual location was only ascertained in August. In the meantime, the circus owner applied to the Italian CITES Management Authority requesting a re-export certificate in order to move the animals to the USA. The Italian authorities accepted the application, although no valid CITES papers had been presented by the trader to support his application; the animals were claimed to have been bred in captivity in a Soviet zoo.

On 19 August 1991, acting on information received from TRAFFIC Europe, the Italian Forest Corps seized one gibbon from a circus trainer and photographer who were using the animal to attract tourists in a Rome park. Co-ordination between the CITES Secretariat, the Soviet authorities and TRAFFIC Europe led to the seizure, on 21 August, of the four Chimpanzees and a second gibbon from a private warehouse. The animals were removed and the seizure was provisionally upheld by a judge. Unfortunately, it soon became clear that Italian legislation might be inadequate to justify confiscation, despite the clear contravention of CITES. Despite representations made to the court by TRAFFIC Europe supported by the US Embassy in Rome, it ruled that confiscation was impossible under CITES-related legislation and that use of general contraband laws in this case would be unconstitutional and unjustifiable: the animals had been openly presented to border guards on entry to the country. No attempt was made by the Italian CITES authorities to contest this decision; the animals had to be released from judicial custody on 13 September and handed back to the trader involved.

Although the Italian authorities revoked the re-export certificate, they did not recover the invalid documentation that had previously been presented to them and upon which the issuance of the certificate had been based. It was soon discovered that all six primates had been transported from Italy to Austria via the border post at Tarvisio on, or around, 16 September. This was the second time that these animals had passed across the Italian border without any of the required CITES documents. Despite being provided full details by the CITES Secretariat, it appears that Austrian authorities made no attempt to apprehend the shipment, and the animals were quickly moved into Hungary. During the next few days a frantic search was made by the Hungarian CITES Management Authority and national police and customs officers in collaboration with their counterparts in the Soviet Union and the CITES Secretariat. The animals were eventually located as the traders were attempting to cross the border into the Soviet Union; they were seized and later formally confiscated by the Hungarian authorities. On 11 October, the four Chimpanzees were returned to Uganda with support from the Jane Goodall Institute; the gibbons have been placed in a rescue centre in Hungary.

In the second case, in October 1991, a circus that had been allowed by Customs to freely enter Brindisi harbour, Italy, was inspected by the State Forest Corps, accompanied by a staff member of TRAFFIC Europe and a Chimpanzee expert. Seven Chimpanzees, accompanied by Italian and Spanish CITES certificates apparently falsely declaring their birth in captivity or their pre-CITES status, were seized and temporarily placed in a zoo near Brindisi. The case was brought to court and the judge decided to leave the animals "in trust" to the circus owner; their sale or use in the show was prohibited, and the owner obliged to produce a death certificate and the corpse in the event of the death of the animal(s).

A further hearing will determine the long-term fate of these animals.

Steven Broad, Assistant Director, TRAFFIC International

Wild Bulb Propagation Project

The Dutch and Turkish flower bulb industries have launched a joint bulb propagation project to preserve endangered species of flower bulbs. The project will be carried out in close co-operation with Dogal Hayati Koruma Dernegi (Turkish Society for the Protection of Nature), the Dutch flower bulb industry represented by the Dutch Bulb Exporters' Association and the Bulb Research Centre, and with Dogl Ciceksogani Uretici Ve Ihracatcilari Dernegi (Asociation of Turkish Growers and Exporters of Botanical Flower Bulbs). Commercial growing areas as well as natural habitats in more remote parts of Turkey have been studied, in particular Bolu and Altinova (northwestern Turkey); Sukurluk (western); Izmir and Bronova (southwestern); and Surmene, Trabzon and Giresun (northeastern). A Dutch co-ordinator will instruct Turkish growers on how to cultivate bulbs, harvest seeds at the right time, and use 'daughter bulbs' as planting stock for the next season. The commercial culture of *Galanthus elwesii* and *G. ikariae*; *Leucojum aestivum, Cyclamen cilicicum, C. neapolitanum* and *C. persicum*; *Sternbergia; Eranthis;* and *Fritillaria persica* and *F. imperialis* seems to be developing at a good pace, although there is still some wild transplantation of some of these plants.

ORYX, 25 October 1991; Netherlands Flower Bulb Information Centre, 10 June 1991

Indian Snakeskin Stock Sealed

On 12 December 1991, the Central Bureau of Investigation in India sealed the entire stock of snakeskins in the warehouse of Bharat Leather Corporation. This Government-owned company had been licensed originally to export snakeskin goods made from confiscated skins, so as to prevent domestic trade in snakeskin articles. This permission, however, was withdrawn two years ago.

Repeated allegations have been made that stock with BLC was used by unscrupulous dealers to illegally trade in snakeskin articles. There have also been rumours of financial irregularities and manipulation of stock.

BLC's stock is said to be well over a million pieces.

TRAFFIC India

Ostrich Farming in the UK

Europe's first commercial Ostrich farm is being besieged by orders for birds selling at £1500 (US$2700) each. The farm, in Banbury, Oxfordshire, UK, is selling three-month-old unrelated breeding pairs of Ostrich *Struthio camelus.*

Chief among the benefits of Ostrich farming, according to the owner of the farm, Francis Ayres, is the lack of waste from the bird. Apart from the meat, the leather is highly prized, the feathers are used for decorative purposes and the eggs are sold for food or craft work.

Ayres has offered to train farmers, eager to diversify. He will supply breeding stock and ready markets for the animals' products.

Such a venture is not cheap. On the world market, a pair of three-month-old breeding chicks costs £3300. It takes about three years before the chicks are mature enough to breed and birds cannot be slaughtered until they are 14-months-old. An adult pair can fetch up to £55 000.

The European (UK), 1 December, 1991

Brazil Supports Caiman Farming

The Brazilian Government environmental agency, IBAMA, is supporting the growth of reptile farming and has issued guidelines on conditions for raising the most popular species *Caiman crocodilus yacare.*

Currently Brazil supplies 60% of the two million caiman skins annually traded worldwide; most of these are from animals illegally taken from the wild. IBAMA has undertaken a rigorous crackdown on the trade and annually destroys tonnes of seized skins.

In order to further undermine the illegal trade, the organisation has actively co-operated in the foundation of caiman farms, assisted by expert advice from the USA; as part of the programme, farmers must return 10% of hatchlings each year to the wild. Research in Brazil has shown that farm-grown caimans yield leather and meat of superior quality and quantity to those raised in the wild. Importantly, a controlled diet also prevents the formation of boney ribs in the underbelly and tail, allowing the entire hide to be used for leather.

One of the first licensed farms has already shipped 300 hides to Japan, the world's major consumer of reptile skins. Each skin was marked with an indelible stamp, identifying it as Brazilian farm-grown and legal. The farm soon expects to be producing up to 1500 hides a year.

Leather, September 1991

Orange Roughy in Deep Water

The Orange Roughy or Deep-sea Perch *Hoplostethus atlanticus* is an extremely slow-growing fish, with a life-span of over 100 years. It does not start spawning until around 20 years of age, and is therefore unable to regenerate its stock as fast as other commercially exploited species. Although the fish had been known for some time from its occurrence in small numbers in the Northern Hemisphere, sufficient quantities to make it a commercial proposition were discovered only about ten years ago around New Zealand, and shortly thereafter near Tasmania. One of the reasons that its potential remained unknown for so long is the fact that the fish live at a depth of 1000 m or more; most commercial fishing extends down to only about 200 m.

In 1985, Australia's fishing fleet started taking the fish, with a catch of 400 tonnes, rising to 4600 tonnes a year later when dense aggregations were found off Tasmania's northwestern coast. The catches have been increasing ever since, such that the Orange Roughy has become Australia's largest fish crop, in both monetary terms (A$50 million (US$36 million) in 1989) and tonnes netted.

In order to determine whether such catches are sustainable indefinitely, in July 1990 CSIRO Division of Fisheries in Hobart carried out a survey of the fish off St Helens, off Tasmania's northeastern coast. The results indicate that if the industry is to survive in this region, the total allowable catch must be reduced from its current 12 000 tonnes (at which it was set, apparently without accurate knowledge of stock sizes) to no more than 2700 tonnes. The survey recommends that further research be carried out in order to determine how much Roughy from other sites constitutes a sustainable catch.

In the course of their research, CSIRO scientists have also been looking at ways to utilise the waste left over after the fish has been processed. Oil from the Orange Roughy comprises about 18% of the fish's weight. Unlike most fish, its swim bladder is full of a wax ester, which may be a possible substitute for oil obtained from the Sperm Whale *Physeter catodon,* or seeds of Jojoba *Simmondsia chinensis.* It could also be used as an industrial lubricant or in the tanning industry. The scientists believe it could be worth about A$1 a kg. A 10 000-tonne catch could yield about 1800 tonnes of oil, representing A$1.8 million. The fatty acids so important in human nutrition, however, are present in much smaller amounts in the oil in the edible flesh, compared with that of other commercial Australian fish.

A report of the New Zealand Ministry of Agriculture, Fisheries and Food (MAFF), indicates that the Orange Roughy fishery on the Chatham Rise, New Zealand, is in danger of collapsing over the next five years if the catch is not reduced to a sustainable level in the next fishing year. The fishery has been reduced to ten per cent of its original biomass in just ten years of fishing. The Total Allowable Commercial Catch (TACC) is just under 24 000 tonnes, while the sustainable level has been estimated by MAFF to be less than 8000 tonnes. Despite MAFF's advice to the Government to reduce the TACC, the Fisheries Minister, Doug Kidd, has proposed that it should remain at 24 000 tonnes for next year.

Ecos (Australia) 68, Winter 1991; Forest & Bird Conservation News (New Zealand) 68, August /November 1991

GATT Tries to Reverse Tuna Ban

The General Agreement on Tariffs and Trade (GATT) panel is trying to overrule a US ban on imports of tuna from nations which use fishing methods that kill large numbers of dolphins, on the grounds that it violates GATT regulations by implementing domestic measures to protect dolphins living outside the territorial jurisdiction of the USA.

The US ban, which came into effect in 1991 to prevent dolphins from being unnecessarily trapped and killed in tuna fishing nets, affects imports from the three major tuna fishing nations - Mexico, Venezuela and Vanuatu. It also applies to tuna imports from Costa Rica, France, Italy, Japan and Panama, where tuna is bought from these three nations and re-exported.

Mexico is supported in its complaint against the US ban by the member states of the European Community and seven other GATT nations, including Australia, Indonesia, Japan, Korea, the Philippines, Thailand and Venezuela. Many of these countries are demanding that articles to GATT, which provide exemptions to allow trade measures necessary "to protect human, animal, and plant life and health" and "conserve exhaustible natural resources", should only apply to wildlife or natural resources within the legal jurisdiction of the country applying the trade measures.

The US report on the panel's finding confirms that GATT could be used to overturn any trade measures applied by a country to protect natural resources outside its own territorial jurisdiction, including the US Pelly Amendment which has been used to support the international whaling moratorium.

WWF Press Release, 28 August 1991

CITES Reservations

The Government of Brazil has withdrawn its reservations, effective 7 May 1991, with regard to Minke Whale *Balaenoptera acutorostrata,* Sei Whale *Balaenoptera borealis* and Pygmy Right Whale *Caperea marginata,* included in Appendix I.

CITES Notification to the Parties No. 649, 28 August 1991

NEWS

Japan to Ban Drift Net Fishing

Bowing to international pressures, Japan has announced that it will start phasing out drift-net fishing, with a 50% reduction in current use by mid-1992, and a total ban by the end of the year. The 1989 United Nations resolution calls for a moratorium on drift-net fishing after June 1992.

After Japan, South Korea and Taiwan are the world's largest drift-netting nations. In October, Taiwan agreed to the UN resolution, its decision coming in the face of economic sanctions worth millions of dollars of seafood exports to the USA.

The South Korean Embassy in Washington, USA, has said that its Government has no immediate plans to follow Japan's lead.

The Animal Welfare Institute Quarterly 40(3)

Illegal Coral Harvest in Singapore

Although the removal of coral from any of its offshore islands is prohibited by the Singapore Government unless authorised by the Land Office, harvesting of the reefs continues. Fishermen in the region have told *The Straits Times* newspaper that in addition to harvesting the reefs around the islands of Sumakau, St John's Island and Pulau Cawan, they also mine the reefs off Indonesia. According to one fisherman, it takes two divers more than three hours to collect about 50 specimens. The fishermen apparently receive orders from commercial aquaria two or three times a day. One commercial aquarium owner said that his shop received "fewer than ten orders for coral a day".

Straits Times (Singapore), 30 September 1991

Bali Sea Turtles

Although the consumption of turtle meat is already banned in Bali, it is widely available in hotels and restaurants on the island. In response to criticism for allowing such trade, the Governor of Bali has stated that he will stop the sale of the meat for consumption; however he will not ban turtle catching for religious or traditional rites for the predominantly Hindu population.

Reuters News Agency, 26 July 1991

LEGISLATION UPDATE

AUSTRALIA - *TREE FROGS AND CASSOWARIES*

Concern about uncontrolled interstate trade in Australian tree frogs has prompted the declaration of several species as 'Fauna' under Queensland's *Fauna Conservation Act 1974*. (The Act defines 'Fauna' as being all indigenous mammals and birds, and any species of animal which is declared by Order in Council to be fauna). It was discovered that tree frogs from Queensland were appearing in pet shops in Adelaide, and elsewhere interstate. It is believed that several shipments of wild frogs a month were being sent to the southern States.

Native Queensland frogs, other than the gastric brooding frogs *Rheobatrachus* spp., were not previously subject to any form of protection. The following species were declared as 'fauna' in the Queensland Government Gazette No. 15, dated 14 September 1991:

Day frogs	*Taudactylus* spp.
Common Green Tree Frog	*Litoria caerulea*
White-lipped Tree Frog	*L. infrafrenata*
Graceful Green Tree Frog	*L. gracilenta*
Orange-eyed Tree Frog	*L. chloris*
Orange-thighed Tree Frog	*L. xanthomera*
Eastern Dwarf Green Tree Frog	*L. fallax*
Northern Dwarf Tree Frog	*L. bicolor*
Cooloola Spotted Frog	*L. cooloolensis*
Wallum Reed Frog	*L. olongburensis*

The listing applies to adult frogs only; eggs and larvae are exempt.

The Cassowary *Casuarius casuarius johnsonii* has been declared as 'Permanently Protected Fauna' under Queensland's *Fauna Conservation Act 1974* (Queensland Government Gazette No. 15, 14 September 1991). This specially protected status means that an open season cannot be declared for the species, and only the Minister for Environment & Heritage may grant a permit for the taking or keeping of specimens. The only other animals which have this special status are the Bilby *Macrotis lagotis,* Bridled Nail-tailed Wallaby *Onychogalea fraenata*, Ground Parrot *Pezoporus wallicus,* Night Parrot *Geopsittacus occidentalis,* gastric brooding frogs *Rheobatrachus* spp., and Illidge's Ant-blue Butterfly *Acrodipsas illidgei.*

TRAFFIC Oceania

PERU - *PLANTS*

The CITES Management Authority of Peru has informed the Secretariat that the export for commercial purposes of plants listed in CITES Appendix II, is only authorised in the case of artificially propagated specimens of the family Orchidaceae. Wild-collected orchids may only be exported for scientific purposes, and the collecting of such plants is strictly regulated.

CITES Notification to the Parties No. 646, 28 August 1991

ZAIRE - *GREY PARROTS*

The CITES Management Authority of Zaire has informed the CITES Secretariat that the Ministère de l'Environnement et de la Conservation de la Nature, has decided, as a trial measure and subject to an annual export quota not exceeding 10 000 specimens, to authorise the trade in Grey Parrots *Psittacus erithacus*, an Appendix II species. The quota will be reviewed each year, taking into account Article IV of the Convention.

CITES Notification to the Parties No. 647, 28 August 1991

JAPAN - *MIST-NET BAN*

With effect from 15 September 1991, Japan has prohibited the use and export of tiny mesh mist-nets, used to catch wild birds.

Up to three million birds each year have been caught for consumption in mist-nets in Japan. The use of these nets for non-scientific purposes has been illegal since 1950, but the law proved largely ineffective, mainly because it made no attempt to control the sale or possession of the nets.

World Birdwatch 13(4), December 1991

PAKISTAN - *EXTENSION OF WILDLIFE BAN*

The Government of Pakistan has decided to extend, until August 1993, the ban on hunting, netting, capturing and export of all wild mammals, reptiles, and native protected birds (both resident and migratory), their parts, products and derivatives (except wild boar and its skin), but to allow controlled trapping and export of native sparrows, mynahs, finches and parakeets except the Alexandrine Parakeet *Psittacula eupatria*.

CITES Notification to the Parties No. 645, 28 August 1991

EXPORT QUOTAS

Lists of those species subject to export quotas in Guyana, Indonesia and Suriname, can be obtained from the CITES Management Authority of the relevant country, or from TRAFFIC International.

INDIA

The *Wildlife Protection Amendment Act 1991* came into effect on 2 October 1991. Violations of the Act can now be brought directly to the attention of the courts by individuals and NGOs if action is not taken by the authorities within 60 days of the complaint. Hunting of wildlife specified in Schedules I, II, III and IV of the Act is prohibited; hunting and trapping licences already issued for such species have now been cancelled. Stocks of wildlife articles held by dealers licensed under the Act are to be verified and identification stamps placed on each item, after which time a deadline will be set for the disposal of such stocks. Thereafter, there will be no domestic or international trade in wildlife or derivatives, except vermin and a limited number of peacock feathers. Commercial timber felling and the exploitation of wild fauna and flora has been banned within wildlife sanctuaries, as it is in National Parks. The transportation of wildlife (other than vermin), or wildlife products, has been banned except with the permission of authorised officers. Vehicles and weapons used for committing an offence under the Act will be seized and forfeited to the Government. With effect from 2 April 1992, domestic trade in imported ivory and carved ivory products will be banned. For the first time, the Act also extends protection to some plant species. The Act provides for the setting up of a Zoo Authority which will be responsible for upgrading zoo conditions, exchange of specimens, maintenance of stud books, captive breeding and, it is hoped, reintroduction of endangered species to the wild.

Under the revision of the Import-Export Policy issued by the Ministry of Commerce, India has banned the export of all birds.

A. Kumar, Director, TRAFFIC India

List of CITES Appendix Amendment Proposals

In accordance with the provisions of Article XV, paragraph 1(a), of CITES, the following proposals for amendment of Appendices I and II of the Convention have been communicated to the Secretariat by Parties. These proposals will be considered at the eighth meeting of the Conference of the Parties to CITES, to be held from 2 to 13 March 1992, in Kyoto, Japan.

Species	Proposal	Proponent
MAMMALIA		
Tarsius syrichta		
Philippine Tarsier	App. II-I	PH
Tamandua tetradactyla chapadensis		
Mato Grosso Collared Anteater	Del. App. II[1]	DE
Manis temminckii		
Temminck's Ground Pangolin	Del. App.I[2]	BW/MW/ NA/ZW
Dusicyon thous		
Crab-eating Fox	Incl. App. II	AR
Ursus americanus		
Black Bear	Incl. App. II	DK
Ursus arctos (CN & MN pops.)		
Brown Bear	App. I[3]	DK
Ursus arctos		
Brown Bear	Incl. App. II	DK
Conepatus spp.		
Hog-nosed Skunks	Incl. App. II	AR
Hyaena brunnea		
Brown Hyaena	Del. App. I[2]	BW/MW/ NA/ZM/ZW
Acinonyx jubatus (pops. of BW, MW, NA, ZM, ZW)		
Cheetah	App. I-II	NA/ZW
Felis geoffroyi		
Geoffroy's Cat	App. II-I	BR
Felis rufa escuinapae		
Mexican Bobcat	App. I-II[1]	US
Panthera pardus (Sub-Saharan pop.)		
Leopard	App. I-II[4]	BW/MW/ NA/ZM/ZW
Mirounga angustirostris		
Northern Elephant-seal	Del. App. II[1]	US
Orycteropus afer		BW/MW/
Aardvark	Del. App. II[2]	NA/ZW
Loxodonta africana (pops. of BW, MW, NA, ZM, ZW)		BW/MW/
African Elephant	App. I-II	NA/ZW
Loxodonta africana (BW pop.)		
African Elephant	App. I-II	BW
Loxodonta africana (ZA pop.)		
African Elephant	App. I-II	ZA
Diceros bicornis (ZW pop.)		
Black Rhinoceros	App. I- II[5]	ZW
Ceratotherium simum simum (ZA pop.)		
White Rhinoceros	App. I- II[2]	ZA
Ceratotherium simum (ZW pop.)		
White Rhinoceros	App. I-II[5]	ZW
Antilocapra americana mexicana		
Pronghorn Antelope	Replace with	US
A. a. peninsularis	App. I listing of	
Lower Californian Pronghorn Antelope	MX pop. of *A. americana*	
A. a. sonoriensis	(=Del. US pop. of	
Sonoran Pronghorn Antelope	*A.a. mexicana* and *A. a. sonoriensis*)[1]	
Capra falconeri falconeri (incl. *cashmirensis*)		
Markhor	App. II-I	GB
Capra falconeri heptneri (incl. *ognevi*)		
Markhor	App. II-I	GB
Hippotragus equinus		
Roan Antelope	Del. App. II	BW/MW/ NA/ZM/ ZW
AVES		
Rhea americana		
Greater Rhea	Incl. App. II	AR
Mycteria leucocephala		
Painted Stork	Incl. App. II	US
Anas formosa		
Baikal Teal	Incl. App. II	GB
Cygnus columbianus jankowskii		
Jankowski's Swan	Del. App. II[1]	DE
Cyrtonyx montezumae mearnsi		
Mexican Mearns' Montezuma Quail	Del. App. II[1]	US
C. m. montezumae		
Southern Montezuma Quail	Del. App. II[1]	US
Goura spp.		
Crowned pigeons	App. II-I	NL
Amazona aestiva		
Blue-fronted Amazon	App. II- I	US
Cacatua goffini		
Goffin's Cockatoo	App. II-I	US
C. haematuropygia		
Red-vented Cockatoo	App. II-I	PH
Eos reticulata		
Blue-streaked Lory	App. II-I	US
Aceros spp. (incl. *A.* =(*B.*) *comatus*)		
Hornbills	Incl. App. II	NL
A. (=*Berenicornis*) *comatus*		
White-crested Hornbill	Incl. App. I	TH
A. corrugatus		
Wrinkled Hornbill	Incl. App. I	TH
A. nipalensis		
Rufous-necked Hornbill	Incl. App. I	TH
A. subruficollis		
Plain-pouched Hornbill	Incl. App. I	TH
A. undulatus		
Wreathed Hornbill	Incl. App. II	TH
Anorrhinus spp.		
Hornbills	Incl. App. II	NL
A. austeni		
Brown Hornbill	Incl. App. II	TH

Species	Proposal	Proponent
A. galeritus		
Bushy-crested Hornbill	Incl. App. II	TH
Anthracoceros spp.		
Hornbills	Incl. App. II	NL
A. malabaricus (=*albirostris*)		
N. Indian Pied Hornbill	Incl. App. II	TH
A. coronatus convexus		
S. Indian Pied Hornbill	Incl. App. II	TH
A. malayanus		
Black Hornbill	Incl. App. I	TH
Buceros spp.		
Hornbills	Incl. App. II	NL
B. bicornis		
Great Indian Hornbill	App. II-I	NL
B. bicornis homrai		
Great Indian Hornbill	App. I-II	NL
B. rhinoceros		
Rhinoceros Hornbill	App. II-I	TH
Penelopides spp.		
Hornbills	Incl. App. II	NL
Ptilolaemus spp.		
Hornbills	Incl. App. II	NL
Ramphastos spp.		
Toucans	Incl. App. II	PY
Pteroglossus spp.		
Toucans	Incl. App. II	PY
Pittidae spp.		
Pittas	Incl. App. II	MY
REPTILIA		
Clemmys insculpta		
Wood Turtle	Incl. App. II	US
Clemmys muhlenbergii		
Bog Turtle	App. II-I	US
Crocodylus cataphractus (CG pop.)		
Slender-snouted Crocodile	App. II-I	CH
Crocodylus niloticus (ET pop.)		
Nile Crocodile	App. II (R)	ET
Crocodylus niloticus (KE pop.)		
Nile Crocodile	App. II (R)	KE
Crocodylus niloticus (MG pop.)		
Nile Crocodile	App. II (R)	MG
Crocodylus niloticus (SD pop.)		
Nile Crocodile	App. II[4]	SD
Crocodylus niloticus (TZ pop.)		
Nile Crocodile	App. II (R)	TZ
Crocodylus niloticus (UG pop.)		
Nile Crocodile	App. I-II[4]	UG*
Crocodylus niloticus (UG pop.)		
Nile Crocodile	App. I-II[4]	ZW
Crocodylus niloticus (ZA pop.)		
Nile Crocodile	App. I-II[2]	ZA
Crocodylus niloticus (pops. of CM, CG, KE, MG, SD, TZ)		
Nile Crocodile	App. II-I	CH
Crocodylus porosus (ID pop.)		
Estuarine Crocodile	App. II (R)	ID
Crocodylus porosus (ID pop.)		
Estuarine Crocodile	App. II-I	CH
Osteolaemus tetraspis (CG pop.)		
West African Dwarf Crocodile	App. II-I	CH
Phrynosoma coronatum		
San Diego Horned Lizard	Incl. App. II	US
Corucia zebrata		
Prehensile-tailed Skink	Incl. App. II	DE
Vipera wagneri		
Wagner's Viper	Incl. App. II	SE
AMPHIBIA		
Conraua goliath		
Goliath Frog	Incl. App. II	US
Rana arfaki		
Asian Bullfrogs	Incl. App. II	DE
R. blythii	Incl. App. II	DE
R. cancrivora	Incl. App. II	DE
R. crassa	Incl. App. II	DE
R. cyanophlyctis	Incl. App. II	DE
R. grunniens	Incl. App. II	DE
R. ibanorum	Incl. App. II	DE
R. ingeri	Incl. App. II	DE
R. kuhlii	Incl. App. II	DE
R. limnocharis	Incl. App. II	DE
R. macrodon (incl. *R. microtympanum*)	Incl. App. II	DE
R. magna	Incl. App. II	DE
R. malesiana	Incl. App. II	DE
R. modesta	Incl. App. II	DE
R. paramacrodon (incl. *R. kenepaiensis*)	Incl. App. II	DE
R. rugulosa	Incl. App. II	DE
PISCES		
Cynolebias constanciae		
Pearlfish	Del. App. II	CH
C. marmoratus		
Pearlfish	Del. App. II	CH
C. minimus		
Pearlfish	Del. App. II	CH
C. opalescens		
Pearlfish	Del. App. II	CH
C. splendens		
Pearlfish	Del. App. II	CH
Clupea harengus		
Herring	Incl. App. I	BW/ MW/ NA/ZW
Polyodon spathula		
Paddlefish	Incl. App. I	US
Gymnocharacinus bergi		
Naked Characin	Incl. App. I	AR
Thunnus thynnus		
Bluefin Tuna		
(Western Atlantic pop.)	Incl. App. I	SE
(Eastern Atlantic pop.)	Incl. App. II	SE
MOLLUSCA		
Strombus gigas		
Queen Conch	Incl. App. II	US
FLORA		
Schinopsis spp.		
Red Quebracho	Incl. App. II	AR
Alocasia sanderiana	Del. App. I	PH/CH
Tillandsia spp.		
Bromeliads	Incl. App. II	AT/DE

CITES AMENDMENT PROPOSALS

Species	Proposal	Proponent
Ariocarpus spp.		
Living-rock Cactus	App. II-I	NL
Discocactus spp.	App. II-I	BR
Melocactus conoideus	App. II-I	BR
M. deinacanthus	App. II-I	BR
M. glaucescens	App. II-I	BR
M. paucicpinus	App. II-I	BR
Turbinicarpus spp.	App. II-I	US
Uebelmannia spp.	App. II-I	BR
Caryocar costaricense	Del. App. II[1]	CH
Dionaea muscipula		
Venus Flytrap	Incl. App. II	US
Quercus copeyensis		
Copey Oak	Del. App. II[1]	CH
Vantanea barbourii	Del. App. II[1]	CH
Cynometra hemitomophylla	Del. App. II[1]	CH
Dalbergia nigra		
Brazilian Rosewood	Incl. App. I	BR
Intsia spp.		
Borneo Teak	Incl. App. II	DK/NL
Oreomunnea (=Engelhardtia) pterocarpa	Del. App. I[1]	CH
Pericopsis elata		
African Teak	Incl. App. II	DK/GB
Platymiscium pleiostachyum	Del. App. II[1]	CH
Tachigali versicolor	Del. App. II[1]	CH
Swietenia spp. (neotropical pops.)		
American Mahogony	Incl. App. II	US
Swietenia spp.	Incl. App. II	CR
Batocarpus costaricensis	Del. App. II[1]	CH
Didiciea cunninghamii	Del. App. I[1]	CH
Areca ipot	Del. App. II[1]	CH
Gonystylus bancanus	Incl. App. II	NL/DK
Hedychium philippinense	Del. App. I[1]	CH
Guaiacum oficinale	Incl. App. II	US

NOTES

[1] Ten-year review proposal
[2] Pursuant to Resolution Conf. 2.23
[3] Replacement of *Ursus arctos pruinosus* with geographical populations of China and Mongolia
[4] Pursuant to Resolution Conf. 7.14, i.e. with an export quota
[5] *Or* quota for commercial trade in rhino horn and sport hunting trophies on App. I

(R) = Pursuant to Resolution Conf. 3.15 on Ranching
* Uganda's accession to CITES entered into effect on 16 October 1991

This list was compiled by Amie Bräutigam, Deputy Chairman of the IUCN/SSC Trade Specialist Group, with assistance from Karen Headley, TRAFFIC International

Proposals for Registration of Captive-breeding Operations of Appendix I Species for Commercial Purposes Pursuant to Resolution Conf. 7.10.

Species	Proponent
Panthera tigris altaica	
Siberian Tiger	CN
Alligator sinensis	
Chinese Alligator	CN
Amazona leucocephala	
Cuban Amazon	DE/PH
Crocodylus acutus	
American Crocodile	HN
Polyplectron emphanum	
Palawan Peacock-pheasant	PH
Caloenas nicobarica	
Nicobar Pigeon	PH
Anodorhynchus hyacinthus	
Hyacinth Macaw	PH
Ara ambigua	
Buffon's Macaw	PH
Ara macao	
Scarlet Macaw	PH
Ara maracana	
Illiger's Macaw	PH
Ara militaris	
Military Macaw	PH
Ara rubrogenys	
Red-fronted Macaw	PH
Cacatua moluccensis	
Salmon-crested Cockatoo	PH
Probosciger aterrimus	
Palm Cockatoo	PH
Diceros bicornis (ZW pop.)	
Black Rhinoceros	ZW

COUNTRY CODES

AR	-	Argentina	MN	-	Mongolia
AT	-	Austria	MW	-	Malawi
BR	-	Brazil	MX	-	Mexico
BW	-	Botswana	MY	-	Malaysia
CG	-	Congo	NA	-	Namibia
CH	-	Switzerland	NL	-	Netherlands
CM	-	Cameroon	PH	-	Philippines
CN	-	China	PY	-	Paraguay
CR	-	Costa Rica	SD	-	Sudan
DE	-	Germany	SE	-	Sweden
DK	-	Denmark	TH	-	Thailand
ET	-	Ethiopia	TZ	-	Tanzania
GB	-	United Kingdom	UG	-	Uganda
HN	-	Honduras	US	-	United States of America
ID	-	Indonesia	ZA	-	South Africa
KE	-	Kenya	ZM	-	Zambia
MG	-	Madagascar	ZW	-	Zimbabwe

Collection and Export of Australian Insects

An analysis of legislative protection and trade to Europe

Trevor Hawkeswood, Debra J. Callister and Frank Antram

The Australian insect fauna is poorly known biologically and taxonomically. This is largely because of the hitherto small-scale collection of insects in that country, compared with that which exists in the USA and Europe. In the past, this has resulted in the insect fauna being more or less overlooked by international insect traders. In recent years, however, there has been an escalation of interest, such that trade in some species may need to be more closely monitored.

INTRODUCTION

From the late 1700s to the early 1900s, virtually the only people seriously interested in the study and collection of Australian insects were European entomologists. They generally employed small teams of collectors to visit Australia to undertake random collecting. Usually only relatively small numbers of the most common and widespread species were collected, with a preference for large, showy species, as these are often commercially appealing. Collection was limited by the highly seasonal and erratic appearance (at least in the adult stage) of many species of the Australian insect fauna and by the inaccessibility of much of Australia's bushland.

After World War I, the emphasis in describing and collecting Australian insects shifted from Europe to Australia, where serious interest in the native insect fauna was fostered largely by a few dedicated entomologists. The publication of a number of popular books on insects and the development and expansion of natural history organisations were also instrumental in the promotion of insect collecting. The sale of specimens overseas, however, was virtually non-existent.

There was an escalation of interest in collecting Australian insects during the late 1950s and early 1960s. Around this time a number of amateur collectors began to gain prominence in entomological circles and were being approached by overseas collectors, entomologists and institutions for supplies of Australian insects. Most of the insects collected by these amateur collectors were traded or swapped. Some, especially those going to private collectors and professional entomologists (both overseas and within Australia), were sold for moderate sums. However, the amount of collecting and trade undertaken by these amateur entomologists was small, particularly when compared to the level of collecting activity undertaken by overseas institutions on official collecting trips (Monteith, *in litt.*, 2 April 1990).

On a global level, Australian insects do not appear to attract the same attention as species from tropical areas such as South America, Southeast Asia and the various Pacific islands. Amongst insect collectors throughout the world most interest is shown in the Lepidoptera, in particular the birdwing butterflies and other Papilionidae. Although Australia possesses some 370 species of butterflies, most of these are small and not very striking. Most of the large tropical species from north Queensland are also found in Papua New Guinea and/or Southeast Asia, or have closely related subspecies in these places which are of more interest to dealers and collectors.

The main, openly-traded species of Australian insect appear to be members of the order Coleoptera and, in particular, the colourful members of the family Buprestidae (jewel beetles). These beetles often occur in large numbers in the same locality and are thus easier to collect than butterflies and many other insects. Beetles are also popular with those dealing overseas because of the comparative ease with which they can be packaged, preserved and despatched.

Until the proclamation of the Federal *Wildlife Protection (Regulation of Exports & Imports) Act 1982* (WPA), in May 1984, little attention was directed towards individuals who were openly collecting and selling insects overseas. Despite Federal laws prohibiting export, and State laws prohibiting collection of certain insect species (see below), there is still a moderately active export trade in wild-collected Australian insects. The majority of this material appears to originate from northeast Queensland and southwest Western Australia. It appears that the trade in some insect groups - for example jewel beetles - has increased dramatically during the past few years.

CONTROL OF INSECT COLLECTION AND EXPORT

There seems to be a certain degree of controversy and dissent over the benefits of specific legal protection for insects (see Hill & Michaelis (1988) for a summary of this debate). Legal protection is probably of limited value while there are no regulations governing non-protected areas to prevent the destruction of the natural habitat, so crucial to the survival of the insects. On the other hand, it could be argued that listing insect species as protected is at least recognition that they require some form of management.

CITES

The only Australian insect species currently listed in the Appendices of CITES belong to the genus *Ornithoptera* (birdwing butterflies). All members of this genus are listed in CITES Appendix II, apart from Queen Alexandra's Birdwing *O. alexandrae* which is listed in Appendix I. Common & Waterhouse (1981) recognise two Australian species of Ornithoptera: *O. richmondia* in the south and *O. priamus* in the north. Four separate subspecies of the latter occur within Australian territory, viz., *O.p. poseidon, O.p. pronomus, O.p. macalpinei* and *O.p. euphorion.*

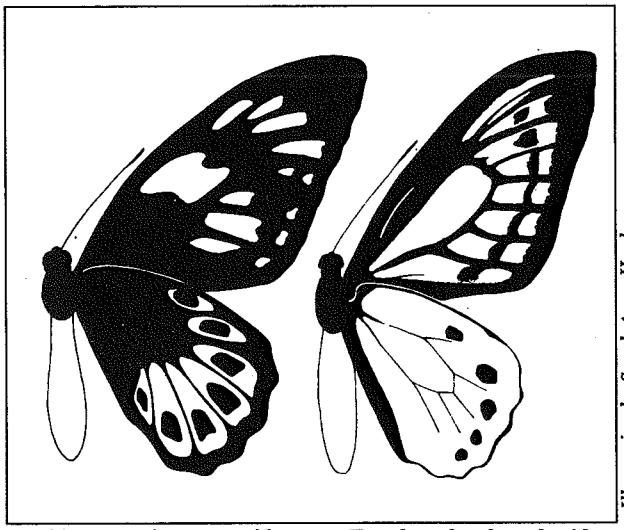


Illustration by Sarah Anne Hughes

Ornithoptera priamus poseidon **Female and male undersides**

Federal

Federal control of insect export first occurred in 1973 (Monteith, 1987). At this time, 'live or dead insects (including ticks and spiders)' were added to the list of prohibited exports under the *Customs Act 1901*. The relevant regulation (Reg. 13A) was administered under a set of guidelines formulated by the Department of Science. It was a controversial regulation, and suggestions were made that it "... had no conservation motive but was solely aimed at preventing the deposition of holotypes of Australian insects in overseas institutions" (Monteith, 1987 p.21). Reg. 13A was amended a number of times before the introduction of the WPA, after which it was rescinded.

Broadly, the WPA regulates international trade in all CITES-listed species, all live animals and plants, and all native fauna and flora. However, certain taxa, listed on Schedules 4-6 of the Act, are exempt from control. Any native invertebrates which are exempt from export controls are listed on Schedule 4. A permit is required to export any native insects. Permits are only granted if the export is: an inter-zoological transfer; for the purposes of scientific research; of a captive-bred specimen; or of a specimen taken in accordance with an approved management programme. To date (December 1991), there are no approved management programmes for insects. Therefore all commercial exports of insects must be of captive-bred specimens. (There are two butterfly farms in Australia which legally export captive-bred butterflies.) In early 1987, the WPA was amended to allow the export of certain live (native Australian) invertebrate material. Prior to this, permits could only be issued for the export of dead material.

Table 1 shows details of all legal exports under the WPA (from 1984-1987) for any genera identified in this report as being available on overseas commercial markets. It indicates that none of the beetle or moth (Saturniidae) species identified in this report has been subject to legal trade since 1 May 1984. All the birdwing butterfly taxa have been traded legally, but none of this trade has gone directly to Germany, the location of all the dealers advertising these taxa (Table 2).

State and Territory

Queensland: All 'fauna' is protected under the *Fauna Conservation Act 1974-1989*. However 'fauna' is defined as indigenous birds and mammals only, plus other species of animal specifically declared to be fauna by government decree. Priam's Birdwing *Ornithoptera priamus* and Ulysses Butterfly *Papilio ulysses* were declared to be fauna under the Act in 1974. Under the Act it is an offence to take, keep, buy or sell fauna without a permit. Both of these butterfly species are subject to trade.

On 21 July 1990, the Illidge's Ant-blue Butterfly *Acrodipsas illidgei* was declared to be, not only fauna, but Permanently Protected Fauna (the first invertebrate to be placed in this specially protected category). Particularly strict regulations and penalties apply to Permanently Protected Fauna which effectively make it very difficult to take or keep specimens of species listed in this category.

In addition, all invertebrates are fully protected in National Parks, Environmental Parks, State Forests and Timber Reserves throughout Queensland.

Tasmania: The following invertebrates are declared as wholly protected wildlife under *Wildlife Regulations 1971* of the *National Parks & Wildlife Act 1970*:

Beetles	- *Idacarabus* spp., *Geodetrechus mendumae, G. parallelus, Tasmanotrechus cockerilli*;
Cave Crickets	- *Micropathus* spp., *Cavernotettix* spp., *Parvotettix* spp.;
Glow-worm	- *Arachnocampa tasmaniensis*;
Harvestman	- *Monoxyomma* spp., *Lomanella* spp.;
Pseudoscorpions	- *Pseudotyrannochthonius typhlus, P. tasmanicus.*

Under these regulations, wholly protected wildlife cannot be taken, kept, bought or sold without a permit. None of these species has been identified in this report as being subject to trade.

All other species of insects are also considered to be wildlife under the Act. It is an offence to remove wildlife from Tasmania without a permit.

Victoria: Any invertebrate can be nominated for specific protection under the *Flora & Fauna Guarantee Act 1988*. Several species of butterfly have already been nominated under the Act (New, *in litt.*, 2 January 1990). However the Regulations to enforce this Act are not yet in place. Additionally, collection of insects in National Parks within Victoria is also prohibited without a permit.

Western Australia: Jewel beetles (family Buprestidae) and ants of the genus *Nothomyrmecia* were declared protected fauna under the *Wildlife Conservation Act* ▷

Species	Year	Country of Import	No.	Description
Antheraea janetta	1985	Colombia	20	Bodies
	1987	France	2	Bodies
	1987	UK	100	Inverts
Anteraea rhythmica	1985	Colombia	40	Bodies
Ornithoptera priamus	1985	Colombia	3	Bodies
	1985	Colombia	10	Eggs
	1985	Colombia	10	Larvae
	1985	Colombia	2	Pupae
Ornithoptera priamus euphorion	1984	Japan	30	Bodies
	1985	Japan	34	Bodies
	1986	Japan	65	Bodies
	1987	France	6	Bodies
	1987	USA	1	Body
	1987	USA	12	Larvae
Ornithoptera priamus macalpinei	1985	Japan	20	Bodies
	1986	Japan	10	Bodies
	1987	France	26	Bodies
	1987	USA	6	Bodies
Ornithoptera richmondia	1985	Colombia	10	Bodies
	1985	Japan	8	Bodies
	1986	Japan	2	Bodies
	1987	France	40	Bodies
	1987	USA	16	Bodies
	1987	USA	30	Cases
*Priamus euphorion**	1985	Japan	20	Bodies
*Priamus macalpinei**	1985	Japan	40	Bodies
Graphium agamemnon	1985	Japan	5	Bodies
	1987	UK	2	Bodies
Graphium eurypylus	1987	UK	1	Body
Graphium macleayanum	1985	Colombia	10	Bodies
	1985	Japan	3	Bodies
	1987	UK	1	Body
Graphium sarpedon	1987	UK	1	Body
Papilio aegeus	1985	Colombia	30	Bodies
	1985	Colombia	10	Larvae
	1985	Colombia	10	Pupae
	1985	UK	550	Live
	1987	France	2	Bodies
	1987	UK	2	Bodies
Papilio aegeus aegeus	1985	Japan	15	Bodies
	1985	USA	10	Bodies
	1987	UK	500	Inverts
Papilio aegeus aegeus f. beatrix	1985	Japan	10	Bodies
Papilio ambrax	1986	Japan	40	Bodies
	1987	France	2	Bodies
	1987	UK	2	Bodies
Papilio anactus	1985	Colombia	20	Bodies
	1985	UK	60	Live
	1987	UK	1	Body
Papilio canopus	1985	Colombia	10	Pupae
	1987	France	2	Bodies
	1987	UK	2	Bodies
Papilio ulysses	1985	Colombia	10	Larvae
	1986	Japan	10	Bodies
Papilio ulysses joesa	1984	Japan	20	Bodies
	1987	France	2	Bodies

Table 1. No. of permits issued for exports of Lepidoptera (*Antheraea, Ornithoptera, Graphium and Papilio*), 1984-1987. Scientific names are as shown in the ANPWS statistics. In some cases these are not the recognised names.
* = *Ornithoptera priamus* *Source: ANPWS unpublished statistics*

▷ *1950-1980* on 1 August 1978. Protected fauna may not be taken, kept or traded without an appropriate permit. They may only be taken under authority issued in accordance with the *Wildlife Conservation Act*. Furthermore, all terrestrial invertebrates are protected in Nature Reserves and National Parks and, possibly, in State Forests and Timber Reserves, although this would appear to be subject to a broad legal interpretation of the *Conservation and Land Management Act 1984* (Morrison, *in litt.*, 20 July 1990).

Other States and Territories: In New South Wales, South Australia, Northern Territory and Australian Capital Territory insects are not considered to be protected fauna. However in all States and Territories except the Australian Capital Territory, insects are protected in conservation reserves such as National Parks. Collecting in these areas without a permit is illegal.

TRADE

Information on Australian insect species traded overseas was gathered by examining French trade catalogues, and advertisements in the German entomological publication *Entomologische Zeitschrift* which carries a large number of advertisements from European collectors and traders. Full details of species traded and their prices are shown in Table 2. Comparison of Tables 1 and 2 shows that the only species advertised overseas which have been subject to legal export from Australia are members of the Papilionidae.

Lepidoptera

All of the moth and butterfly species identified in this report as being subject to trade are capable of being captive-bred. This means material advertised in Europe has a number of possible sources: wild-collected specimens; bred in Australia; bred overseas; or, from an Australian or overseas private collection.

Four species of the family Papilionidae were identified in trade. *Ornithoptera priamus euphorion* is the largest and one of the most striking of the Australian butterflies. It has long been traded overseas. Richmond's Birdwing *Ornithoptera richmondia* is much rarer, with a more restricted distribution than *O.p. euphorion*. Little is known of its biology and habitat requirements. *Papilio (Graphium) macleayanum* is a common species with a distribution covering four Australian States. It is probably not in high demand with collectors. *Papilio ulysses joesa* is well known in Australia from its extensive representation on Queensland tourist logos and brochures. It is difficult to collect in the field and specimens are easily damaged. Almost all specimens in trade would be bred in captivity (not necessarily legally) (Monteith, *in litt.*, 2 April 1990). The Australian subspecies is now probably not in high demand since the Southeast Asian and Papua New Guinean subspecies appear to be easier and cheaper to obtain.

Two species of the moth family, Saturniidae, were identified in European trade. The spectacular Hercules Moth *Coscinocera hercules* of Australia and Papua New Guinea, is the largest known Australian moth. Most of the material offered for sale in Europe appears to have been collected in Papua New Guinea and trade from Australia (at least in the adults) seems rather limited. *Antheraea eucalypti* is a large yellow, pink and/or pale brownish moth with prominent 'eye-spots' on the wings. Trade in this species has primarily been in the egg and cocoon stages. It appears that the congeneric *A. helena* is also sometimes traded, incorrectly labelled as *A. eucalypti* (New, *in litt.*, 2 January 1990). None of these species is threatened by collecting.

Coleoptera, Buprestidae

At least 59 species of Australian Buprestidae have been offered for sale on the open market in Europe during the past decade, most within the past few years. This is clearly the largest number of species of any Australian insect family traded overseas. They are mostly large and attractive species, easily captured and packaged and can command relatively high prices. For example, *Stigmodera miranda* and *S. mniszechi* fetch A$15-A$49 (US$10-US$35) and A$16-A$57 respectively per specimen.

A majority of the 59 species are endemic to Western Australia, occurring in the arid and semi-arid south-west portion of the State. The remainder are also found in, but not restricted to, Western Australia. A number of these species are large and colourful - *S. bonvouloiri, S. brucki, S. cancellata, S. caroli, S. chalcodera*, for example. In general, the larger, more colourful species fetch higher prices than the small species such as *S. mustelamajor, S. picta, S. placens, S. subtincta.*

Buprestids are not known to have been bred in captivity. Jewel beetles are protected fauna in Western Australia. However, one private individual has had permission to collect Buprestids since 1980. Also, since 1986, six persons have been issued with Scientific Licences specifically to collect Buprestidae. A further 21 persons have been issued with Scientific Licences to collect invertebrates generally (Morrison, *in litt.*, 20 July 1990). Only one case of illegal collection of Buprestids has proceeded to prosecution; in 1980, an individual was charged with the unlawful possession of 771 specimens (Morrison, *in litt.*, 20 July 1990).

There seems little doubt that trade in Australian Buprestidae has increased over the past few years despite controls imposed by State and Federal laws.

Coleoptera, Lucanidae

None of the six Lucanid species identified in this report is known to have been captive bred. However, many specimens are obtained by rearing out field-collected larvae (Monteith, *in litt.*, 2 April 1990). The species subject to the most trade are *Cacostomus squamosus*, the two *Lissotes* species and, particularly, *Phalacrognathus muelleri*. All species seem to command relatively high prices, ranging from A$20 each for *C. squamosus* to A$1071 each for *P. muelleri.*

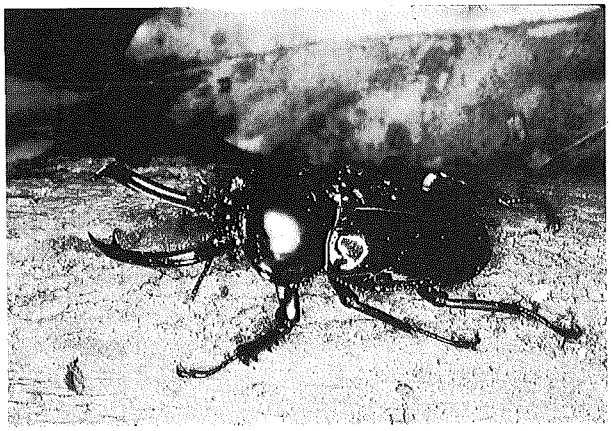
Species	Unit of Sale	Price range A$ (average price)	Years advertised	No. times advertised	Dealers' country
LEPIDOPTERA					
Papilionidae					
Ornithoptera priamus richmondia	pair	(182)	< >	2	DE
O.p. euphorion	pair	(64)	>	1	DE
Papilio (Graphium) macleayanum	each (F)	(64)	>	1	DE
P. ulysses joesa	pair	(50)	>	1	DE
Saturniidae					
Coscinocera hercules	each	(34)	>	1	FR
	pair	(71)	>	1	DE
Antheraea eucalypti	cocoon (each)	(4)	<	1(1)	DE
	cocoon (10)	(39)	<	1(1)	DE
	egg (12)	6-9(7)	<	3(3)	DE
COLEOPTERA					
Buprestidae					
Chalcotaenia quadriimpressa	each	4-17(11)	>	2(1)	DE
Curis yalgooensis	each	(4)	>*	1	FR
Julodimorpha bakewelli	each	7-31(16)	>*	3(1)	DE,FR
Stigmodera acuticeps	each	(4)	>*	1(1)	FR
S. aeraticollis	each	(4)	>*	1(1)	FR
S. atricollis	each	(9)	>	1	DE
S. bonvouloiri	each	(13)	>*	1(1)	FR
S. brucki	each	4-17(8)	>*	4(3)	DE,FR
S. bucolica	each	(3)	>*	1(1)	FR
S. cancellata	each	(32)	>*	1(1)	FR
S. caroli	each	9-21(18)	>*	6(1)	DE,FR
S. chalcodera	each	4-13(9)	>*	3(1)	DE,FR
S. chevrolati	each	14-34(21)	< > *	6(3)	DE,FR
S. cincta	each	(4)	>*	1(1)	FR
S. conspicillata	each	(29)	>*	1(1)	FR
S. crenata	each	(9)	>	1	DE
S. crocicolor	each	(4)	>*	1(1)	FR
S. cruentata	each	(3)	>*	1(1)	FR
S. doponti	each	(36)	>	1	DE
S. filiformis	each	(3)	>*	1(1)	FR
S. flava	each	(3)	>*	1(1)	FR
S. flaviceps	each	(4)	>*	1(1)	FR
S. georgiana	each	(9)	>	1	DE
S. gratiosa	each	9-11(10)	>*	2(2)	FR
S. helenae	each	(13)	>	1	DE
S. heros	each	14-50(29)	< > *	5(3)	DE,FR,IT
S. immaculata	each	3-6(4)	>*	2(1)	DE,FR
S. lessoni	each	(14)	<	1	IT
S. martini	each	(16)	>*	1(1)	FR
S. miranda	each	15-49(34)	< > *	3(1)	DE,FR
S. mniszechi	each	16-57(43)	< > *	3(1)	DE,FR,
S. murrayi	each	6-26(13)	< > *	5(2)	DE,FR,IT
S. mustelamajor	each	(3)	>*	1(1)	FR
S. obscureipennis	each	(13)	>*	1(1)	FR
S. oleata	each	(13)	>*	1(1)	FR
S. pallidipennis	each	(3)	>*	1(1)	FR
S. pallidiventris	each	(4)	>*	1(1)	FR
S. parallela	each	5-9(7)	>*	2(1)	DE,FR
S. picta	each	(3)	>*	1(1)	FR
S. pictipes	each	14-23(17)	>*	2(2)	DE,FR
S. placens	each	3-4(3.5)	>*	2(2)	FR
S. princeps	each	23	>*	1(1)	FR
S. quadrifasciata	each	4	>*	1(1)	FR

Table 2. Australian insect species advertised for sale overseas
*< = advertised before 1984; > = advertised during or after 1984; * = advertised during 1988. N = number of times the species has been advertised for sale. Bracketed figure indicates number of advertisements stating more than one unit was available. Does not include instances where no indication of availability was given. NPA = no price available. DE-(F.R.) Germany; FR-France; IT-Italy. F = female; M = male.*

Species	Unit of sale	Price range A$ (average price)	Years advertised	No. times advertised	Dealers' country
Stigmodera rectipennis	each	(32)	>*	1(1)	FR
S. reichei	each	18-21(20)	>*	2(1)	FR
S. richardsi	each	4-16(10)	>*	2(1)	DE,FR
S. roei	each	17-64(30)	< >*	6(1)	DE,FR
S. rufipennis	each	4-9(6)	>*	2(2)	FR
S. rufolimbata	each	(4)	>*	1(1)	FR
S. sanguinolenta	each	(3)	>*	1(1)	FR
S. sanguinosa	each	(36)	>*	1(1)	FR
S. secularis	each	(23)	>*	1(1)	FR
S. simulata	each	(4)	>*	1(1)	FR
S. subtincta	each	(4)	>*	1(1)	FR
S. tibialis	each	18-23(21)	>*	3(2)	DE,FR
S. varicollis	each	(26)	>*	1(1)	FR
S. vegeta	each	(9)	>	1	DE
S. wimmerae	each	18-19(18.5)	>*	2(2)	FR
S. yarelli	each	18-20(19)	>*	2(2)	FR
Australian Buprestidae	pack of 6	(49)	>	1	DE
Lucanidae					
Cacostomus squamosus	pair	7-57(24)	< >	4	DE,FR
	each (M)	(20)	>	1	DE
	pack of 10 (M)	(129)	>	2	DE
Lamprima aurata	each (F)	(36)	>	1	DE
	each (M)	32-36(34)	>	1(1)	DE
	pair	(57)	>	1	DE
	pack of 10 (M)	143-179(161)	>	2	DE
Lissotes obtusatus	each (M)	(29)	>	2	DE
	pair	(57)	>	3	DE
	pack of 10 (M)	(179)	>	2	DE
L. rudis	each (M)	(29)	>	2	DE
	pair	(57)	>	3	DE
	pack of 10 (M)	(179)	>	2	DE
Phalacrognathus muelleri	each (F)	(107)	<	1	FR
	each (M)	(107)	>	1	DE
	each (?)	NPA	>	1(1)	FR
	pair	571-1143(887)	< >	7(3)	DE,FR
	unknown	NPA	< >	3	DE,FR
Rhyssonotus nebulosus	each	(68)	>	1(1)	DE
	15 "pieces"	(536)	>	1	DE
Scarabaeidae					
Anoplognathus aeneus	each	(11)	<	2	DE,IT
A. boisduvali	each	6-16(11)	< > *	8(3)	DE,FR
A. hirsutus	each	(11)	<	1	IT
A. parvulus	each	5-11(8)	<	10	DE,IT
A. porosus	each	4-5(4.5)	< > *	2	DE,FR
A. punctulatus	each	(4)	>	1	FR
A. smaragdinus	each	6-14(10)	< > *	5	DE,FR
A. viridiaeneus	each (M)	NPA	<	1	DE
Calloodes atkinsoni	each	(4)	<	2	DE
C. grayanus	each	6-19(14)	<	6	DE,IT
C. rayneri	each	(4)	<	1	DE
Diaphonia dorsalis	each	(10)	> *	1(1)	FR
D. mniszechi	each	7-10(8)	> *	2(2)	FR
Metallesthes metallescens	each	(3)	> *	1(1)	FR
Repsimus aeneus	each	(3)	> *	2	DE,FR
Trichaulax marginipennis	each	NPA	<	1	DE
Xylotrupes gideon	each	1-6(3.5)	< >	4(1)	DE

Table 2 continued. Australian insect species advertised for sale overseas

Prices converted using the average exchange rate at the time the report was prepared, i.e., DM1.4=A$1; F4.7=A$1.



Phalacrognathus muelleri **© T.J. Hawkeswood**

Cacostomus squamosus is probably the most common of the six Lucanid species discussed in this report. *Lamprima aurata* is also not uncommon, whereas the remaining four species are uncommon to rare. The biology of all species appears to be fairly poorly known. The wingless Tasmanian *Lissotes* species are generally considered to be rare and have restricted rainforest distributions. They are collected by rolling the logs in which they breed and thus are quite vulnerable to systematic collection in isolated patches of temperate rainforest (Monteith, *in litt.*, 2 April 1990). Thus, the sale of two Lissotes species in Europe for moderate prices during recent years is of much interest.

However, the species of most interest is *Phalacrognathus muelleri*. It is perhaps the most striking and colourful of all Australian beetles and is eagerly sought after by collectors (Hawkeswood, 1987). Restricted to tropical rainforests of northeast Queensland, it is generally considered to be rare (Hancock, 1970), and is certainly infrequently collected (Monteith, *in litt.*, 2 April 1990). However, recent literature suggests that the larvae can be located in rotting logs in virtually any rainforest throughout their distribution (Wood and Hasenpusch, 1990). Rearing out larvae is a particularly common method of obaining adult specimens of this species (Monteith, *in litt.*, 15 November 1988).

Phalacrognathus muelleri continues to sell in Europe for comparatively very high prices, often surpassing prices asked for many of the rare and eagerly sought-after birdwing butterflies. The males, usually with large mandibles, seem to be especially in demand. The continued collection of *P. muelleri* for overseas sale, and the destruction of its rainforest habitat, are of great concern.

Coleoptera, Scarabaeidae

Eight species of Christmas beetle of the genus *Anoplognathus* are identified in this report as being in trade. However only one species (*A. punctulatus*) has been offered for sale in the past five years. The species most often advertised are *A. boisduvali, A. parvulus* and *A. smaragdinus*, the latter being uncommon to rare. However, trade in the entire genus appears to be at insufficient levels to pose a threat.

Xylotrupes gideon is a large (4.5-5.5 cm), glossy black beetle commonly known as the Elephant or Rhinoceros Beetle, presumably because of the large bifurcate horns found on the head of the male (Hawkeswood, 1987). It is found in Australia (where it is often common within its range), Papua New Guinea, some Pacific islands, and parts of Southeast Asia. The Australian population may represent a different race of the species. It is commonly advertised for sale in Europe but most of the material appears to have been collected outside Australia.

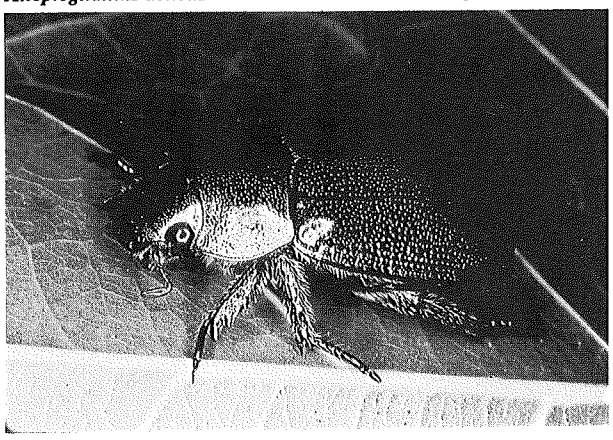
The other species of the Scarabaeidae family identified in this report do not seem to be under any threat from trade. They are either relatively common - e.g. *Diaphonia dorsalis, Metallesthes metallescens*; rarely offered in trade - e.g. *Repsimus aeneus, Trichaulax marginipennis*; not recently offered for sale - e.g. *Calloodes* spp.; or a combination of these. None of the Scarabaeids identified in trade is known to have been captive bred.

CONCLUSIONS AND RECOMMENDATIONS

Of the species identified in this report, the one which most obviously seems to require greater protection, particularly from illegal trade, is *Phalacrognathus muelleri*. Regulation of trade could occur within its native State of Queensland, if the species was declared to be fauna under the *Queensland Fauna Conservation Act*. At an international level, consideration should be given to listing the species on Appendix II or III of CITES. (Appendix III listing is unrealistic at the present time as Australia's wildlife import/export laws contain no provisions for the recognition of Appendix III species.)

All commercial exports of *Phalacrognathus muelleri* to date have been illegal (see Postscript). The *modus operandi* of export - packages mailed through the post - makes enforcement from Australia virtually impossible. It could be argued that this problem will remain after CITES listing. However CITES Appendix II listing would at least provide some measure of control and monitoring by importing countries.

Anoplognathus aeneus **© T.J. Hawkeswood**



Members of the Buprestidae family seem to be the only other species of Australian insects subject to significant illegal trade. Controls on this trade already exist at the State level in Western Australia and at the Federal level. The level of trade, and threat imposed by it, are currently insufficient to warrant CITES listing. However, trade controls of any sort will have little real impact on the conservation of the Buprestids unless their habitat is protected. The Western Australian government should be encouraged to address this problem. Given the recent increases in the level of trade in this family, any relaxation of legal protection would be ill-advised.

The remaining species identified in trade do not appear to present any immediate cause for concern. However, some may require further conservation measures, either because of their general rarity, or because they are threatened by habitat destruction. The protection conferred by the recent listing of the north Queensland rainforests on the World Heritage List may benefit species found there, such as *Anoplognathus aeneus, Phalacrognathus muelleri* and *Trichaulax marginipennis.*

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POSTSCRIPT

Since this report was written, an entomologist/dealer in north Queensland has apparently succeeded in breeding *Phalacrognathus muelleri* in captivity. A total of 16 permits, covering 182 specimens, have been issued by the Australian National Parks & Wildlife Service for export of captive bred specimens. The specimens have been exported to France, Germany, Japan, Spain and Switzerland (ANPWS, *in litt.,* 8 January 1991).

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A Review of the Tasmanian Brushtail Possum Industry

Debra J. Callister

The Common Brushtail Possum Trichosurus vulpecula *is Australia's most abundant possum and most widely distributed marsupial. It has historically been harvested for the fur and skin trade over most of its range, however commercial hunting now occurs only in Tasmania. Here the Brushtail is considered to be a pest of forestry and agriculture on a scale sufficient to warrant culling. Control of populations is restricted to areas of agricultural and farming production. Principal control of population numbers comes from the commercial harvest, which is allowed for a limited period during winter. When additional control is needed during the rest of the year, crop protection permits are issued. Skins of animals killed in these localised culling operations may not enter trade. Trade volumes fluctuate widely from year to year, generally following changes in skin price. In 1987/88, around 100 000-150 000 skins were traded from 150 000-250 000 animals killed. In 1989, at the time this report was written, the trade slumped and has continued to decline owing to the depressed skin market.*[1]

Responsibility for the management of the harvest is currently vested in the Tasmanian Department of Parks, Wildlife and Heritage (DPWH).

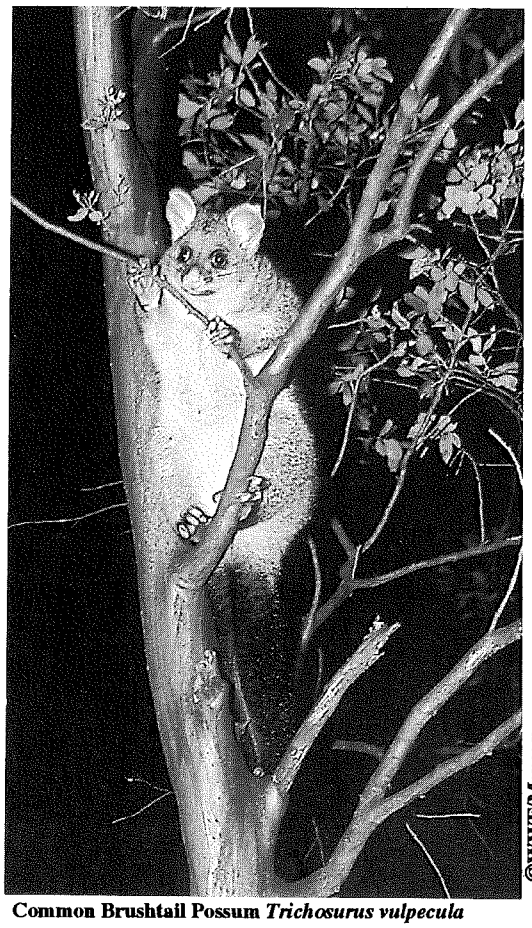
INTRODUCTION

The Common Brushtail Possum is found in every State and Territory in Australia. Tasmanian animals (subspecies *Trichosurus vulpecula fuliginosis*), which may be either black or grey, are larger than their mainland counterparts and have denser, more valuable, fur (Strahan, 1983; Anon., 1987). Mainland Brushtails are grey, except for the northern Queensland subspecies *T.v. johnstoni*, which is copper coloured (Strahan, 1983).

Brushtail Possums usually live for under 11 years (Strahan, 1983). They are nocturnal and during the day live in hollow trees or logs, but will inhabit buildings, rock crevices, cliffs or holes in the ground where trees are scarce (Frith, 1973; Green, 1973; 1974). Brushtails are arboreal but also travel and feed extensively on the ground. They are primarily herbivorous, eating a variety of native and exotic plants. The main breeding season is in autumn (March to May or June), although in many areas there is a shorter breeding season in spring (September to November). The Carpet Python *Morelia spilota*, Dingo *Canis familiaris*, Red Fox *Vulpes vulpes* and Lace Monitor *Varanus varius*, are known to be minor predators of Brushtail Possums on mainland Australia. Other causes of death include roadkills, poisoning and shooting. Estimates of annual adult mortality range from 10% (Anon., 1987) to 20% (How, cited in Green, 1984). Mortality can be especially high among juvenile animals (Green, 1984), with a bias towards higher mortality in males (Hocking, 1981). Juvenile survival is higher in populations that are newly colonised (Hocking, 1981) or subject to heavy harvesting (Anon., 1987). Therefore hunting may act to keep a population in a proliferative phase rather than allowing numbers to stabilise (Kerle, 1984).

In Tasmania and New Zealand, Brushtails suffer from a type of dermatitis known as 'rumpiness' (Munday, 1978; Presidente, 1984). This disease causes damage to the fur and skin, especially over the lumbo-sacral region, and resembles dog eczema (Munday, 1978). It is often not noticeable to hunters until after an animal is shot, and in some areas infection is so severe that hunters discard up to 80% of all possums killed (Statham, *in litt.*, to I. Fry, 9 August 1985). 'Fur-finishing', where possums are live-trapped and kept in captivity for three to four months, allows rumpiness to heal. This process is carried out in New Zealand.

Possums are also known to carry bovine tuberculosis *Mycobacterium bovis*. This infection appears to be confined to New Zealand where it has had a detrimental effect on the New Zealand pastoral industry (Munday, 1978). This, combined with their pest status in forests, has led to the expenditure of considerable effort to control Brushtails in New Zealand.



Common Brushtail Possum *Trichosurus vulpecula*

[1]1988/89 export figures: 31 204 skins valued at A$148 467 (US$108 000); figures for 1990/91: 14 900 skins valued at A$39 571 (Australian Bureau of Statistics).

In Tasmania, the Brushtail was confined to forests and mountainous areas until around the 1940s (Green, 1973). It has since expanded its range and is now found in most regions except large areas of rainforest, sedgeland and agricultural land (Anon., 1987).

It is generally accepted that the Brushtail population has increased during this century (Green, 1973; Kerle, 1984). In 1984, the Tasmanian National Parks and Wildlife Service (TNPWS)[2] estimated the Tasmanian Brushtail Possum population to be four million (Anon., 1984a). More recent management programmes (e.g. Anon., 1987) only calculate suitable habitat and do not attempt to estimate population size. The Department of Lands, Parks and Wildlife[2] estimated that at least 60% of Tasmania provides suitable Brushtail habitat (Anon., 1987). Further, Hocking (1989) estimated that over 1 100 000 ha, or 16% of Tasmania, was medium-to-high-value Brushtail habitat which was reserved for nature conservation. However these nature reserves also include State Forests. Such areas may contain forestry concessions and Brushtails may be killed in areas utilised for forestry.

PEST STATUS

Pasture: A number of studies have found evidence that Brushtail Possums eat pasture grasses (e.g. Gilmore, 1965; Frith, 1973; Fitzgerald, 1984). Gilmore (1965) suggested that Brushtail Possums probably feed selectively and therefore may seriously decrease the carrying capacity of pasture by eating only the best grasses and clover. According to Landsberg (1987), Brushtails have been shown to feed selectively on nutritionally superior *Eucalyptus blakelyi* seedlings. However Gilmore's conclusions were based on New Zealand where the density of Possums is generally considerably higher than in Australia. Coulson and Heron (1981) do not consider possums to be a serious pest of pastures and crops in Tasmania.

Pine: Brushtail Possums were first implicated in damage to pines in the 1950s in Victoria (McNally, 1955). In that study, and a later study in New South Wales (Barnett *et al.*, 1977), the main agent of damage was the Mountain Brushtail Possum *Trichosurus caninus*, rather than the congeneric Common Brushtail Possum. The Mountain Brushtail Possum does not occur in Tasmania.

In a Tasmanian pine plantation, damage occurred primarily in areas that included, or were close to, native trees or forest patches (Statham, 1984). Possums were found only to eat pine older than five years. In these stands the damage was patchy, not serious, and confined to the winter months. Results of a questionnaire circulated to foresters throughout Tasmania indicated that damage to pines was either insignificant or non-existent in other regions (Statham, 1983, cited in Statham, 1984).

Eucalypts: Brushtail Possums feed on *Eucalyptus* spp., and have often been accused of damaging regenerating eucalypts on forestry concessions; however, other browsing marsupials such as the Red-necked Wallaby *Macropus rufogriseus* and Tasmanian Pademelon *Thylogale billardieri* are also implicated (Cremer, 1960; 1969; Mollison, 1960; Gilbert, 1961; Statham, 1984). Statham (1984) attempted to provide some quantitative evidence to support these claims. While an increase in the amount of *Eucalyptus* spp. eaten from a regenerating forestry concession coincided with an incident of browsing damage, no physical evidence was apparent to implicate the Brushtail as the animal responsible for this damage.

Apart from feeding on pasture and trees important to silviculture, Brushtail Possums have also been reported as a minor pest in gardens (Frith, 1973) and in crops (Coulson and Heron, 1981).

Importance of control

Damage to pasture and pine appears insufficient to warrant control of Brushtail Possum numbers except in localised areas. Possum damage to eucalypt seedlings appears greater but it has been suggested that it would be wise to restrict control to areas where damage is proven (Mollison, 1960). However it should be remembered that control measures are already in place - possums have been culled in Tasmania for decades. Without the broad control resulting from the yearly harvest, damage may well be much worse. This illustrates the difficulty in determining pest status of a species when control measures are broad-scale but damage often spatially and temporally localised (Wilson, 1987).

HISTORY OF POSSUM HUNTING

The first human utilisation of possums was by Aborigines. They used their meat for food, and in some areas, their skins to make cloaks, their lower jaws for tools and their fur for string (Jones, 1967; Hope, 1974; Mulvaney, 1975; Thomson *et al.*, 1987). After European settlement, the level of exploitation escalated. A wide variety of Australia's indigenous wildlife was caught for skins. Common Brushtail, Mountain Brushtail and Common Ringtail Possums *Psuedocheirus peregrinus* were all taken, as well as the Koala *Phascolarctos cinereus*, Platypus *Ornithorhynchus anatinus*, Australian Fur Seal *Arctocephalus pusillus* and many species of macropod.

In the early 1900s the economic value of Brushtail Possum skins was well-known overseas (Thomson *et al.*, 1987). Prices in Australia reflected this. In 1923 one skin was equivalent in value to 16% of a man's basic weekly wage (Johnson, 1977). Over four million skins were marketed in London and New York in 1906 alone (Thomson *et al.*, 1987).

Closed seasons were introduced periodically in Queensland from 1907 after concern that high trapping levels were lowering the population (Winter, 1979).

[2] now named the Department of Parks, Wildlife and Heritage (DPWH)

However exploitation continued, with over one million animals trapped in 1928 (Frith, 1973). Overtrapping, coupled with habitat destruction and at least one epidemic, eliminated the Brushtail Possum from much of its range. Restocking programmes were undertaken in the years prior to the last open season in 1936 (Winter, 1979) and the population has now recovered (Frith, 1973; Winter, 1979).

In New South Wales, Brushtail Possums were being taken for their fur from at least the 1880s (Frith, 1973). Open seasons seem to have been introduced in the 1920s (Thomson *et al.*, 1987). In 1926, a 14-day open season in only two districts within the State yielded 11 701 skins. During the 1931/32 season over one million skins were exported from New South Wales. The population appeared to suffer but it is not known when or why hunting stopped.

In Victoria, both Common and Mountain Brushtail Possums were taken (as was probably also the case in New South Wales and southern Queensland), with the Mountain Brushtail the favoured species (Winter, 1979; Strahan, 1983). Information on early controls and harvest levels is scarce. In latter years open seasons were only declared if there was evidence of widespread increases in possum numbers, and especially if this was leading to increased forest damage (Frith, 1973). In 1957, 223 715 skins were traded, around 107 000 in 1959, and 90 295 over a two-month season in 1963 (Frith, 1973; Winter, 1979). This was the last open season declared on the mainland. Potassium cyanide and strychnine were sometimes used to take possums illegally (McNally, 1955), a practice which may also have been prevalent in other States.

The Common Ringtail Possum was also hunted for its fur, with the majority of the trade concentrated in Tasmania. Trade began prior to the 1920s, with peak harvests occurring between 1929 and 1938, when around 3 975 700 skins were sold (Thomson *et al.*, 1987). Some 3.5 million of these came from Tasmania. In the 1934 season nearly 1.5 million Tasmanian Ringtail skins entered trade (Coulson and Heron, 1981). There were only four more seasons declared in Tasmania after this, the last in 1949. There was a marked decline in the numbers taken over these final seasons. Various reasons have been suggested for the decline of the trade, including poor skin quality (Guiler, 1957), the difficulty of capture following banning of the use of steel gin traps (Guiler, 1953; 1957), and a decline in numbers caused by either an epidemic (Green, 1973) or overhunting (Coulson and Heron, 1981). The last open season for Ringtails appears to have been in Victoria in 1959, when 2500 skins were traded (Thomson *et al.*, 1987).

Regulation of hunting in Tasmania[3]

Government regulations for hunting Brushtail Possums in Tasmania were introduced in 1918/19 with a system of licences and hunting seasons. Animals could be trapped or snared but not shot, and royalties were payable on all skins traded. An attempt in 1924 to introduce a private bill to allow the farming of wallabies and possums for fur production was apparently unsuccessful. In 1953, the use of steel gin traps was banned.

By 1974, control of the Brushtail Possum harvest was vested in the National Parks and Wildlife Service under the *National Parks and Wildlife Act 1970* and *Wildlife Regulations 1971*. The current system, introduced under the provisions of this legislation, are discussed below.

PRESENT INDUSTRY STRUCTURE

Commercial harvest regulations[4]

Export of Brushtail Possum skins, fur, and meat from Australia is controlled under the *Wildlife Protection (Regulation of Exports & Imports) Act 1982*. This Act is administered by the Australian National Parks and Wildlife Service (ANPWS). Under the Act, commercial exports of Brushtail Possums, or their products, are only

Year	Licences/Permits Issued	
	Hunters	Skin dealers
1964	699	
1965	708	
1966	975	
1967	757	
1968	822	
1969	994	
1970	866	
1971*		
1972	709	
1973	685	
1974	563	2
1975	1168	3
1976	1685	5
1977	1903	8
1978	3093	11
1979	** 2640	16
1980	2935	9
1981	2971	9
1982	1705	9
1983	1611	10
1984	1316	9
1985	745	7
1986	717	7
1987	1320	
1988	1422	
1989	635	

Table 1. No. of licensed hunters, 1964-1989
* - *closed season*
** - *in 1979 the number of hunter permits issued was restricted to 2640*
Source: Hunters - Hocking, 1989
Dealers - Annells, in litt., *1 August 1988*

[3]Anon., 1924; 1987; Guiler, 1957; Mollison, 1960; Green, 1974; Johnson 1977; Coulson and Heron, 1981. [4]Johnson, 1977; Coulson and Heron, 1981; Anon., 1987.

allowed if the animals are captive-bred, or taken in accordance with an approved management programme. The Tasmanian Government annually submits a management programme for approval by the relevant Federal Minister (currently the Minister for the Arts, Sport, the Environment, Tourism and Territories). Once this programme is approved, exports of Brushtail products can proceed under permit. A quota is set by DPWH on the maximum number of skins that can enter commercial trade each year. This is based on current population trends, the need for crop protection, seasonal conditions, the size of previous harvests, the size of the non-commercial harvest and previous quota sizes (Anon., 1987). In 1990, the quota was 250 000 skins.

In Tasmania, the Brushtail Possum is classified as partly protected wildlife. The regulations covering partly protected wildlife allow for its taking under licence or permit, and for the sale of such species, or their products, by commercial operators. Specific regulations relating to the Brushtail harvest are outlined below.

In 1974, the system of harvesting under licence during a declared open season was replaced by one of special permits which could be used for one to three months during the winter. Brushtails could only be taken by shooting or using cage traps.

Under the current system, harvesting is allowed on both private and Crown land, but only in areas used for grazing, farming or forestry. Permits specify where a hunter can operate and written permission from the landholder is required before a permit is issued. Details of all skins sold must be recorded on permits, which must be returned to the authorities within 30 days of the end of the harvest period. Since 1979 permit returns must also show the total number of animals killed. Details of the number of licences or permits issued are available from 1964 to the present and are shown in Table 1.

Skin dealers and processors must be licensed. They are required to submit monthly returns stating the number of skins traded and the permit number of the hunter(s) from whom the skins were purchased. Royalties must be paid on skins entering trade, and the skins stamped, within 28 days of purchase. Royalties currently stand at 30 cents a skin. Only royalty-stamped skins can be exported.

In 1985, permit conditions were changed to allow trading in Brushtail Possum carcasses. Processing of meat must occur on premises licensed by the Department of Agriculture and processors must supply monthly returns to this department. No Brushtail meat has been traded to date, although there has been some interest in establishing an export market (Hocking, 1989).

Enforcement of the Regulations is carried out by DPWH rangers, who are assisted by other law enforcement agencies when necessary. Details of prosecutions relating to Brushtail Possum offences since 1981/82 are given in Table 2.

Year	Charges Laid	Convictions	Dismissals	Fines (A$)
1981/82	66	54	12	1596
1982/83	61	53	8	2332
1983/84*	47	31	2	4612
1984/85	31	28	3	1261
1985/86	23	19	4	1026
1986/87	39	24	3	1070
1987/88	7	0	0	0
1988/89	36	17	15	787

Table 2. Charges related to Brushtail Possum offences, 1981/82-1988/89 *Adapted from Hocking, 1989; (1983/84 data from Anon., 1985) *-there were also 14 adjournments*

Crop protection permits

Outside the harvest period, crop protection permits to kill Brushtails are only issued when the animals are causing, or are likely to cause, damage to crops or pasture. Permits are issued for a specific period, property and type of control - i.e., shooting, poisoning or live trapping. Permits to allow poisoning are only issued after determining that shooting is an ineffective control method (Hocking, *in litt.*, 24 August 1988). Permit holders must report on the outcome of action taken under the permit. Possums taken under crop protection permits may not enter commercial trade.

TRADE

The trade is primarily in skins. Fur and meat are also allowed to be traded, but there has only been a small amount of trade in the former and none in meat.

In the past, the two main uses of possum skins were in the fashion industry - for collars, trimmings and linings; and in the spinning industry, where they were utilised as a lining inside the shuttles used for combing and straightening nylon and rayon. During the last possum harvest in Victoria, in 1963, 40%-50% of skins were sold for shuttles, approximately 40% went to woollen coat manufacturers for trimmings and 10% were sold to furriers (mainly in the USA) (Frith, 1973).

Today, most skins are exported. In Italy, a major importer, the skins are primarily used in the textile industry for cleaning the spools of the textile line (Pani, *in litt.*, 2 March 1990).

The number and value of exports is shown in Table 3. Peak numbers and export values occurred in the late 1970s and early 1980s. After decreasing steadily, they rose again in recent years, but then dropped away sharply in 1989. The most regular importers are the UK, USA, Japan and Italy. The USA is the major importer in terms of volume, and Italy in terms of value.

An estimate of the total amount paid to hunters by dealers can be calculated by multiplying the average skin price paid to hunters, by the number of skins they sold to dealers. This can then be used to determine the average income each season per hunter. As Table 4 shows, this amount is not high. Over the 12 years for which figures

are available, it ranged from a low of A$180 (US$130) per hunter in 1984/85 to a high of A$1109 in 1976/77, with a mean of A$473.

The Brushtail skin trade appears, at best, to be only marginally profitable to dealers. The estimated total amount paid to hunters by dealers (not including 1989 figures - A$11 153 160), exceeded the declared value of skin exports over the same period (A$10 604 545). In addition, dealers' costs are increased by having to pay a royalty on every traded skin. During these 12 years, 95% of all royalty-paid skins were exported. Therefore sales of skins for domestic use are unlikely to increase skin dealers' income greatly, and hence their likely profit. Given that the trade appears to return negligible, if any, profits to dealers, one questions how or why they remain in business. This could be explained if the declared export value of skins is artificially low, and the true value of exports higher than that declared to Customs at the time of export.

All available records of the number of royalties paid, the number of skins sold or entering trade, and the number of animals shot are shown in Table 5. There has been a gradual increase in the number of royalties paid, with peaks in the late 50s/early 60s and more especially the late 70s/early 80s. The total number of animals killed was estimated from extrapolation of information included on permit returns. The permit return rate has been over 90% since 1982 (Hocking, 1989). The figure for the number of skins entering trade is the number of skins dealers bought from hunters. [The statistic for the 'number of skins sold' was calculated from 1975-1982. This was essentially the same as the number of skins in trade, but was based on information provided by hunters, rather than the dealers (Annells, *in litt.*, 1 August 1988).] The number of royalties paid may be lower than that of skins entering trade because some skins are bought from hunters and then subsequently discarded by skin dealers before royalty payment.

Of all animals killed, on average only 72% entered into trade and only 85% of these will have had royalties paid on them. Therefore, of all possums killed, on average only 60% have resulted in royalty-paid skins.

There is also some additional mortality from the possum trade as dependent young die when their mothers are shot (Murrell, *in litt.*, 24 June 1988). Approximately 40% of the population at the time of harvest consist of mature females (Hocking, *in litt.*, 24 August 1988). Eighty-eight per cent of mature females breed in any given year, and 99% of births are in autumn (Hocking, 1981) and result in young still dependent at the time of the harvest. Therefore nearly 35% of all possums shot would be expected to be carrying dependent young which would die following the shooting of their mother (0.40 x 0.881 x 0.99 = 0.349). This figure does not account for mortality of young prior to the harvest, however this is likely to be very low (Hocking, *in litt.*, 7 May 1990).

Year*	No. exported	Value (A$)	A$/skin
1966	134 289	203 000	1.51
1967	104 121	115 000	1.10
1968	98 141	144 463	1.47
1969	119 028	195 868	1.31
1970	66 662	70 065	1.05
1971	14 016	13 218	0.94
1972	87 771	141 000	1.61
1973	140 501	325 062	2.31
1974	33 865	73 777	2.18
1975	110 718	286 000	2.58
1976	242 121	568 000	2.35
1977	201 502	951 000	4.72
1978	294 046	1 247 000	4.24
1979	272 853	1 864 000	6.83
1980	257 649	2 163 000	8.40
1981	196 299	1 147 361	5.84
1982	101 347	546 918	5.40
1983	94 005	441 205	4.69
1984	87 229	411 574	5.97
1985	25 996	155 326	5.97
1986	57 677	343 699	5.96
1987	91 371	724 801	7.93
1988	76 447	481 866	6.30
Totals	2 907 654	12 613 203	

Table 3. Volume and value of Brushtail Possum skin exports, 1966-1989 **-12 months beginning 1 July*
Source: Australian Bureau of Statistics

Problems with the trade statistics

There are three different sources for statistics which describe export of Brushtail skins (see Table 6). The number of skins exported from Tasmania comes from DPWH records of permits issued for the export of skins from Tasmania. This figure includes both interstate and overseas exports. The Australian Bureau of Statistics (ABS) figure is calculated from exporters' declarations of the number of skins they have exported. ANPWS export figures come from permits issued for overseas export. Theoretically, the latter two figures should correspond.

Skin dealers may hold skins in storage for a year or more (Annells, *in litt.*, 1 August 1988). As a result, the number of skins exported from Tasmania can exceed the number for which royalties are paid in the same year. When the skins are stockpiled by dealers on the mainland, exports from Australia can exceed both exports from Tasmania, and royalties paid, in that same year.

Table 6 shows a number of apparent discrepancies in the figures. In order to try to overcome the problem of comparison when skins taken in one year are exported in another, comparisons were made on the combined totals over a number of years.

In no years do the ABS and ANPWS export figures match. Over the four-year period for which ANPWS

Year	*Average skin price (A$)	#Skins sold/ entering trade	Total paid to hunters	** No. of hunters	Average income per hunter
1976	6.00	311 388	1 868 328	1685	1109
1977	6.50	305 622	1 986 543	1903	1044
1978	3.00	366 211	1 098 633	3093	355
1979	5.50	302 808	1 665 444	2640	631
1980	4.50	303 039	1 363 676	2935	465
1981	3.50	171 724	601 034	2971	202
1982	3.00	116 361	349 083	1705	205
1983	4.10	n/a	n/a	1611	n/a
1984	3.00	78 802	236 406	1316	180
1985	2.50	62 599	156 498	745	210
1986	3.00	62 821	188 463	717	263
1987	5.00	213 724	1 068 620	1320	810
1988	4.00	142 608	570 432	1422	401
1989	4.00	43 923	175 692	635	277
TOTALS		2 481 630	11 328 852		Mean 473

Table 4. Domestic trade 1976-1989
*Sources: *-1976-1988 - Hocking, 1988; 1989 - Hocking,* in litt., *7 May 1990; #-1976-1982 - Anon., 1984a; 1984-1989 - Hocking, 1989; **-Hocking, 1989*

figures are available, ABS records total only 57% of the ANPWS figure. ANPWS records also exceed royalties (totals 1984/85-1987/88 : ANPWS - 458 617; royalties - 360 593; difference - 98 024) and skins sold/entering trade (totals 1984/85-1987/88 : ANPWS - 458 617; skins sold/entering trade - 417 946; difference - 40 671). The total number of skins exported from Tasmania over an 11-year period also exceeds the royalty figures for the same period (totals 1976/77-1986/87 : Tasmanian exports - 1 947 406; royalties - 1 899 228; difference - 48 178). The difference betwen royalties and ABS export figures should reflect the amount of domestic utilisation (totals 1966/67-1988/89 : royalties - 3 059 804; ABS exports - 2 907 684; difference - 152 120). This suggests that domestic utilisation of Brushtail Possum skins only amounted to 152 120 skins over this 23-year period.

A number of possible factors may have acted together or alone to produce these results:

Statistical errors/discrepancies: Statistical problems include the following: ANPWS permits may be issued in one year but the skins not exported until the following year; exporters may export fewer skins than the number stated on their permit; and exporters may misclassify possum skins on their export returns, calling them something else. Royalty figures are subject to audit and therefore should be reliable, whereas DPWH expresses reservations about the accuracy of figures on Tasmanian exports (Hocking, *in litt.*, 7 May 1990).

Skin stockpiling: Close examination of Table 6 suggests that stockpiling is unlikely to account for Tasmanian exports exceeding royalties. Exports equalled or exceeded royalties from 1976/77 to 1980/81, meaning no legal skins could have been stockpiled in Tasmania during these years. The possible number stockpiled during the next three years was insufficient to meet the excess exports in 1984/85 to 1986/87. If these years included exports of stockpiled skins, such skins must date from *before* 1976/77 - that is, be at least nine years old.

Illegal trading of skins: Whilst it is possible that skins have been kept in stock since before 1976/77, it does not seem very probable. The more obvious explanation is that export permits are being issued for skins that have not had royalties paid on them and that therefore are being traded illegally. However, uncertainties regarding the accuracy of the Tasmanian export statistics do not allow this conclusion to be drawn unequivocally.

This clearly illustrates the inadequacies of the various statistics gathered on the possum skin trade. It is virtually impossible to reconcile the statistics with each other. Illegal skins would appear to be able to enter trade either at the point of export from Tasmania, or from mainland Australia, without the trade statistics alerting authorities that this is happening.

MANAGEMENT STRATEGY

Management of Brushtail Possum populations began with the introduction of trade regulations around 1918. Collection of trade statistics began in 1923 with the recording of royalties paid per season. The number and detail of statistics gathered and analysed has grown from then onwards.

The 1988 management programme states that: "The object of management is to ensure that taking Brushtail Possums to protect crops and pastures does not effect (sic) the conservation status of the species in Tasmania."

Year*	Royalties Paid A$	Year*	Royalties Paid A$	Skins sold/ entering trade	Possums shot
1923	105 968	1957	19	-	-
1924	47 137	1958	70	-	-
1925	60 192	1959	229 032	-	-
1926	49 737	1960	208 701	-	-
1927	42 617	1961	91 106	-	-
1928	37 805	1962	128 806	-	-
1929	0	1963	232 295	-	-
1930	50 170	1964	69 758	-	-
1931	23 538	1965	78 998	-	-
1932	0	1966	124 595	-	-
1933	0	1967	104 488	-	-
1934	61 455	1968	99 072	-	-
1935	110	1969	133 848	-	-
1936	0	1970	85 421	-	-
1937	44 406	1971	0	-	-
1938	21	1972	100 627	-	-
1939	0	1973	121 833	-	-
1940	61 057	1974	24 261	-	-
1941	24	1975	120 072	138 758	-
1942	53	1976	226 571	311 388	-
1943	746	1977	239 643	305 622	-
1944	167 847	1978	298 019	366 211	-
1945	1	1979	291 848	302 808	405 578
1946	335	1980	270 421	303 039	373 400
1947	132	1981	159 395	171 724	277 578
1948	62	1982	97 281	116 361	161 275
1949	90 815	1983	136 546	n/a	217 900
1950	72	1984	57 743	78 802	118 300
1951	40	1985	59 922	62 599	115 234
1952	61 357	1986	61 839	62 821	106 734
1953	149 451	1987	153 104	213 724	252 086
1954	110 290	1988	93 255	101 894	177 808
1955	71	1989	34 047	43 923	59 731
1956	82 417				

Table 5. Harvest statistics 1923 to 1989
**-12 months beginning 1 July - = unknown or not available*
Sources: Royalties: 1923-1974 (Johnson, 1977); 1975-1981 (Annells, in litt., *1 August 1988; 1982-1989 (Hocking, 1989). Skins sold: 1975-1982 (Anon., 1984a). Skins entering trade: 1984-1989 (Hocking, 1989); Possums shot: 1979-1982 (Anon., 1984a); 1983-1989 (Hocking, 1989)*

(Anon., 1987; p.1). This implies that the main motivation for the possum harvest is for pest control, rather than to provide skins for a trade. This is true for the Government certainly, and probably most landholders (Hocking, *in litt.*, 7 May 1990), but for hunters and skin dealers the trade itself is the main motivating factor for the harvest. This is supported by the number of possums taken annually, which seems to vary not with possum population or severity of damage, but with the prevailing skin price (Anon., 1987).

More important for management of populations however, is the development of methods for monitoring population trends. Two such methods - spotlight counts and roadkill surveys, were introduced in 1975 and 1977 respectively (Anon., 1984a). Roadkill surveys were discontinued in 1985 because this method was found to give inconsistent results (Hocking, *in litt.*, 24 August 1988). At the same time, the number of transects included in annual spotlight surveys was increased from 50 to 128 (Anon., 1987). Additions in recent years have brought the number of transects surveyed to 140 (Hocking, 1988). These changes resulted from recommendations made by ANPWS following a review of the Brushtail survey system. All the recommendations made by ANPWS in 1985 have subsequently been implemented by DPWH (Hocking, *in litt.*, 7 May 1990).

Population monitoring

A primary step for managing populations is determination of the species' abundance (Johnson, 1977; Wilson, 1987). Available data are thought to be insufficient to estimate the total Tasmanian Brushtail Possum population, therefore population monitoring is based on measures of relative rather than absolute abundance.

Spotlight surveys were found by Johnson (1977) to be suitable for small-scale censuses of Brushtail Possum populations. He did not examine their suitability for State-wide counts [contrary to the claim made in the management programme (Anon., 1987)]. Nevertheless, ANPWS recommended the use of spotlight surveys in its review of the Brushtail population monitoring system.

Surveys of areas subject to possum harvesting are conducted during November to December and sometimes into January. They are carried out from a slow-moving vehicle, following fixed transects. Attempts are made to control a number of potential sources of variation (Anon., 1987). Since 1985, half of the survey work has been undertaken by ANPWS officers (Hocking, *in litt.*, 24 August 1988).

DPWH divides the State into nine regions for the purpose of analysis of statistics. Some regions contain no, or few, transects. Generally these are areas where little harvesting is done. There are however some areas, subject to considerable harvesting, which are still relatively unsurveyed. Attempts are being made to rectify this situation.

Changes in population numbers are analysed by comparing the mean number of animals seen per transect, for different years. Statistical analysis indicates a

Year	Skins sold/ entering trade	No. exports from Tasmania	No. exports from Australia (ABS)	No. exports from Australia (ANPWS)
1966	-	-	134 289	-
1967	-	-	104 121	-
1968	-	-	98 141	-
1969	-	-	119 028	-
1970	-	-	66 662	-
1971	-	-	14 016	-
1972	-	-	87 771	-
1973	-	-	140 501	-
1974	-	-	33 865	-
1975	138 758	-	110 718	-
1976	311 388	226 571	242 121	-
1977	305 622	239 643	201 502	-
1978	366 211	306 633	294 046	-
1979	302 808	296 106	272 853	-
1980	303 039	273 868	257 649	-
1981	171 724	155 205	196 299	-
1982	116 361	94 862	101 347	-
1983	-	96 654	94 005	-
1984	78 802	112 564	87 229	82 206
1985	62 599	73 191	25 996	100 562
1986	62 821	72 109	57 677	71 442
1987	213 724	-	91 371	204 407
1988	101 894	-	76 477	-
1989	43 923	-	31 024	-

Table 6. Comparison of trade figures from different sources
**-12 months beginning 1 July. - = unknown or not available*
Sources: Skins sold: 1975-1982 (Anon., 1984a); Skins entering trade: 1984-1989 (Hocking, 1989); Tasmanian exports: 1976-1978 & 1986 (Annells, in litt., *1 August 1988; 1979-1983 (TNPWS annual reports; 1984-1985 (Murrell,* in litt., *24 June 1985; Australian exports (ABS published statistics/ANPWS unpublished statistics).*

significant population increase between 1985 and 1987 (t=2.27, p<.05) (Hocking, 1988). In 1989 there was a significant decrease in the population from the high levels of 1987 and 1988, but Brushtail numbers were still significantly higher than pre-1986 (Hocking, 1989).

The changes to the spotlight survey system implemented in 1985 were aimed at improving their precision from 17% (Hocking, *in litt.*, 24 August 1988) to 10% (Anon., 1987) (where precision = standard error/ mean number of possums seen per transect x 100%). This goal has not yet been achieved, although the 1989 survey approached it, with a precision of 11.3%. Generally, the minimum detectable population change which can be measured by the surveys is three times the percentage precision. This means that, even with a percentage precision of 10%, the population could increase or decrease in one season by 30% without this change being detected. Percentage precision figures for the years 1985 to 1989 have been: 1985 - 12.36%, 37.08%; 1986 - 12.34%, 37.02%; 1987 - 17.18%, 51.54%; 1988 - 15.1%, 45.3%; 1989 - 11.3%, 33.9% ((Hocking, *in litt.*, 4 August 1988). Thus in 1987 the population could have increased or decreased by up to 50%, and in 1988 by 45%, without these changes being detected by the survey techniques.

Spotlight surveys are conducted at least seven months before the harvest period. Coulson and Heron (1981) see this as a severe fault and express reservations about management decisions being based on the results of these surveys. A failure of the breeding season, as well as the effects of any epidemics or unfavourable conditions over summer and autumn, would not be detected. They suggest an autumn spotlight survey would give a better indication of the population prior to the harvest.

Changes to the timing of spotlight surveys have been rejected by DPWH for two reasons (Hocking, *in litt.*, 7 May 1990). Firstly, the continuity of the data set would be lost. Secondly, DPWH must submit survey results to ANPWS very early in the year, as part of the annual approval process for its Brushtail management programme.

Analysis of harvest statistics

DPWH calculates a number of harvest indices in the form of catch:effort ratios. The indices currently calculated and included in the management programme are 'animals shot per permit' and 'royalties paid per permit'. In theory, changes in catch:effort ratios over time can be used to monitor changes in abundance of exploited species (Johnson, 1977). In practice, the catch:effort ratios used by DPWH are too unrefined, and subject to influence by other factors, to do this satisfactorily. DPWH has recognised these shortcomings and since 1985 no longer uses harvest indices to monitor population trends (Hocking, *in litt.*, 7 May 1990).

The main problem with these indices is that there are a number of factors that can affect the harvest statistics, which are unrelated to the total possum population. They include length of shooting season (Coulson and Heron, 1981); weather (Johnson, 1977); general affluence of society (Johnson, 1977); and prevailing skin price (Johnson, 1977; Anon., 1987).

There is a significant positive correlation between the domestic skin price and the total number of animals shot each year (r_s=0.865, N=9, p<.01), but no correlation between domestic skin price and the number of permit holders each year (r_s=0.401, t=1.386, df=10, p>.05). However there is a significant correlation between the number of permit holders and the skin price the previous year (r_s=0.789, t=3.975, df=9, p<.01). (All results tested using the Spearman rank correlation coefficient (Siegel, 1956), adjusted for ties where necessary.) Therefore skin price affects both the number of animals hunters will shoot in a season and the number of hunters that will apply for permits the next season. The fact that harvest statistics are so closely linked with skin price limits their usefulness as predictors of population changes.

One way to improve catch:effort ratios would be to incorporate the measure of time spent hunting: hunter days or hunter hours (Coulson and Heron, 1981). Most catch:effort ratios are based on the number of animals killed per hunter per unit time (Johnson, 1977). Hunters could include estimates of time spent hunting on their permit returns. DPWH has been considering this option since at least 1984 (Anon., 1984a) but has not implemented

it because of the correlation between harvest statistics and skin price, and the increased effort directed towards spotlight surveys (Hocking, *in litt.*, 7 May 1990). Both Johnson (1977) and Coulson and Heron (1981) advocated calculating catch:effort indices on a regional basis. This would allow an assessment of the effect of local land management practices (e.g. woodchipping) on the regional population. TNPWS analysed the number of permit holders and the number of animals killed in each of the nine regions mentioned above during the 1985 season. Despite claims to the contrary in the management programmes, analyses for other years were unavailable (Annells, *in litt.*, 1 August 1988) until 1989 when Hocking (1989) calculated the regional distribution of permit holders and the harvest over the period 1985-1989.

Harvest statistics and especially catch:effort ratios should be calculated on a regional basis every year and incorporated into the yearly management plan. Careful consideration should also be given to expanding the number of regions from nine. The smaller the regions, the more sensitive the system should be to local population changes, although DPWH indicate that their experience has shown that the resulting trends are not as precise (Hocking, *in litt.*, 7 May 1990).

Crop protection permits

DPWH officers must be convinced that damage is occurring before issuing a crop protection permit (Hocking, *in litt.*, 24 August 1988). There are no formal population surveys carried out either before or after crop protection permits are issued. This is despite the fact that a determination of abundance is needed to decide what percentage of the population should be removed (Johnson, 1977). Unfortunately, the number of crop protection permits issued for possum, Tasmanian Pademelon and wallaby is too high, and DPWH resources too low, for the surveys to be feasible.

Records of the number of crop protection permits issued are only available from 1981/82, and are shown in Table 7. Details of the total number of possums killed yearly under shooting and poisoning permits are not available. Returns from shooting permits indicate that an average of 60.1 possums are taken per permit (Anon., 1984a; 1987). This figure appears to have been derived from a maximum sample of two years' permits. As permit holders are required to report on the result of any action taken under permits, DPWH should be able to calculate yearly totals of the number of animals killed. Apparently the handling of crop protection permits has recently been computerised by DPWH (Hocking, *in litt.*, 7 May 1990).

Obtaining estimates of mortality following poisoning is more difficult. Poison permits are only issued where shooting was unsuccessful in reducing damage (Hocking, *in litt.*, 24 August 1988). Several hundred permits are also issued for poisoning wallabies every year (see Table 7), and some Brushtail mortality would be expected from these operations (Anon., 1987).

Permit	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89
Brushtail:								
-shooting	36	55	n/a	46	44	109	153	109
-poison	11	5	n/a	5	7	2	3	9
Wallaby:								
-poison	171	301	357	400	415	578	n/a	n/a

Table 7. Crop protection permits issued 1981/82-1988/89
Sources: Anon., 1984b; Hocking, in litt., *24 August 1988; Annells,* in litt., *1 August 1988*

CONCLUSIONS

The Common Brushtail Possum is abundant in Tasmania. Culling it to supply the skin trade does not appear to have affected population levels adversely. The Brushtail can be a pest in pasture, crops and forests. The Government rationalises the trade in terms of its pest control function: where control by the trade is insufficient, non-commercial permits are issued for localised pest control operations. The dynamics of the trade seem to be driven by skin prices rather than by levels of possum damage or population growth.

There are a number of statistics on the volume of trade, kept by various Government sources. These invariably show a number of discrepancies. The nature of these different statistics, combined with the practices followed by dealers (e.g. stockpiling), make the discrepancies very difficult to reconcile. There are instances where illegal trading of skins is inferred, but cannot be verified because of the nature of the statistics. Government agencies providing Brushtail statistics should ensure that these are as accurate as possible. They should also collaborate to determine ways of better reconciling various sources of data.

The management programme for Brushtail Possums in Tasmania, developed and administered by the DPWH, is adequate but could be improved. Some of the specific improvements that could be made are:

-regional analysis of harvest statistics;
-introduction of a time factor in catch:effort ratios;
-improvement in the precision of spotlight surveys;
-determination of actual mortality from crop protection shooting permits using reports from permit holders.

The future of the Brushtail Possum industry in Tasmania is inexorably linked to skin prices. Hunter interest drops off when domestic skin prices are low, but increases again as skin prices rise.

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Australian Imports of Asian Slipper Orchids

Debra J. Callister

In 1989, the genus Paphiopedilum *(Asian slipper orchids) was transferred from Appendix II to Appendix I at the seventh meeting of the Conference of the Parties to CITES. This listing effectively prohibits all commercial trade in wild-collected* Paphiopedilum *specimens.*

In Australia, the importation of wild-collected Paphiopedilum *for commercial purposes has been illegal since May 1984. Since then, 3000-6500* Paphiopedilum *plants, of some 54 species/varieties, have been imported annually, with the number of specimens with* declared *wild origin steadily increasing since 1986. In 1988, such specimens accounted for 24% of the total number of* Paphiopedilum *imports. According to other sources, the true level of* Paphiopedilum *imports from the wild may be as high as 50%-80%, indicating that many plants were being falsely declared as artificially propagated.*

This paper investigates Australia's import trade in Paphiopedilum *plants since 1984. It highlights weaknesses in the administrative procedures controlling the importation of* Paphiopedilum *and, by extension, the enforcement of domestic legislation governing the importation of CITES-listed plants in general.*

INTRODUCTION

The taxonomy of the genus *Paphiopedilum* is still subject to debate, however Cribb (1987) recognises 60 species and 14 varieties. A further six species have been described since the publication of Cribb's monograph (Davies and Lloyd, 1988; 1989). The scientific nomenclature used in this paper follows Cribb (1987) and Davies and Lloyd (1988; 1989).

The geographical range of *Paphiopedilum* extends eastwards from India, across southern China to the Philippines and throughout Southeast Asia and the Malay Archipelago to New Guinea and the Solomon Islands.

Cribb (1987) estimated that 25 of the 60 species of *Paphiopedilum* are seriously threatened in the wild. He suggested that this figure may even be an underestimate. Habitat destruction can pose a threat to *Paphiopedilum*, but generally much less so than for many other plants because *Paphiopedilum* habitat is usually in areas unsuitable for exploitation. The main threat to the genus is from collecting. The species are particularly vulnerable because they are found in small, discrete colonies.

REGULATIONS

Import of CITES-listed plants into Australia is controlled under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982* (WPA). This Act came into effect on 1 May 1984. Administration of the WPA is responsibility of the Australian National Parks and Wildlife Service (ANPWS), which is also the Australian CITES Management and Scientific Authority. Prior to the introduction of the *Wildlife Protection Act*, CITES requirements were implemented through the *Customs (Endangered Species) Regulations* of the *Customs Act 1901*. Discussion here will be limited to trade restrictions since the introduction of the WPA.

The WPA consists of a body of legislation, appended by eight schedules. Circumstances under which taxa and populations listed in the various schedules can be traded are given in the body of the Act. The schedules of relevance to CITES are: Schedule 1 - contains all CITES Appendix I-listed plants and animals; Schedule 2 - incorporates all Appendix II-listed organisms; Schedule 3 - contains Cetacea; and Schedule 8 - contains the text of the Convention.

Government permission is required before Appendix II-listed plants can be imported. In this sense, the WPA imposes upon Appendix II-listed plants the same documentary requirements as those needed to trade in Appendix I-listed plants under CITES. There are two different types of documents used to indicate that permission has been granted for importation - permits and authorities.

The importation of a plant listed in Schedules 1 and 2 of the Act (i.e., CITES-listed plants) without a permit or authority can bring a penalty of up to ten years' imprisonment or a A$100 000 (US$77 000) fine for an individual, or both, or a maximum A$200 000 fine for a corporate body.

Permits are issued on a shipment by shipment basis. For Schedule 2 (Appendix II) listed plant specimens permits are only issued for: scientific research; artificially propagated specimens; and wild plants taken in accordance with a management programme approved under the Act. To date (December 1991), no management programmes have been approved for the *importation* of plants under the WPA.

Artificially propagated Schedule 2 plants can also be imported using an authority. These allow for importation on multiple occasions, over a defined period of time (up to 12 months maximum). Before receiving an authority, applicants must sign a statement declaring that all plants imported under their authority will be artificially propagated. Prior to 1990, authority holders were required to submit a single annual return detailing date of importation, number of plants imported, CITES export permit/certificate number and country of export. Under this system, authorities for the following year were issued before returns were received for the previous year. Therefore, from August 1990, authority holders were required to submit three returns for authority renewal - mid-year, end-of-year and at the time of application.

Plants listed in Schedule 1 can only be imported using a permit. The only difference between granting import permits for Schedule 1 and Schedule 2-listed plants is that there is no provision to grant permits for Schedule 1-listed plants taken in accordance with an approved management programme.

On 28 February 1990 the Schedules of the WPA were altered to reflect changes to the CITES Appendices made at the seventh meeting of the Conference of the Parties,

Species	1984	1985	1986	1987	1988	Total
Paphiopedilum spp.	937	2787	1588	540	333	6185
Paphiopedilum hybrids	1110	571	281	2035	2721	6718
P. acmodontum	0	10	57	56	100	223
P. adductum	80	30	60	25	85	280
P. appletonianum	0	0	140	30	0	170
P. argus	0	20	75	66	90	251
P. armeniacum	0	4	145	60	200	409
P. barbatum	21	151	35	47	20	274
P. barbigerum	0	0	0	10	13	23
P. bellatulum	45	0	162	46	98	351
P. bullenianum	0	0	4	0	0	4
P. bullenianum var. celebesense	0	0	3	0	0	3
P. callosum	43	1	19	190	224	477
P. callosum var. sublaeve	16	86	176	25	6	309
P. charlesworthii	0	0	1	10	13	24
P. ciliolare	0	10	40	61	100	211
P. concolor	51	165	212	41	182	651
P. druryi	0	0	0	1	0	1
P. emersonii	0	0	0	45	55	100
P. exul	30	1	110	51	28	220
P. fairrieanum	0	200	270	10	0	480
P. glaucophyllum	0	0	3	0	0	3
P. godefroyae	60	1	199	120	179	559
P. gratrixianum	0	1	335	0	0	336
P. hainanense	0	0	0	0	57	57
P. haynaldianum	50	40	61	40	135	326
P. hennisianum	0	40	87	123	123	373
P. hennisianum var. fowliei	0	40	56	51	55	202
P. henryanum	0	0	0	0	60	60
P. hirsutissimum	0	130	291	76	34	531
P. hirsutissimum var. esquirolei	32	87	339	55	129	642
P. hookerae	0	2	5	0	0	7
P. javanicum	0	0	3	0	0	3
P. kalopakingii	11	12	0	0	0	23
P. lowii	0	0	1	0	0	1
P. malipoense	0	0	80	35	136	251
P. mastersianum	0	0	3	0	0	3
P. micranthum	0	4	184	35	295	518
P. niveum	47	20	205	39	73	384
P. parishii	42	24	164	163	134	527
P. parishii var. dianthum	0	11	27	35	20	93
P. philippinense	50	66	148	0	150	414
P. philippinense var. roebelenii	50	0	44	0	95	189
P. purpuratum	0	100	25	35	40	200
P. randsii	50	0	81	10	65	206
P. rothschildianum	0	0	5	0	5	10
P. spicerianum	12	115	175	20	0	322
P. stonei	67	42	2	0	0	111
P. sukhakulii	131	62	73	75	138	479
P. urbanianum	50	20	50	70	100	290
P. venustum	0	95	133	10	0	238
P. victoria-mariae	0	0	3	0	0	3
P. victoria-regina	0	0	6	0	0	6
P. villosum	46	62	164	75	174	521
P. villosum var. annamense	0	0	1	0	0	1
P. wardii	0	6	30	45	53	134
TOTALS	3031	5016	6361	4461	6518	25387

Table 1. Imports of *Paphiopedilum* into Australia, 1984-1988 *Source: Australian CITES annual reports*

which included the transfer of the *Paphiopedilum* and *Phragmipedium* orchid genera from Appendix II to Appendix I. Schedule 1 of the WPA was subsequently amended to include: "A specimen, other than a seed or spore or flasked culture of hybrids, that is or is derived from a plant of the genus *Paphiopedilum* or *Phragmipedium*." Schedule 2 was amended by the inclusion of: "A specimen, being a flasked culture of hybrids, that is or is derived from, a plant of the genus *Paphiopedilum* or *Phragmipedium*."

Prior to 28 February 1990, specimens of these two genera other than a seed, spore, pollen (including pollinia), a tissue culture or flasked seedling, were included on Schedule 2 of the WPA.

In essence, this change means that flasked hybrids of *Paphiopedilum* and *Phragmipedium* may still be imported under authority. Import of 'species' and hybrid plants, and 'species' flasks, will require a permit. These new provisions were outlined by ANPWS in a notice to orchid traders.

Plants imported into Australia must comply with quarantine provisions. These are set out in the *Quarantine Act 1908* and *Quarantine (Plants) Regulations* under this Act. These are administered by the Australian Quarantine and Inspection Service (AQIS). Plant quarantine activities are usually undertaken by Plant Quarantine Services in the State Departments of Agriculture, on behalf of AQIS (Jefferies, *in litt.*, 26 February 1990).

Permits must be obtained from AQIS prior to importation (Jefferies, *in litt.*, 26 February 1990). Quarantine permit approval does not consider any relevant CITES provisions. However, in Victoria at least, the Plant Quarantine Service sends the importer ANPWS information sheets on CITES plant controls when issuing the quarantine permit (Caulfield, *in litt.*, 20 February 1990). Plants may only be imported through a designated port which, in effect, is any major port. Quarantine personnel are not appointed as inspectors under the WPA. This means they have no powers to enforce any of the provisions of the WPA.

Any officer of the Australian Customs Service (ACS) is an inspector under the WPA. When CITES-listed plants are imported the accompanying documentation is examined by ACS officers. If all is in order, the consignment is forwarded into quarantine (Drury, *in litt.*, 2 April 1990; ACS & Jefferies, *in litt.*, 26 February 1990).

Year	Orchids	Paphiopedilums	% of Paphiopedilums
1984	54 610	3 031	5.55
1985	40 100	5 016	12.51
1986	97 040	6 361	6.56
1987	66 609	4 461	6.70
1988	108 190	6 518	6.02
TOTAL	366 549	25 387	6.93

Table 2. Comparison of total orchid imports with *Paphiopedilum* imports 1984-1988

Source: Australian CITES annual reports

Confidential sources indicate that problems arose at one major port in the past, when CITES-listed plants, including Appendix I plants, were being forwarded directly into quarantine without the CITES documentation being checked. There have been suggestions that this problem is more widespread throughout the Customs Service than indicated by this single example.

If there are any problems with the documentation, the shipment can be seized - for example, if the plants are declared as wild-collected or if there is no valid CITES export permit. It appears that no physical check is ever made on consignments which are not seized to see whether the plants are as stated on the permit.

Where the documentation is in order, it is forwarded with the plants to quarantine. AQIS staff then send it to the importer (Caulfield, *in litt.*, 20 February 1990). This is AQIS' only involvement with the CITES documents.

ACS indicates (Drury, *in litt.*, 2 April 1990) that AQIS notifies it if it detects CITES species which have been declared as non-CITES. AQIS, on the other hand, states (Jefferies, *in litt.*, 26 February 1990; Caulfield, *in litt.*, 20 February 1990) that it has no responsibility for screening CITES documents and has no further involvement in CITES procedures than that already outlined.

Plants are inspected in quarantine but only for signs of disease, and are required to undertake a period of post-entry growth. The quarantine period is usually three months, during which time the plants may not be sold (Mowatt, ANPWS, pers. comm.).

Authority holders (which comprise the majority of orchid importers) are responsible for forwarding CITES export documents to ANPWS. Before 1988, ANPWS only saw these documents when it received the yearly returns. Therefore, in some cases, the CITES documents were not seen until up to 14 months after the shipment arrived in Australia, if at all. Where the documents revealed plants that may have been illegally imported, it was often impossible to seize the plants because of the time elapsed. In early 1988, ANPWS insisted that authority holders submit importation details, including the CITES export permit, within one week of receiving shipments. According to ANPWS, in practice it now usually receives documents for most imports within the three month quarantine period - a clear improvement on the previous system.

Situations still arise, however, where importers fail to forward complete, or indeed, any documentation to ANPWS. Despite the fact that these should have been checked by Customs at the time of importation, in these situations ANPWS cannot guarantee that importation was legal.

TRADE

Methods

Trade in *Paphiopedilum* into Australia was analysed using data in Australian CITES annual reports from 1984 to 1988. Yearly totals were calculated for each species and for each country of export; the latter both for separate

species and for all species combined. Yearly totals were also calculated for every other orchid genus imported. There were instances in the annual reports where the CITES export permit number was not listed or was given as "not supplied" or "none issued". Details of the species, number of plants and country of export involved in such cases were determined from other details listed in the annual report.

Details of all imports declared as of wild origin were extracted. Yearly and overall totals were calculated for each species and country of origin. Percentages of declared wild-taken imports across all years were calculated for each country of export for each species, for each species in total, and for all species combined.

The likely true (rather than the declared) amount of trade in wild-collected plants was examined using comparisons with two other sources of information. A Dutch Government proposal for the transfer of the *Paphiopedilum* genus from Appendix II to Appendix I of CITES (Anon., 1989b) includes information on the sources of wild-collected plants. This is the most comprehensive reference work ever prepared on international trade in *Paphiopedilum*. It lists species and source countries from which all exports are considered to be wild-collected. Comparative tabulations of all international *Paphiopedilum* trade reported by CITES Parties can also be examined to see which species, exported from which countries, are not declared as artificially propagated.

With the comparative tabulation figures, where declarations of the amount of trade differed between countries of import and export, the highest figure was used. In the comparative tabulation, all hybrid trade is listed as trade in *Paphiopedilum* spp. It is impossible to know how much of the trade given as *Paphiopedilum* spp. refers to trade in hybrids and how much to trade in true 'species' orchids. A similar situation arose with varieties, which are amalgamated into their relevant species listing in the comparative tabulation.

Comparative tabulations were only available up to 1987. Data prior to 1984 were not used so as to make the information more directly comparable. For each species, only trade from the same countries as those exporting that species to Australia was analysed. The percentage of trade not declared as artificially propagated in the tabulation was calculated for each country of export for each species, for each species in total, and for all species combined.

These figures were then extrapolated to obtain an estimate of likely trade in wild-collected specimens. This was done by multiplying the percentage obtained for each country, within each species, by the actual number of plants imported into Australia from that country. Totals from all countries exporting that species were then added to obtain a total estimate for the species. Where there was more than one source country for a species, this process was used as it was more sensitive to the distribution of source countries, which may well have differed to that in the comparative tabulation.

A large number of orchid catalogues were obtained from dealers who advertise in orchid journals. These were collected from 1988 to mid 1990, except for one which was dated July 1987. More than one catalogue was obtained from some dealers. There was very little variation in prices and species offered in subsequent catalogues. Prices were also obtained directly from advertisements in orchid journals. A list of all *Paphiopedilum* species offered for sale was compiled, with their average price, price range, and number of companies selling each species.

Results

Australia's total declared imports of *Paphiopedilum* plants from 1984 to 1988 are given in Table 1. There were 47 species and seven varieties of *Paphiopedilum*.

Paphiopedilum do not form a significant percentage of orchid imports into Australia, averaging only 6%-7% of the total (Table 2). However it is consistently one of

Country	1984		1985		1986		1987		1988		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Brazil	0	0	0	0	0	0	95	2.13	0	0	95	0.37
China	0	0	0	0	0	0	0	0	11	0.17	11	0.04
France	0	0	7	0.14	15	0.24	0	0	0	0	22	0.09
Hong Kong	12	0.40	29	0.58	32	0.50	1047	23.47	2031	31.16	3151	12.41
India	0	0	715	14.25	743	11.68	40	0.90	0	0	1498	5.90
Indonesia	432	14.25	238	4.74	171	2.69	0	0	68	1.04	909	3.58
Japan	90	2.97	120	2.39	1510	23.74	866	19.41	0	0	2586	10.19
Malaysia	78	2.57	160	3.19	0	0	0	0	0	0	238	0.94
New Zealand	2	0.07	5	0.10	0	0	3	0.07	550	8.44	560	2.21
Philippines	850	28.04	971	19.36	1116	17.54	924	20.71	1399	21.46	5260	20.72
Singapore	0	0	1	0.02	0	0	125	2.80	0	0	126	0.50
Taiwan	0	0	0	0	15	0.24	200	4.48	0	0	215	0.85
Thailand	1482	48.89	2710	54.03	2656	41.75	914	20.49	2081	31.93	9843	38.77
UK	0	0	8	0.16	0	0	18	0.40	0	0	26	0.10
USA	85	2.80	52	1.04	103	1.62	229	5.13	378	5.80	847	3.34

Table 3. Imports of *Paphiopedilum* into Australia by country of origin, 1984-1988 *Source: Australian CITES annual reports*

Species	1986	1987	1988
Paphiopedilum acmodontum	0	10	0
P. appletonianum	40	0	0
P. armeniacum	50	0	95
P. barbatum	0	0	20
P. barbigerum	0	0	10
P. bellatulum	17	10	*49
P. callosum	0	50	*86
P. charlesworthii	0	10	10
P. ciliolare	0	10	0
P. concolor	37	0	115
P. emersonii	0	0	55
P. exul	0	46	*25
P. godefroyae	8	30	100
P. hainanense	0	0	57
P. hennisianum	0	50	20
P. henryanum	0	0	60
P. hirsutissimum	0	66	30
P. hirsutissimum var. esquirolei	0	0	60
P. malipoense	0	0	45
P. micranthum	100	0	270
P. niveum	12	10	25
P. parishii	0	121	*131
P. parishii var. dianthum	0	0	20
P. purpuratum	0	0	40
P. sukhakulii	0	50	70
P. villosum	0	50	*102
P. wardii	0	0	53
*Paphiopedilum hybrid***	0	0	20
TOTALS	264	513	1568

Table 4. Numbers of wild-collected *Paphiopedilum* imported from Thailand, 1986-1988

* - *includes five specimens imported for scientific purposes*

** - *listed in CITES annual report as* P. bellacon, *possibly a naturally occurring hybrid of* P. bellatulum x P. concolor *(Inskipp,* in litt.).

Source: Australian CITES annual reports

the five most popular genera, with only *Cattleya* and *Dendrobium* recording more imports over the five years 1984 to 1988.

The source countries for Australian *Paphiopedilum* imports are shown in Table 3. Thailand has been the major exporter to Australia. The most interesting trends are the sharp increase in imports from Japan in 1986 (although these have now fallen away again) and, particularly, the increase in imports from Hong Kong. Imports from Hong Kong now rival those from Thailand.

Although Australian import laws prohibit it, numerous imports of wild-collected plants are indicated in Australia's CITES annual reports. Shipments of wild-collected plants first began appearing in 1986, with these, and all subsequent imports declared as wild-collected, coming from Thailand. Wild-collected plants of 27 species/varieties have been imported since 1986, with both the volume and number of species involved approximately doubling each year (Table 4). In 1988, importations declared as wild-collected accounted for 24% of total *Paphiopedilum* imports and 75% of all imports from Thailand. Only the scientific specimens, accounting for only 1% of the wild-collected plants imported, were imported in conformity with the legislation.

Table 5 shows imports for which no CITES export permit was available. CITES export permits were also unavailable for a further 44 *Paphiopedilum* spp. and hybrid plants imported from Hong Kong and New Zealand in 1987. Whilst the total number of plants concerned is only small, they are of at least 28 different species and varieties. Examining the CITES import permit numbers given in the CITES annual reports indicates that these plants went to six importers in 1986, three in 1987, and one scientific and two commercial importers in 1988.

Nine per cent of all *Paphiopedilum* specimens imported into Australia from 1984 to 1988 were declared as wild-collected. If plants declared as hybrids, or hybrids and *Paphiopedilum* spp. are excluded, this figure rises to 12.6% and 18.6% respectively.

The figures given in Anon. (1989b) suggest that the percentage of importations which are wild-taken may be as high as 60.7% (all), 80.6% (excluding hybrids) and 82.9% (excluding hybrids and *Paphiopedilum* spp.). The data from the comparative tabulations support wild-taken imports of this magnitude. However when these data are adjusted to make them more comparable to Australian import levels, they indicate lower levels of trade in wild-collected plants - 47.8% (all), 55% (excluding hybrids) and 55% (excluding hybrids and *Paphiopedilum* spp.).

Details of species and varieties of *Paphiopedilum* offered for sale are shown in Table 6. Fifty-three species and seven varieties were advertised, using 84 different species or variety names.

Species most commonly offered for sale included *P. callosum, P. concolor, P. sukhakulii* and *P. villosum.* A number were only available from a single company including *P. delenatii, P. glanduliferum, P. rothschildianum* and *P. spicerianum.* The species with the most expensive average price were *P. bullenianum* var. *celebesense, P. hookerae, P. liemianum, P. stonei* and *P. victoria-mariae.* The least expensive were *P. callosum, P. concolor, P. primulinum* var. *purpurascens, P. sukhakulii* and *P. villosum.*

DISCUSSION

The list of species which have been imported into Australia declared as wild-collected (Table 4) contains five recently described species, namely *Paphiopedilum armeniacum, P. emersonii, P. henryanum, P. malipoense* and *P. micranthum.* The importation into Australia of these species for the first time coincides well with the time that wild-collected plants were known to be first entering the world market. Wild-collected plants were still being imported in 1988 (Table 4). Given the length of time between discovery and importation and that the importations were of plants rather than flasked seedlings, it seems highly likely that all imports of these five

Species	1986		1988	
	No.	Source	No.	Source
Paphiopedilum armeniacum	3	HK	25	US
P. bellatulum	2	US	5	*TH
	1	TH	1	CN
P. bullenianum var. celebesense	3	ID	0	0
P. callosum	1	TH	5	*TH
P. callosum var. sublaeve	1	TH	0	0
P. concolor	2	TH	0	0
P. exul	1	TH	5	*TH
P. glaucophyllum	3	ID	0	0
P. godefroyae	3	TH	0	0
P. hennisianum	1	TH	0	0
P. hirsutissimum	0	0	1	CN
P. hirsutissimum var. esquirolei	1	TH	0	0
P. hookerae	3	ID	0	0
	2	HK	0	0
P. javanicum	3	ID	0	0
P. lowii	1	TH	0	0
P. malipoense	0	0	6	US
P. mastersianum	3	ID	0	0
P. micranthum	3	HK	25	US
	1	TH	0	0
P. niveum	1	TH	0	0
P. parishii	1	TH	5	*TH
P. parishii var. dianthum	2	HK	0	0
P. rothschildianum	5	US	0	0
P. stonei	2	HK	0	0
P. sukhakulii	1	TH	0	0
P. victoria-mariae	3	ID	0	0
P. victoria-regina	3	ID	0	0
	3	TH	0	0
P. villosum	1	TH	5	*TH
P. wardii	5	HK	0	0
Paphiopedilum spp.	0	0	9	CN
Paphiopedilum hybrids	15	FR	150	NZ
	8	US	14	US
TOTALS	88		256	

Table 5. Imports for which CITES export permits were not received by Australian authorities, 1986-1988
(CN-China; FR-France; ID-Indonesia; HK-Hong Kong: NZ-New Zealand; TH-Thailand; US-USA)* - *importation for scientific purposes. Source: Australian CITES annual reports*

species were of wild origin. This is supported by the information in Anon. (1989b).

Three of these species (*P. armeniacum*, *P. malipoense* and *P. micranthum*) also figure in the list of imports for which no CITES export permit was available (Table 5). This table also lists a number of other imports which according to Anon. (1989b) would also be wild-collected, including - *P. bullenianum* var. *celebesense*, *P. glaucophyllum* and *P. mastersianum* from Indonesia, and numerous species from Thailand. Also of interest is the lack of CITES documents for the import of five plants of the extremely rare *P. rothschildianum* from the USA.

Importing wild-collected orchids and CITES-listed plants without a CITES export permit is a breach of the WPA. The latter is also in contravention of CITES and, in fact, import should not occur where no CITES export permit is available.

Where Appendix II-listed specimens are being imported under permit, the WPA requires that the CITES export permit is seen before an import permit will be granted. However, for Appendix II specimens imported under an authority, the CITES export permit is not presented to the relevant Australian authorities until the time of importation. In the latter case, the documentary check is undertaken by the ACS at the port of entry.

There have been no prosecutions for illegal importation of plants or for breaching the provisions of an authority. The only action that has ever been taken is the seizure of plants imported illegally. The personal opinion of ANPWS staff consulted was that, because of the commercial value of the plants, seizure in itself is a sufficient penalty. In some instances, however, illegally imported plants may not have been seized. Plants can be seized either when Customs notice there are problems with the paperwork at the time of import (the plants are declared as wild-collected for example) or ANPWS identifies problems when the importer forwards the export documentation to them. Prior to 1988, ANPWS did not receive the documents until the end of the year. Therefore if Customs failed to notice a problem, often by the time ANPWS saw the paperwork it was impossible to locate the plants in order to seize them. This problem may still occur where importers are tardy in forwarding their documentation.

It was not possible to obtain information on all seizures of orchids, including *Paphiopedilum*, under the WPA. The way the information is stored, and the detail of the information (not always to species level) precludes this. From the information that was available it was possible to determine that there have been seizures of at least 21 shipments of orchids, from 12 different companies or individuals. The number and/or the species of orchids involved were not always identified in the records. At least 4485 plants, 11 packages and 15 boxes of orchids were seized, including a minimum of 553 *Paphiopedilum* from seven shipments by six different importers. All four seizures identified in 1989 involved *Paphiopedilum* spp.

Five shipments were subsequently released to the importers, including three which involved *Paphiopedilum* spp. One such release occurred despite the fact that there were discrepancies between the species listed on the invoice and the CITES permit. One importer had six shipments seized between late 1984 and mid-1988, and another had five seized from 1986 to 1988. Both of these individuals are known to import and sell *Paphiopedilum*. Countries of export were not always recorded, but Thailand was the most common source for seized *Paphiopedilum* shipments.

Information from Anon. (1989b) suggests that up to 80% of all 'species' *Paphiopedilum* imported into Australia are of wild origin. This is some six times greater than the declared level of wild-collected imports. Using the assumptions of Anon. (1989b)(i.e., that all specimens of particular species exported from certain countries are wild-collected), may be to overestimate the level of wild

trade. According to Bräutigam (1989), there is some propagation of *Paphiopedilum* species in some countries which Anon. (1989b) has suggested only export wild specimens. Whether these propagated specimens are subsequently exported is not known. On the other hand, the method of analysis used with the Anon. (1989b) information fails to take into account any countries which export some but not all wild-collected plants. Therefore, there is a good possibility that these figures represent an underestimate, rather than an overestimate, of the level of wild-collected imports.

The estimates, derived from Anon. (1989b), of the proportion of wild-caught specimens in trade, give higher figures than those from the comparative tabulation. This is not unexpected. The comparative tabulation may contain instances where wild-collected plants are traded as artificially propagated (the opposite is also true), which would depress the figures. Adjusting the comparative tabulation figures to Australian import data gives lower estimates of wild-collected trade than that obtained from the other CITES Parties. Again, this is not surprising. Australia prohibits commercial importation of wild-taken plants. Therefore it would be expected to import greater numbers of plants either from those countries which trade in artificially propagated plants, or, which declare plants as artificially propagated, regardless of source.

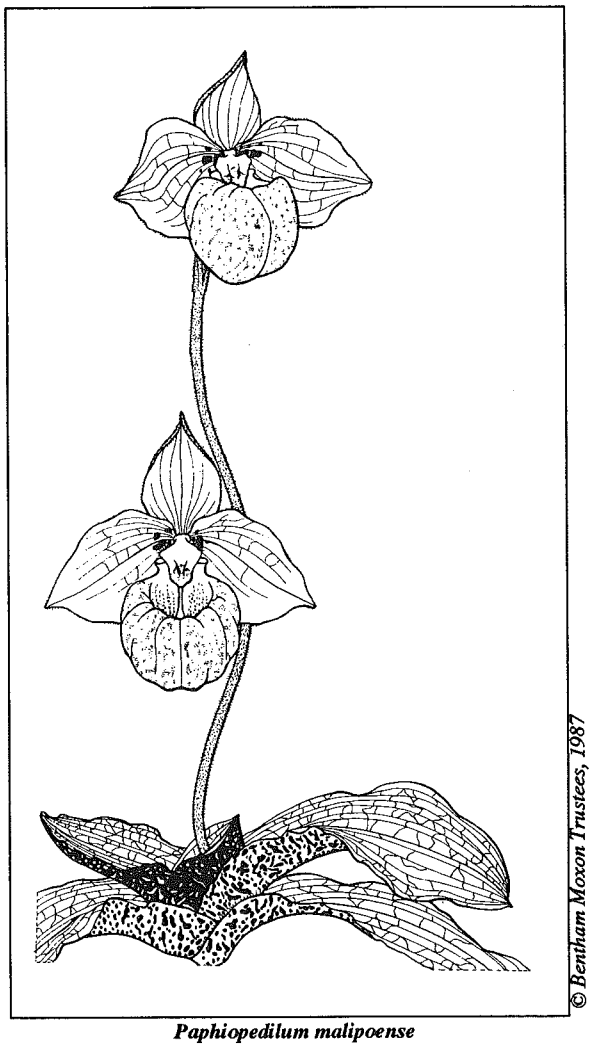
It could be argued that it is invalid to assume that the proportion of wild-collected plants in trade is identical for Australia (which prohibits wild-collected imports) and the rest of the world (which generally allows them). On the other hand, it seems equally as unwarranted to assume that countries export all artificially propagated specimens of a given species to Australia, when they export all wild-collected plants to other countries. Besides this, there is substantial evidence that wild-collected *Paphiopedilum* are traded, falsely declared as artificially propagated (Anon., 1989a;b). Exporters have a greater motivation to do this when exporting to countries which ban the import of wild-collected plants. Therefore it is concluded that the comparative tabulation analysis does provide a valid indication of the possible level of trade of wild-collected plants into Australia.

The information from the comparative tabulation data suggests possible sources of wild-taken plants. Taiwan is notable here for a number of species. Assuming that the information in Anon. (1989b) is correct, it also suggests that many wild-taken plants are traded as artificially propagated throughout the world.

These figures highlight the poor enforcement under the WPA. Plants declared as artificially propagated on export permits are never physically checked to see whether they show signs of being wild-collected. Provided the paperwork is in order the shipment proceeds unhindered. This is true for both Appendix I and Appendix II species.

Species	Average price A$	Price range	No. of companies advertising	Species	Average price A$	Price range	No. of companies advertising
P. acmodontum	20	12-35	3	*P. javanicum*	14	10-18	3
P. adductum	30	25-35	2	*P. liemianum**	50	50	2
P. appletonianum	17	5-30	2	*P. lowii*	36	22-45	3
P. argus	15	14-15	4	*P. malipoense*	41	35-50	4
P. armeniacum	26	17-38	3	*P. mastersianum**	47	45-50	2
P. barbatum	18	15-20	3	*P. micranthum*	23	15-30	3
P. barbigerum	29	15-50	3	*P. niveum*	15	8-25	5
P. bellatulum	17	8-30	5	*P. parishii*	18	10-25	6
*P. bullenianum**	44	25-50	3	*P. parishii var. dianthum*	31	20-52	3
*P. bullenianum var. celebesense**	50	50	2	*P. philippinense*	26	15-55	6
P. callosum	14	10-20	7	*P. philippinense var. roebelenii*	27	15-50	5
P. callosum var. sublaeve	14	8-20	7	*P. primulinum**	36	10-65	5
P. charlesworthii	30	20-40	2	*P. primulinum var. purpurascens*	5	5	1
P. ciliolare	17	15-19	3	*P. p. var. purpurascens (flask)*	17	17	1
P. concolor	13	10-20	8	*P. purpuratum*	26	18-35	4
P. delenatii (flask)	35	35	1	*P. randsii*	30	25-35	1
P. emersonii	42	20-60	2	*P. rothschildianum (flask)*	20	20	1
P. exul	16	12-20	5	*P. spicerianum*	18	18	1
P. fairrieanum	18	18	1	*P. stonei***	75	75	2
P. fairrieanum (flask)	15	15	1	*P. sukhakulii*	12	9-18	8
*P. glanduliferum**	-	-	1	*P. supardii**	-	-	1
*P. glaucophyllum**	14	14	2	*P. superbiens*	41	25-50	3
P. godefroyae	16	10-30	4	*P. tonsum**	30	30	2
P. hainanense	33	20-45	3	*P. tonsum (flask)*	25	25	1
P. haynaldianum	23	15-40	3	*P. urbanianum*	23	15-35	4
P. hennisianum	16	8-30	5	*P. venustum*	20	18-24	2
P. hennisianum var. fowliei	18	12-28	4	*P. victoria-mariae*	52	50-55	2
P. henryanum	41	20-60	3	*P. victoria-regina**	49	40-60	3
P. hirsutissimum	20	12-28	3	*P. villosum*	14	8-20	7
P. hirsutissium var. esquirolei	16	12-20	4	*P. villosum (flask)*	15	15	1
*P. hookerae***	50	50	2	*P. violascens**	-	-	1
P. insigne	14	8-18	3	*P. wardii*	33	18-50	3

Table 6. Species and prices advertised in orchid dealers' catalogues
Prices are for whole plants unless stated. Dashes mean that the species was offered for sale but no price was given.
* - *advertised (without prices) as 'available shortly' by one dealer.*
** - *advertised (without prices) as 'possibly available shortly' by one dealer.*



Paphiopedilum malipoense

Plants are never identified to check if they correspond with those listed on the permit or authority. There would, therefore, appear to be ample scope for species substitution and other fraudulent practices.

The country from which most wild-collected *Paphiopedilum* specimens are imported into Australia appears to be Thailand. According to Luxmoore (1989), several million orchid plants collected from the wild are exported around the world from Thailand each year, with little or no control. The Thai Management Authority issues blank CITES permits to the exporter, who then fills in the relevant details and returns it for validation. Furthermore, export shipments are never physically inspected to see if the shipment corresponds with the permit details. This has serious implications for the Australian *Paphiopedilum* import trade as, since 1984, some 20%-54% of annual imports have originated from Thailand.

Also of concern is the rapidly increasing level of imports from Hong Kong. This country is a known re-export point for wild-collected plants from other countries, particularly China (Anon., 1989b; Cribb, pers. comm.). Up until the end of 1989, Australia was accepting an 'Export of Cultivated Plant Specimens' certificate, issued by the Hong Kong Department of Agriculture & Fisheries, as evidence that the accompanying plants were artificially propagated. This certificate never stated that the plants were artificially propagated. The problem with the term 'cultivated' is that wild-collected plants which have been grown in a pot in a nursery for a time could be considered to be 'cultivated'.

Other countries such as the Philippines, Indonesia and India are all known to have exported wild-collected *Paphiopedilum* declared as artificially propagated (Anon., 1989a). This indicates how widespread this problem is. These three countries, plus Thailand and Hong Kong, account for 81% of all *Paphiopedilum* imports into Australia during 1984 to 1988.

There are six species and one variety of *Paphiopedilum* offered for sale by dealers, which are not recorded in the Australian import statistics for 1984 to 1988: *P. delenatii, P. insigne, P. liemianum, P. primulinum, P. primulinum* var. *purpurascens, P. superbiens* and *P. tonsum*. Very little can be inferred from this as regards possible illegal trade. There are several possible legitimate explanations: (a) the plants were imported before the WPA came into effect in 1984; (b) they were artificially propagated from stock held in Australia; (c) they were imported as flasked seedlings which are not controlled under the WPA; and/or (d) they were declared on importation as *Paphiopedilum* spp.

In comparison to many other countries in the world, the Australian laws governing the importation of CITES-listed plants are very strict. In the light of this, it may be unduly harsh to criticise Australia for poor enforcement of regulations which exceed the basic CITES requirements. This paper has made no attempt to analyse Australia's performance in CITES implementation for plants, compared with that of other countries. The fact remains, though, that Australia has chosen to adopt stricter domestic measures which it is failing to implement properly.

Inadequacies identified in the control of *Paphiopedilum* imports apply equally to the importation of other CITES-listed plants. The enforcement of import controls into Australia for *all* CITES-listed plants is clearly inadequate.

RECOMMENDATIONS

1. Unless there are clearly extenuating circumstances, authority holders who have not submitted a return should either not receive renewal of their authority, or have their authority cancelled (whichever is applicable), until such time as they furnish a complete and satisfactory return to ANPWS.

2. The current practice whereby importers are required to forward importation details, including CITES permits, to ANPWS within one week of receiving shipments, should be enforced. Importers who are consistently and grossly late in forwarding documentation, and/or who fail to supply CITES documents on more than one occasion, should have their authorities cancelled or not renewed, whichever is applicable.

3. Plants should be seized in all cases where: CITES export permits are not supplied; the plants are wild-collected; or there are other discrepancies in the documentation. Subsequent treatment of seized specimens should comply with CITES Resolution Conf. 5.14.

4. Importers guilty of serious and/or persistent breaches of the conditions of their authority/permit and the provisions of the WPA should be prosecuted. Undertaking such a case would indicate to importers that ANPWS is serious about controlling trade in CITES-listed plants.

5. Customs officers should be given more adequate training regarding legislative controls relating to importation of CITES-listed plants.

6. AQIS officers should be appointed as inspectors under the WPA, and receive appropriate training in CITES plant importation matters.

7. It is crucial that a system of physical checking of CITES-listed plants by a trained individual is initiated. Such checks should be targeted towards particular importers, exporters, source countries or genera, and also conducted at random. ANPWS should liaise with both AQIS and ACS to discuss the implementation and operation of such a system. Restricting the ports of entry for commercial shipments of CITES-listed plants would facilitate the operation of physical checking procedures.

8. Importations where plants, declared as artificially propagated, are listed by genus or higher taxon only (e.g. *Paphiopedilum* spp. or Orchidaceae spp.) should not be accepted. It is unlikely that the identity of the plants would not be known if indeed they are artificially propagated.

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DIY Firm Promotes WWF Target

B&Q, Europe's largest Do-It-Yourself (DIY) retailer, is phasing out the use of all non-sustainably-produced wood by the end of 1995. This decision, formally agreed by the B&Q Board in early September 1991, means that it is the first major retailer to support WWF-UK's campaign to make all commercial timber production sustainable by 1995. B&Q has already told its wood product suppliers to drop all "environmental labelling", believing that most of these claims cannot be proven and are confusing the consumer.

WWF-UK is encouraging other companies to take similar steps to tighten their wood product purchasing policies to promote the trade of timber from known well-managed forests.

Conservation News Update, WWF-UK, 29 October 1991

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Logging in Morobe Province, Papua New Guinea

Mahogany Quota

The Brazilian environment agency, IBAMA, has set a quota for the period July to December 1991 of 75 000 m^3 *Swietenia* mahogany and 40 000 m^3 *Virola*. Producers must be registered and have an approved reafforestation plan, which is checked by IBAMA to ensure implementation. Last year the UK imported about 62 000 m^3 of Brazilian mahogany. The proposed quota is roughly equivalent to the total annual Brazilian mahogany exports in the late 1980s. IBAMA controls the quota by issuing a certificate to each registered logging company for every sale to a sawmill.

Costa Rica and the USA have submitted proposals to include populations of *Swietenia* taxa *(Swietenia humilis, S. macrophylla* and *S. mahogoni)* in CITES Appendix II, to be considered at the eighth meeting of the Conference of the Parties to CITES.

Tropical Timbers, Vol. 6(9), September 1991

New Forestry Act in Papua New Guinea

On 17 July 1991, Papua New Guinea passed a new Forestry Bill which gives landowners the right to determine the terms and conditions in relation to the development of their resources. The new legislation comes in the wake of the Barnett Commission of Inquiry into forestry matters in Papua New Guinea, which revealed a number of malpractices, including transfer pricing, environmental damage and corruption arising from poor practices by industry and inadequate monitoring by Government.

In addition to containing a number of reforms that will extend powers to the traditional landowners, it provides for the establishment of a National Forest Authority which will be charged with the responsibility for the overall supervision and management of forestry matters in Papua New Guinea. It will be administered by a Board of representatives from national and provincial government, forest industry, an NGO and a ministerial nominee from the financial/commercial sector, preferably with forestry-related experience. A Provincial Forest Management Committee will be established in each province. Members of the Committee are representative of: the provincial government; National Forest Service; parliamentarians in the province; local and community groups; land-owning groups; and NGOs. The current methods of acquiring timber rights from landowners will be replaced by a Forest Management Agreement which will have strict provisions for ensuring majority landowner willingness and consent and gives the right to harvest, plant, grow and manage timber. Penalties for offences under the Forestry Act 1991 will start at K1000 (US$1700) fine, or one year's imprisonment, rising to a K100 000 fine, five years' imprisonment, or both.

Last minute amendments to the Act have caused controversy as they appear to undermine the powers and functions of the Board, moving these back to the Minister of Forests.

TRAFFIC Oceania; Asian Timber, August 1991

Timber Fells PNG Ministers

Papua New Guinea's Governor-General, Sir Serei Eri, has resigned following the controversy surrounding his refusal to sack the disgraced Deputy Prime Minister, Ted Diro, who has subsequently also resigned.

A special Leadership Tribunal convicted Diro of 81 charges of official misconduct. These charges primarily arose from information uncovered during the Barnett Commission of Inquiry into Aspects of the Timber Industry in 1987. They included findings that Mr Diro had issued logging permits to a timber company in which he held shares, and solicited money from applicants for logging permits; he has also been found to have represented traditional landholders in negotiations with a company while secretly holding shares in the company, and receiving benefits from the company for having forced an unfair agreement on those same landholders. The former Deputy Prime Minister has also been accused of accepting a gift of about US$139 000 to help fund his 1987 election campaign and further gifts from companies involved in the timber industry.

The Australian (Australia), 1 October 1991; Asiaweek, 11 October 1991

Guyana Sells its Forests

Guyana's national forestry company, which owns 40 500 million (m) ha of rainforest and a huge sawmill, has been bought for US$16.5 m by Beaverbrook Foundation, set up by the UK Government's treasurer, Lord Beaverbrook, to form part of the Beaverbrook-controlled United Dutch Group (UDG).

In 1988, economically beleaguered Guyana launched an IMF-sponsored Economic Recovery Programme. This involves a 50% devaluation of the currency, a drive to increase exports (dominated by minerals, timber and cash crops) and a privatisation programme of ten large state-owned companies.

According to a *Guardian* newspaper report, a group of Dutch scientists, Tropenbos, funded by the UDG, is working in the forest to ensure sustainable logging. Its definition of sustainable logging is to ensure the survival of the forest purely for future timber production. A 1990 Tropenbos study proposes "refinement and liberation treatments" - which at its extreme can mean poisoning all trees other than the long-lived and valuable Greenheart *Ocotea rodiaei.*

Other deals signed in Guyana include one with Barama, a joint company formed by Korea's Sunkyong and Malaysia's Samling Timbers, which has bought the rights to over 1.5 m ha of forest on the Venezuelan border for a saw-milling, plywood and logging operation.

The Guardian (UK), 1 November 1991

Philippines to Preserve Remaining Forests

Under Administrative Order No. 24, the Philippine Government, intent on preserving its remaining forest, will ban logging in virgin forests and residual forests situated at or over 1000 metres above sea level and slopes greater or equal to 50 degrees, with effect from 1992.

In a related development, at least 65% of the functions of the Department of Environment and Natural Resources (DENR) will be absorbed by local government. These include: reforestation, collection of forest charges, ▷ monitoring of forest activities, and policy implementation. The decentralisation of the DENR's functions will take effect in 1992.

The Senate has also recently approved a legislative proposal to totally ban commercial logging for at least 30 years, commencing 1992. This has not yet passed in to law.

Asia Pacific Forest Industries/Asian Timber, October 1991

Indonesian Reafforestation Projects

Indonesia has the world's second largest rainforests after Brazil, but is destroying its forests at an estimated one million ha a year, largely through slash and burn farming and logging.

Reafforestation projects to turn unproductive land into forest are being encouraged by the Government. A reafforestation fund, partly financed by commercial loggers, has already allowed 20 000 ha to be planted with acacia, eucalyptus and pine, to be turned eventually into pulp. There are fears, however, that insufficient care will be taken to ensure that firms do not cut down existing natural forest areas under the scheme. One project, partly financed by the fund, is jointly run by Barito Group, recently fined US$6 million for unlawfully cutting down trees (see over).

Straits Times (Singapore), 29 May 1991

Alerce Loophole

A loophole in Chilean law makes it possible to remove fallen or dead trees of the protected indigenous Alerce *Fitz-Roya cupressoides*, listed in CITES Appendix I.

It is not always possible to identify whether timber brought from the isolated forest in the south of Chile is from illegally-felled trees or not.

Süddeutsche Zeitung (Germany), 17 October 1991

Logging Suspended in Owl Habitat

A special committee with the power to grant an exemption to the US *Endangered Species Act* will decide whether to permit logging on Bureau of Land Management (BLM) forests in southwest Oregon, despite federal efforts to protect the Northern Spotted Owl *Strix occidentalis caurina* which inhabits the forests; in 1990, the species was listed in the *Endangered Species Act* as threatened.

In June 1991, the Fish and Wildlife Service ruled that logging in the forest tracts would jeopardise the Northern Spotted Owl. This decision halted 44 timber sales on BLM lands. The seven-member Endangered Species committee will reach a decision on whether to permit logging in these forests, in March 1992.

TRAFFIC USA

Timber Firm Refuses to Pay Fine

One of Indonesia's biggest timber firms has refused to pay a fine of nearly US$6 million passed by the Forestry Ministry, claiming the criteria used to calculate the fine were not acceptable. The firm had been fined for cutting down trees in a protected jungle in Kalimantan, Borneo, and in a neighbouring timber concession.

PT Barito Pacific Lumber allegedly took 91 000 m³ of wood from the two areas between 1985 and 1988.

The fine was based on calculations on the volume of cut logs and their tariffs. Officials from the Ministry and Barito are meeting to determine appropriate criteria for calculating the fine.

Straits Times (Singapore), 17 July 1991; Asian Timber, October 1991

Malaysia Announces Cut in Timber Exports

Malaysia's log exports from Sarawak will be cut from 14 million m³ to 5 million m³ by 1995. Log exports from Sabah will be cut to 2 million m³ by 1995.

The Malaysian move is being undertaken to promote higher value-added timber processing industries and also to preserve the rainforests. Analysts, however, say these two objectives will be difficult to reach. The two states - Sabah and Sarawak - are not prepared to see a sharp cut in log export revenues and fear that foreign investment in processing industries and aid from the federal government will be insufficient.

At the eleventh session of ITTO, held in Yokohama from 28 November to 4 December 1991, Malaysia announced a planned decrease in logging from the permanent Forests Estate in Sarawak of 1.5 million m³ in each of 1992 and 1993.

Asian Timber, August 1991; TRAFFIC Oceania

Japan Switches to Conifer

Japan, currently the world's largest importer of tropical timber, with 92% of its tropical timber derived mostly from Sabah and Sarawak in 1990, is rapidly reducing its consumption of equatorial trees in favour of fast-growing coniferous trees. Although Malaysia's intention to restrict its tropical log exports (see also *TRAFFIC Bulletin*, 12(1/2):28 and above), is a key reason, environmental concern among users, coupled with rising prices of tropical logs, is prompting producers and users to utilise different kinds of timber, in particular coniferous trees.

Japan's largest plywood producer, Salhoku Corporation, which accounts for some 25% of total plywood output in Japan, plans to more than quadruple production of conifer plywood by March 1992. Officials say the shift is not easy because coniferous trees are narrower than tropical trees and require special, expensive, machinery to process the logs. However, Japan's leading importers of tropical logs have responded quickly to changing conditions. Nisaho Iwai Corporation and Juken Sangyo Company, a major construction material company, recently started building a conifer plywood plant in New Zealand which the firms hope will replace Malaysia as a major supplier of logs. The plant is due to start production in spring 1992. According to a spokesman from Mitsubishi's lumber department, New Zealand and Chile, which both have large coniferous forests, are likely to become major suppliers of coniferous timber. Some trading companies are also increasing production of substitute materials for tropical timber. Marubeni, for example, in collaboration with a Malaysian company, Hume Industries Malaysia Bhd., will start producing boards made from abandoned rubber trees by the end of this year at a site near Kuala Lumpur.

The Nikkei Weekly (Japan), 13 July 1991

Assistance in investigations was provided to authorities by TRAFFIC staff in most of the cases reported below which occurred in regions covered by a TRAFFIC office.

EUROPE

BELGIUM

On 5 June 1991, 150 kg of ivory was confiscated by Customs officers at Zaventum airport, Brussels, whilst in transit from Gabon to South Korea. The ivory was fresh and had been cut into 36 pieces of between 20 cm and 60 cm in length and was contained in the personal luggage of a South Korean woman; also included in the shipment were three ivory statues weighing a total of 1 kg. On two occasions in 1989 ivory which has travelled the same route in the hand luggage of Korean citizens has been seized at Zaventum.

On 5 November 1991, a further 660 kg of raw ivory was seized. The shipment had travelled, unaccompanied, from Bujumbura, Burundi, and was destined for Abidjan in Cote d'Ivoire. The tusks had been cut into pieces and were contained in six iron crates labelled as personal effects. Samples of the ivory indicated that it was of good quality and not fresh. The contraband was discovered by accident when one of the crates fell open during handling. Investigations are continuing.

TRAFFIC Europe

FRANCE

French Customs officers have seized 400 *Paphiopedilum* orchids (CITES App. I) from one of the most prestigious and established French specialist orchid nurseries.

The seizure follows a visit to the nursery by TRAFFIC Europe whilst in the course of carrying out a survey on the commercial availability in Europe of wild-collected CITES-listed species. The survey team's attention was immediately drawn by the distinctive appearance of the plants, which had evidently been recently potted and had scarred and torn foliage, indicating a wild origin.

According to the nursery owner, who was unable to provide Customs officers with the necessary import permits when questioned, the plants had been obtained from a Philippine dealer who had imported approximately 2000 *Paphiopedilum* plants for a national show held in France in 1989.

The confiscated specimens were identified as *Paphiopedilum adductum, P. argus, P. haynaldianum* and *P. philippinense*, and were sent to a French botanical garden.

TRAFFIC Europe

Fifty tiger penises, destined to be sold in sex shops as aphrodisiacs, were seized from the suitcase of a Chinese man at the border with Luxembourg on 5 June 1991. A Customs spokesman said the penises, along with packets of powdered deer horn and various other supposed aphrodisiac substances, were confiscated, and the man questioned and later released.

In order to release the alleged stimulating properties, the spokesman stated that the penises are grated over food.

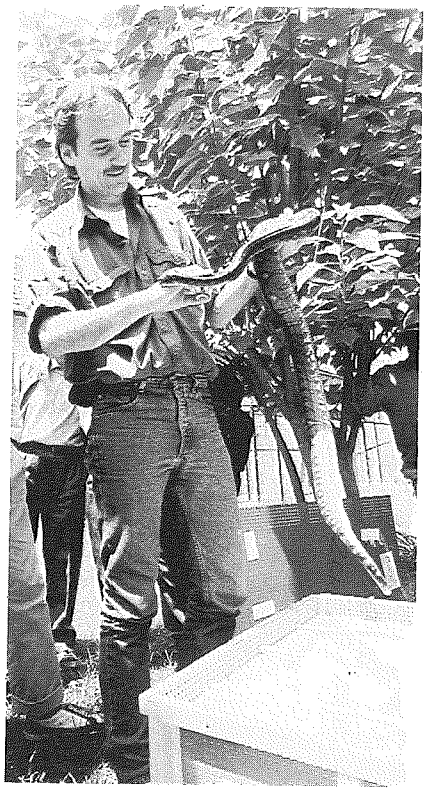
Straits Times (Singapore), 7 June 1991

GERMANY

On 21 January 1991, Customs officers at Munich airport seized ten Madagascar boas *Acrantophis madagascariensis* and *Sanzinia madagascariensis* from the hand luggage of a tourist returning from Madagascar. Further enquiries led to the uncovering of a smuggling ring comprising six couriers and two organisers and the confiscation of more reptiles from private addresses. These included 18 Madagascar boas of the above species and *Acrantophis dumerili*, and 18 tortoises (*Geochelone radiata* and *Pyxis arachnoides*). On a recent smuggling trip, one of the organisers was discovered by Customs officers at Zurich airport, with a 2.9 kg Madagascar boa wrapped round his body as he attempted to board a train to Munich.

On 23 March, WWF-Germany arranged for the repatriation of the Malagasy reptiles, which were flown free of charge courtesy of Air Madagascar; the airline also provided free travel to Dr Michael Waitzmann, formerly of TRAFFIC, to supervise the transport of the reptiles from Munich to Antananarivo. The release of the animals was overseen by WWF experts.

TRAFFIC Europe-Germany



Dr Waitzmann, with one of the boas repatriated to Madagascar

© WWF Germany

ITALY

An advertisement offering two rhinoceros horns for sale in Florence, Italy, led a staff member at TRAFFIC Europe-Italy to an appointment with the seller and the ultimate seizure of the horns by the Italian State Forestry Corps. The horns were being offered for sale at 7.5 million lire (US$6300). Following this case, the Minister of Agriculture and Forestry issued a Ministerial decree prohibiting internal trade in rhinoceros products in Italy.

Following a five-month investigation by TRAFFIC Europe-Italy and the Italian State Forestry Corps, a large quantity of animals was seized from a villa, south of Rome, in March 1991. These included ten Common Marmosets *Callitrix jacchus* (CITES App. II) and more than 70 birds, including 10 Red-spectacled Amazons *Amazona pretrei*, 2 Vinaceous Amazons *Amazona vinacea*, 2 Palm Cockatoos *Probosciger aterrimus*, 2 Scarlet Macaws *Ara macao*, 2 Red-fronted Macaws *Ara rubrogenys* and 2 Bali Mynahs *Leucopsaar rothschildi*, all CITES App. I-listed species.

Approximately 100 kg of worked ivory items and several small whole tusks were seized by the Finance Guard on 23 September in a hotel at Lido di Ostia, Rome. The seizure was made after a long investigation which led to the arrest of a number of drug dealers and the confiscation of 3 kg of cocaine. The case continues.

Chimpanzee seizures (see page 33).
TRAFFIC Europe-Italy

NETHERLANDS

On 18 March 1991, a shipment of tortoises arriving from Tanzania with KLM airlines, was seized at Schiphol airport. Over 300 Leopard Tortoises *Geochelone pardalis* were stacked in five boxes, six to seven layers deep; another box contained 511 Pancake Tortoises *Malacochercus tornieri* which were arranged in ten layers; all the animals were dehydrated, undernourished and infected with a wide variety of parasites; a permit issued by the Government Veterinary Clinic of Dar es Salaam, dated 14 March, stated that the animals had been found to be free from any signs of communicable diseases. There is some uncertainty about the CITES permits which, according to the Tanzanian authorities, were issued for birds. The documents named M/S Unity Investments Ltd in Dar es Salaam as the exporter and LA Reptile in the USA as the importer. All the surviving reptiles will be repatriated to Tanzania.

A number of cases involving the smuggling of Cuban Amazons *Amazona leucocephala* (CITES App. I) have recently come to light. In July 1991, three specimens were confiscated from a Soviet ship which had arrived in Amsterdam from Cuba, bound for Hamburg, Germany. A number of empty, soiled cages were also found, suggesting that there may have been more specimens which had not survived. ▷

▷ A further six specimens were confiscated from the premises of a private individual who did not have a possession certificate, as required by Dutch law.

In September 1991, four postal parcels containing a total of 500 wild orchids from Suriname were seized on separate occasions by a postal Customs service in Amsterdam. All the boxes had originated from five exporters and were destined for one importer. Although the importer had import permits, export permits were missing.

On 25 September 1991, a shipment containing 150 hummingbirds (CITES App. II) were seized at Schiphol airport. The CITES permit had been issued for 75 birds but was otherwise valid. The birds, from Peru, can fetch over US$100 each in the Netherlands.

In October 1991, 4400 skins of Yellow Anaconda *Eunectus notaeus*, were seized at Schiphol airport. The accompanying permit had been issued for the more expensive Anaconda *Eunectus murinus* and could have been an attempt to swindle the Milan-based importer. The export permit had also been forged to include a final zero to the figure of 672 skins. The skins had come from Venezuela and were flown in via Aruba, in the Lesser Antilles.

The Yellow Anaconda does not inhabit Venezuela but can be found in large numbers in Paraguay, a country that prohibits the export of wildlife.

TRAFFIC Europe-Netherlands; General Inspection Agency, Schiphol airport.

UK

Over 17 tonnes of dead coral were seized at Tilbury docks, London, in July 1991, the largest seizure of coral in the UK to date. Customs officers discovered two tonnes after a random search of a Soviet freighter which had arrived from the Philippines. The consignment had been labelled "driftwood, cuttlefish and rocks". Another 15 tonnes were seized at premises in Boston, Lincolnshire. A man was interviewed and released, pending further investigations.

All hard corals, or reef-building corals, are listed in CITES Appendix II. Since 1977, the collection and export of coral from the Philippines has been banned, except during a period of seven months in 1986 to "clear stocks". Unscrupulous dealers are evading regulations, either with false documentation, or no documents at all. Reefs in the Philippines have been particularly badly damaged as a result of siltation, pollution, over-fishing and dynamite fishing; coral collection is an added problem.

Portcullis, August 1991; Marine Conservation Society

On 16 August 1991, David Deans, a bird dealer from Bilsthorpe, Nottinghamshire, was fined £250 (US$450) with £250 costs, at Isleworth Crown Court, London, for smuggling 11 Blue-cheeked Amazons *Amazona dufresniana* into Britain. He was also found guilty of forging a bird health certificate, but acquitted of two further charges of forgery and of producing a false certificate.

Deans was stopped by Customs officers at Heathrow airport on 1 February 1990, after arriving from Guyana with the birds. He had applied to the Department of Environment in 1989 for an import permit in respect of ten Blue-cheeked Amazons, but the application was refused on the grounds that Guyana has a zero export quota for this species.

Five of the birds died within days of being imported; the remainder, all male, are being cared for by the World Parrot Trust. The trial lasted five days and the case cost £20 000 to bring to court.

Portcullis, September 1991; The Guardian (UK), 17 August 1991

On 21 September 1991, Johan Goessens, from Belgium, was apprehended at Ramsgate port, with one dead and eight live Rosellas *Platycercus* spp. which had been stowed in his car. Four were found behind the dashboard and centre console; five were hidden in the lining and inside pocket of Goessen's jacket. All birds had been wrapped in black stockings and had been sedated; a syringe and vial of Valium were found on the accused.

Goessens was charged with violating *Transit of Animals Order, Importation of Birds, Poultry and Hatching Eggs Order 1979*, and Section 170(2) of *Customs and Excise Management Act*. He was fined a total of £1275 (US$2300) including costs.

On 29 September 1991, at Solihull Magistrates Court, Paul Harkins, of Redfern, Australia, was fined £1200 (US$2150) for smuggling 18 Galah *Cacatua roseicapillus* eggs from Australia through Birmingham airport the previous day. Harkins claimed he had acted as a courier, after being recruited anonymously by phone in Sydney and given the ticket to Britain, via Amsterdam. During a body search the eggs were found concealed in separate compartments in a thermal vest. Only six of the birds survived and are housed at Twycross Zoo, Leicestershire, which hopes to breed from them eventually.

Galahs can fetch up to £2500-£3250 in the UK.

The Daily Telegraph Mirror (Australia), 11 October 1991

AFRICA

SOUTH AFRICA

Two Taiwanese businessmen who attempted to buy 55 rhino horns have been gaoled for nine months. Lee Wei-pao and his brother Kang, both of Johannesburg, were arrested on 13 June 1991 whilst on their way to collect the horn. The pair had been negotiating the sale for two months and had agreed to pay R244 000 (US$82 700) for the horns, which weighed 204 kg. The crime was committed prior to the introduction of new legislation which carries a maximum prison sentence of ten years for such an offence.

Cape Times (South Africa), 30 August 1991

South African police seized ivory worth US$800 000 on 23 August 1991 and arrested a Taiwanese man in what was one of the biggest swoops on ivory smugglers in the country. The ivory, which had been cut into 3000 blocks, weighed 158 kg and was seized at a jewellery store run by the Taiwanese man in Johannesburg. The tusks, from about 130 elephants, most of which had been killed in Zaire, had been smuggled to South Africa via Zambia and Swaziland. It is believed that a syndicate responsible for bringing in another 57 kg of ivory seized by police on 21 August, was behind the latest seizure. The police unit, which includes undercover officers posing as smugglers, stepped up investigations after a tusk-cutting operation was discovered in Zambia last year. In August, Johannesburg magistrates fined two members of the cutting operation R60 000 (US$25 000) each, or imprisonment for six years for smuggling.

Since September 1991, police in southern Africa have arrested about 80 people, including several Taiwanese, in a series of operations against ivory and rhino horn smugglers.

Despite strict control measures, the rock lobster industry in South Africa is still to a large extent undermined by black market activities. In the past financial year, about 462 prosecutions were instituted for contraventions of regulations to control rock lobster populations. These resulted in fines totalling R177 182 (US$60 000) and represent about 27% of all prosecutions instituted under the *Sea Fisheries Act*.

The total wholesale value earned by the South African rock lobster industry is about R 101 303 000 or about 11% of the total earnings of the South African fishing industry.

Southern Africa Nature Foundation

SWAZILAND

The Head of the League of Churches, Reverend J. Zitha, has been arrested on a charge of being in possession of a rhino horn.

Police told the Manzini magistrates court that their investigations had established that the Reverend, his daughter and a traditional healer, had masterminded the killing of rhinos at wildlife reserves and the smuggling of rhino horns. The accused were found in possession of the horn in the Khuphuka area in the Lubombo region, on 11 September 1991. They have been refused bail.

The Times of Swaziland, 18 September 1991

OCEANIA

AUSTRALIA
FEDERAL

On 16 May 1991, at Perth Magistrates Court, Casey Stephen Lazik, an American citizen, was convicted on charges of illegal possession and attempted export of Australian snakes. Lazik had been arrested on 24 March 1991 after investigations into the mailing of a parcel to the USA from Port Hedland post office, Western Australia. The parcel had been found to contain a Woma *Aspidites ramsayi*, a Black-headed Python *Aspidites melanocephalus* and a Pygmy Children's Python *Liasis childreni perthensis*. ▷

Wildlife officer with illegally harvested sandalwood, near Mundrabilla, Western Australia
Photo courtesy of Western Australian Government Department of Conservation and Land Management
Photographer Colin Verwey

▷ Lazik was fined A$6000 (US$4800) for attempted export of the three animals (Section 21a of the *Wildlife Protection (Regulation of Exports & Imports) Act*, through Section 7 of the *Crimes Act*), and a total of A$4000 on three counts of possession under the *Wildlife Conservation Act* (Western Australian State legislation).

On 11 June 1991, at Perth District Court, an Austrian citizen Walter Spreitzer, was convicted on charges under the *Wildlife Protection (Regulation of Exports & Imports) Act 1982*, and the *Quarantine Act 1908* relating to attempted illegal importation of live birds. Spreitzer had been arrested at Perth airport on 8 February 1991. He had arrived on a Qantas flight from Singapore and was attempting to smuggle three Rose-ringed Parakeets *Psittacula krameri* mutations into Australia. The court sentenced him to 12 months' imprisonment on the wildlife charge, and six months' on the quarantine charge, to be served concurrently. The court ordered that Spreitzer, who had been in custody since his arrest, should serve another six months before being considered for release.

On 28 August 1991, at Sydney District Court, Peter Bazos, Director of Elite Wood Products (Australia) Pty Ltd., was sentenced to four and a half years' imprisonment, and his company was fined A$134 500 (US$104 000) and ordered to repay A$429 989. Bazos and his company had been found guilty on 178 charges under the *Customs Act 1901* involving forgery, fraud and false pretences. The court was told that, between November 1983 and March 1987, Elite Wood Products had imported timber from Malaysia and, on Bazos' instructions, understated to Customs the value of the goods. Approximately A$288 000 in Customs duty had been evaded, which the judge estimated to be worth A$429 989. Bazos claimed in court that he had been forced to pay bribes to Malaysian timber merchants to guarantee a steady supply of cheap plywood.

On 9 December 1991, at Wollongong District Court, Jean-Pierre Blanc of Switzerland was convicted on charges under Section 21b of the *Wildlife Protection (Regulation of Exports & Imports) Act 1982*, of attempted illegal export of 40 Shingleback Lizards *Trachydosaurus rugosus*, and under Section 98 of the New South Wales *National Parks & Wildlife Act 1974*, of taking protected fauna.

Blanc had been arrested at Sydney airport on 24 September 1991 as he attempted to leave the country with the lizards.

He was sentenced to 86 days imprisonment (the amount of time that he had already spent in custody since his arrest), and was released immediately.

On 11 December 1991, at Melbourne County Court, David Freda of New Paltz, USA, and Rebecca Robison of Montana, USA, were convicted on charges relating to the attempted smuggling of Australian native birds' eggs. Freda and Robison had been apprehended at Melbourne airport in September 1991. Freda pleaded guilty to charges under the *Wildlife Protection (Regulation of Exports & Imports) Act 1982* of attempting to export 24 eggs, export of 20 eggs (on a previous trip to Australia in 1990), and being knowingly concerned with the attempted export of 47 eggs by another person. He was fined A$5000 (US$3850), and required to enter into a A$5000 bond to be of good behaviour for three years. Freda was given a year to pay the fine, and is expected to return home to the USA immediately. The Crown is expected to lodge an appeal against the leniency of the sentence.

Robison pleaded guilty to two counts of being knowingly concerned with the attempted export of birds' eggs. She was fined A$6000, to be paid by 20 December 1991, or six months in default.

The species involved were mainly Galahs *Eolophus roseicapillus* and Major Mitchell's Cockatoos *Cacatua leadbeateri*. The eggs had been taken from nests in Wyperfeld National Park in Victoria.

STATE

Northern Territory

An Australian court has gaoled an Indonesian fisherman for nine months and placed six others on good behaviour bonds for poaching prized trochus *Trochus* shells in territorial waters off Australia's northwest coast. The fishermen all pleaded guilty in a local court on 22 October 1991 in the northwest coastal port of Broome. The men were part of a 16-person crew detained by a navy patrol boat at the beginning of October, with 50 kg of trochus on board their boat. Six were placed on good behaviour bonds of A$5000 (US$3850) for five years on fishing and quarantine charges. Two 16-year-olds from the same boat will appear before a juveniles' court, while the other seven, all children between ten and 11 years old, will be repatriated to Indonesia. Five Indonesian boats were detained in October for illegal shark fishing off the northwest coast of Darwin (see also *TRAFFIC Bulletin* 12(1):27).

Fisheries officials fear the spate of detentions mark the start of a mass incursion by Indonesian fishermen of Australia's shark-fishing grounds as a result of the good seasonal conditions and strong international demand for shark fin and trochus.

Trochus, a mollusc whose shell is used for making buttons and fashion jewellery, can fetch from three to six US dollars a kilogram.

Western Australia

Errol Cason and David Cahill, of Queensland, were convicted in Eucla Justices Court, on 21 and 24 May 1991 respectively, on charges under Western Australia's *Wildlife Conservation Act* of taking protected flora on Crown land without a licence. Each was fined A$12 000 (US$9250), plus A$30 costs. Both men had been involved in illegally taking sandalwood *Santalum spicatum* trees in Western Australia, storing them in South Australia, before sending them to Queensland for export.

Cahill was convicted again on 20 August 1991 under South Australian law for illegal possession of native plants, and was fined A$4500.

NEW ZEALAND

Eight parrot chicks and 42 eggs smuggled into Auckland, have been sent, courtesy of Air New Zealand, to Jurong Bird Park in Singapore.

The eggs were found inside tennis balls which had been strapped to the bodies of two couriers arriving from Los Angeles, USA.

Two Customs officers transported the eggs to Singapore employing the same method as the smugglers to ensure that the birds remained at a constant temperature throughout the flight. Because quarantine rules forbade the opening of the incubator in New Zealand, the officers used the galley of the aeroplane to transfer the cargo once the flight had left New Zealand airspace.

On 2 October 1991, at Auckland District Court, Philip and Marlene Morrison, of Albany, were convicted on charges, under Section 449(b) of the *Trade in Endangered Species Act 1989*, of attempting to trade illegally in specimens of a 'threatened species'. The Morrisons had been apprehended at Auckland airport on 7 April 1991 on their return from Los Angeles. Mrs Morrison was found to have ten eggs strapped underneath her breasts. She broke the eggs as soon as she was discovered. The eggs were sufficiently near ▷

▷ to hatching to enable identification as one Blue and Yellow Macaw *Ara ararauna*, one Senegal Parrot *Poicephalus senegalus* and eight Peach-fronted Conures *Aratinga aurea*. The Morrisons were each fined NZ$2500 (US$1400).

A total of 14 dried fur seal Otariidae penises were seized from the luggage of a Korean fisherman at Christchurch airport on 3 November 1991; deer velvet and deer blood were also found.

Fur seals are sometimes accidentally caught in fishing nets and such occurrences must be reported to the authorities. Four seals were reported as having been landed on Korean vessels in the west coast hoki fishery this season. Of these, three were male, all of which were reported by Ministry of Agriculture and Fisheries observers as having had their penises removed.

Customs did not detain anyone in connection with the seizure. The Department of Conservation, concerned at the implications for New Zealand's protected fur seal population, has stated that it will write to the nation's Fishing Industry Association to ensure that foreign fishing crews are fully aware that removal and export of any part of protected marine mammals is an offence.

Dried fur seal penises are utilised for their alleged aphrodisiac properties.

Oceania section compiled by TRAFFIC Oceania

ASIA

INDIA

A sandalwood smuggler has allegedly shot and beheaded a senior forestry official who had been on his trail for over a year.

Mr P. Srinivas, Deputy Conservator of Forests in Kollegal, in Mysore, was killed in an ambush after being lured into a village in the belief that the smuggler wished to surrender

The Times of India (India), 11 November 1991

MALAYSIA

Seven Orang Utans *Pongo pygmaeus* were smuggled out of Sarawak in July 1991 in what is the first known case of Orang Utan poaching in this region in 15 years. According to the *Borneo Bulletin* (18 July 1991), the Forestry Department and the Anti-Corruption Bureau will conduct a full-scale investigation into allegations of a conspiracy involving Government employees. The animals were reportedly sold in various countries for a total of US$510 000.

Asian Primates Vol. 1 No. 2, IUCN/SSC Primate Specialist Group, September 1991

MYANMAR

Over 50 people, many of them Government employees, have been arrested in connection with an illegal trade in birds' nests. Twenty-eight of those arrested have been accused of possessing arms obtained from an insurgent group and of paying the group to protect the multi-million dollar concession to farm the nests.

The nests of swiftlet species *Collocalia* spp. consist largely of the birds' saliva and are considered a delicacy in Chinese cuisine.

Straits Times (Singapore), 18 July 1991

THAILAND

On 2 July 1991, police officers, led by the Government's Crime Suppression Division, raided a farm in Samut Prakan Province, south of Bangkok. They found four freshly slain bears, and a number of tourists, mostly Koreans, dining on bear meat. Also discovered were several living bears (including seven hidden at a nearby village), 48 bear paws in a refrigerator and records of sales of bear gall bladders and bear paws. Seven people, including the Korean manager and a couple of workers from Taiwan, were arrested.

During the investigation, it emerged that the farm was a restaurant and medicine outlet and, since opening in May 1991, 16 tour companies had been bringing in tourists from South Korea, Taiwan and Hong Kong to consume protected species and buy medicine made from their parts. Most of the farm's bears were smuggled by trawler via the Gulf of Thailand from Cambodia, though some may also have come from Myanmar. The animals were reportedly prodded with a metal pole to stimulate the adrenalin and other, allegedly medicinal, juices, after which they were killed by drowning, strangulation or stabbed with a spear. A bowl of bear paw soup or stew was being offered for sale for US$32 to US$40. The farm's owner, the brother of Thailand's former Deputy Commerce Minister, claimed the farm was a zoo set up for tourists and to help save endangered animals from extinction.

The Government took great effort to publicise the bust, and authorities have stated that they are considering not only stiffer penalties for such offences but a ban on possession, import and export of protected species.

TRAFFIC Japan

AMERICAS

ARGENTINA

On 16 August 1991, following an anonymous tip-off, police officers, together with officials of the Dirección Nacional de Fauna Silvestre, the Argentine Wildlife Foundation and TRAFFIC South America, carried out a raid on the premises of Eduardo Trama, a known dealer in illegal wildlife. The following animals which are native to Argentina and neighbouring countries were seized: 8 Chilean Flamingos *Phoenicopterus chilensis*, 6 Toco Toucans *Ramphastos toco*, 22 Yellow-collared Macaws *Ara auricollis*, 10 Troupials *Icterus icterus*, 55 Black-backed Grosbeaks *Pheucticus aureoventris*, 6 Bare-throated Bellbirds *Procnias nudicollis*, 10 woodpeckers, 250 Red-crested Cardinals *Paroaria coronata*, 130 Hooded Siskins *Carduelis magellanica*, 40 Argentine Tortoises *Geochelone chilensis*, 1 *Lystrophis semicinctus*, 1 *Clelia rustica*, 3 snakes of *Philodryas* spp, 1 Geoffroy's Cat *Felis geoffroyi*, 1 *Cebus apella vellerosus* and 1 Argentine Grey Fox *Dusicyon griseus*. Non-Latin American species seized included: 1 Ball Python *Python regius*; 8 lizards *Anolis* spp., 4 geckos, 1 *Basiliscus plumifrons*, 1 garter snake *Thamnophis sirtalis*, 1 Corn Snake *Elaphe guttata*, 6 Common Marmosets *Callitrix jacchus* and several unidentified birds, 3 Goldfinches *Carduelis carduelis*, 3 pheasants Phasianidae and 2 Black Swans *Cygnus atratus*. The snakes had originated from Miami, USA. All specimens were in a poor condition and are being cared for at the Zoological Gardens of Buenos Aires until a more permanent home for them can be found.

Trama spent three days in prison but was released, pending a prosecution for smuggling offences.

TRAFFIC South America-Argentina

USA

In April 1991, a shipment containing 173 bear gall bladders was seized at Anchorage International airport. The gall bladders, addressed to two Koreans living in Alaska, were believed to be bound for Asia.

Two US citizens have been convicted of selling and facilitating the transportation and sale of 21 juvenile Yellow-naped Amazons *Amazona ochrocephala auropalliata* (CITES App. II), imported illegally into the USA. Oscar Gonzalez was sentenced in Texas on 8 July 1991 to 18 months' imprisonment, three years' supervised release, and fined US$1500. His brother, Arnold Gonzalez, was sentenced to five months' imprisonment, five months' home detention, three years' supervised probation, and fined US$500. The pair had allegedly also sold 336 psittacines to a purchaser from Missouri for approximately US$82 000 during the period October 1986 to March 1988.

Sentencing has been carried out on persons charged on 12 July 1990 with incubating 208 parrot eggs which were later sold (see *TRAFFIC Bulletin*, 12(1):28). Paul and Jeanette Parker were convicted on 25 June 1991 on 18 felony counts of violating the *Lacey Act 1900*; one count of conspiracy and aiding and abetting, and four counts of smuggling wildlife. Each was sentenced to 33 months in gaol, three years of supervised probation and ordered to pay US$1150 court costs. The 24 cockatoos that had been seized were forfeited and the defendants were ordered to pay the US Government US$5000 from the profits received on the sale of the birds. Others sentenced in connection with the case include:

- Denise Hassler pleaded guilty to a misdemeanour under the *Lacey Act*: four years supervised probation and 250 hours of community service in the field of conservation education;

- Debra Campling pleaded guilty to one misdemeanor count under the *Lacey Act*: sentenced to one year supervised probation, 100 hours community service in wildlife conservation education, and fined US$1000;

- Jeff Fruits pleaded guilty to one misdemeanour count under the *Lacey Act*: sentenced to three years' supervised probation and fined US$3000.

Authorities in the USA and Australia are working together to arrange for the extradition of Suzette Morrison and John Leleu, both currently in Australia, or for their prosecution in that country.

TRAFFIC USA

Export of Live Birds from Calcutta, India

Kalyan Chakrabarti

The significance of Calcutta for Indian wildlife trade is based on its importance as a port (it is one of the four principal international airports in the country) and its proximity to the main bird-trapping area of India (Inskipp, 1983).

Customs statistics for live bird exports from Calcutta, India, between 1977 to 1988 are presented in Table 2 (overleaf). The data include figures for exports via sea, air and as postal parcels.

The period of review, 1975 to 1988, encompasses a time of change in the history of India's wildlife law. India became a Party to CITES in 1976, and in 1977, major restrictions to native wildlife exports were introduced. The *Exports (Control) Order 1977* banned the export of some of the most popular birds, on which about 70% of the live bird trade of India was based. The *Exports (Control) Order 1979* prohibited the export of practically all forms of Indian wildlife and their products. Only 212 species in 15 families of birds were still allowed for export (see Inskipp, 1983). Lists of species subject to export control are revised regularly. In 1991, the following birds were included: Budgerigars *Melopsittacus undulatus*; Bengalese Finches *Lonchura striata*; Java sparrows *Padda oryzivora* and Zebra Finches *Taeniopygia guttata* (Nichols *et al.*, 1991).

Live birds have occupied a prominent place among wildlife exports from Calcutta. A total of 2.3 million birds, worth Rs.44m (US$4.89 m) left the port during the period studied, reaching peak numbers in 1976. During this year, circa 800 000 live birds were exported, valued at Rs.10.5m. Thereafter, a definite decline is noticeable, so that by 1988 the corresponding totals were circa 30 000 birds at Rs.1.2m. This trend is in line with figures for India as a whole, whose exports of live birds declined sharply between 1978 and 1980 (the number of those exported in 1980 being only 1.8% of that in 1972) (Inskipp, 1983).

In several cases, exports of bird species from Calcutta ceased altogether after 1979. The Hill Mynah *Gracula religiosa*, for example, was one of the most popular bird exports from India, until it was banned from external trade in 1978, after which time, no further exports of this species were made from Calcutta. Only those species which continued to be traded post 1979 are shown in Table 2.

Species		Number
Alexandrine Parakeet	*Psittacula eupatria*	65 465
Moustached Parakeet	*Psittacula alexandri*	41 453
Plum-headed Parakeet	*Psittacula cyanocephala*	20 186
Slaty-headed Parakeet	*Psittacula himalayana*	320
Fischer's Lovebird	*Agapornis fischeri*	194
Peach-faced Lovebird	*Agapornis roseicollis*	24
Sarus Crane	*Grus antigone*	74
Blyth's Tragopan	*Tragopan blythii*	4
Malabar Parakeet	*Psittacula columboides*	6
Nicobar Pigeon	*Caloenas nicobarica*	2
White-winged Wood Duck	*Cairina scutulata*	2

Table 1. Exports from Calcutta of CITES-listed bird species, 1977-1988

Exports of other species show definite fluctuations in numbers, especially at the end of the 1970s: munias Estrildidae accounted for 85% of live bird exports from Calcutta in 1977, but during 1979 very few were traded from Calcutta. The six species of munia were prohibited from export in April 1978 until 1980, when the ban on these species was lifted. Between 1977 and 1978, about 40% of the munias transported abroad each year via Calcutta were noted to have been dyed. The artificial colouring of birds, especially of drab species, such as munias, was common among Indian exporters (Inskipp, 1983), but no dyed birds were noted to have left Calcutta after the Indian Government banned this process after 1978.

It is noteworthy that several CITES-listed birds were exported from Calcutta during the period 1977 to 1988 (see Table 1), including the following Appendix I species in 1988: White-winged Wood Duck *Cairina scutulata*, Blyth's Tragopan *Tragopan blythii* and Nicobar Pigeon *Caloenas nicobarica*. Any species listed in CITES Appendix I is automatically banned from export from India unless for zoological or scientific purposes on specific recommendations from the Ministry of Environment. All the CITES Appendix I-listed bird species mentioned in Tables 1 and 2 were exported as exchanges between zoos on specific recommendations from the Indian Ministry of Environment.

ACKNOWLEDGEMENTS

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POSTSCRIPT

In mid-1991, under the revision of the Import-Export Policy issued by the Ministry of Commerce, India banned the export of all birds (see page 36).

TABLE 2. Export of live birds from Calcutta port, 1977 to 1988

Species	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
CICONIIDAE												
Painted Stork *Mycteria leucocephala*	10	10				6						
ANATIDAE												
Bar-headed Goose *Anser indicus*		31	47		1							
Cotton Pygmy Goose *Nettapus coromandelianus*	2		80		1							
White-winged Wood Duck *Cairina scutulata*										2		
PHASIANIDAE												
Blyth's Tragopan *Tragopan blythi(columboides??)*							4					
GRUIDAE												
Sarus Crane *Grus antigone*	14	37	17		6							
COLUMBIDAE												
Nicobar Pigeon *Caloenas nicobarica*					2							
Blue Rock Pigeon *Columba livia*			12(dom.)	250	320	128	242					
Spotted Dove *Streptopelia chinensis*				72								
PSITTACIDAE												
Fischer's Lovebird *Agapornis fischeri*											166	74
Peach-faced Lovebird *Agapornis roseicollis*											12	12
Budgerigar *Melopsittacus undulatus*			40					530	150	200	602	200
Moustached Parakeet *Psittacula alexandri*	9800	12936	555	1240	595		4040	4650	2595	1070	1231	1261
Plum-headed Parakeet *Psittacula cyanocephala*	4016	3614	1878	1665	2012		132	450	570	2080	536	1294
Alexandrine Parakeet *Psittacula eupatria*	8098	13178	15620	1017	8118		7780	4935	2660	1485	2199	1597
Slaty-headed Parakeet *Psittacula himalayana*	100							160	660			
Rose-ringed Parakeet *Psittacula krameri*	25875	37543	22144	13095	27308	14274	4742	23204	19760	14010	4689	2435
CAPITONIDAE												
Blue-throated Barbet *Megalaima asiatica*	565	765	169		2							
Coppersmith Barbet *Megalaima haemacephala*	1	89			2							
PITTIDAE												
Indian Pitta *Pitta brachyura*	14	36			2							
Hooded Pitta *Pitta sordida*	193	446	12	100	1							
PYCNONOTIDAE												
Red-vented Bulbul *Pycnonotus cafer*	730	899	56	94	169							
Red-whiskered Bulbul *Pycnonotus jocosus*	1200	1200	601	294	350							
White-cheeked Bulbul *Pycnonotus leucogenys*	67	267	69	10	56							
IRENIDAE												
Golden-fronted Leafbird *Chloropsis aurifrons*	3055	4776	843		3488	126						
MUSCICAPIDAE												
Yellow-eyed Babbler *Chrysomma sinense*		12		80	209							
Oriental Magpie-Robin *Copsychus saularis*	432	816	108		243							
Rufous-bellied Babbler *Dumetia hyperythra*		4		100								
Black-capped Sibia *Heterophasia capistrata*	114	306	117	103								
Silver-eared Mesia *Leiothrix argentauris*	24	187	19	109								
Red-billed Leiothrix *Leiothrix lutea*	293	1131	206		125							
Blue-winged Siva *Minla cyanouroptera*	169	560	135	65	150							
Blue Rock Thrush *Monticola solitarius*	84	30		42								

TABLE 2 continued. Export of live birds from Calcutta port, 1977 to 1988

Species	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
MUSCICAPIDAE (continued)												
Puff-throated Babbler *Pellorneum ruficeps*			3	96	274	800						
Indian Robin *Saxicoloides fulicata*		70	13	185	466							
Common Babbler *Turdoides caudatus*	8	34	12		240							
Jungle Babbler *Turdoides striatus*	3	10			167							
Whiskered Yuhina *Yuhina flavicollis*	48	361	45	25								
Black-chinned Yuhina *Yuhina nigrimenta*	101	335	149	116								
White-bellied Yuhina *Yuhina zantholeuca*			1	15								
Orange-headed Ground Thrush *Zoothera citrina*	443	697	108	184	2							
Pied Ground Thrush *Zoothera wardii*		3		25								
ZOSTEROPIDAE												
Oriental White-eye *Zosterops palpebrosus*	3180	4905	100	1150	1250	360						
EMBERIZIDAE												
Red-headed Bunting *Emberiza bruniceps*	12370	14345	13575	336	2174	1119	590	597	715	1282	705	796
Black-headed Bunting *Emberiza melanocephala*	970	22287	698		1115	430	1095	432	83	2724	1010	292
FRINGILLIDAE												
Common Rosefinch *Carpodacus erythrinus*		5	830		300							
Bengalese finch *Lonchura striata*						50	7800	4738		4700	7600	8420
Canary *Serinus canaria*											12	165
ESTRILDIDAE												
Red Avadavat *Amandava amandava*	268241	57260	50		12700	22186	15990	9991	4250	1700	1823	740
Indian Silverbill *Lonchura malabarica*	14235	1160		1620				2190	2590	2850	650	1200
Chestnut Munia *Lonchura malacca*	148980	13660	50	7175	2800	526	6089	5819	10030	5970	4303	2420
Scaly-breasted Munia *Lonchura punctulata*	76265	3570		3505	3500		1726	550	3780	5180	1888	4510
Java Sparrow *Padda oryzivora*			16		520	151			1200	906	213	1185
House Sparrow *Passer domesticus*				50								
Gouldian Finch *Chloebia gouldiae*											174	100
PLOCEIDAE												
Chestnut-shouldered Petronia *Petronia xanthocollis*	143		50	25	733	604	738	396	277	312	441	89
Baya Weaver *Ploceus philippinus*	2680	1680		130	770	478	647	738	631	858	556	100
Zebra Finch *Taeniopygia guttata*						1610	7275	6600	3195	4304	12450	5025
Pin-tailed Wydah *Vidua macroura*											78	36
STURNIDAE												
Bank Myna *Acridotheres ginginianus*	510		40			100	233	1480		66		20
Common Myna *Acridotheres tristis*	1950		50	420	1665	1205	1140	550	232	25		
Chestnut-tailed Starling *Sturnus malabaricus*	835	2341	470	355				330	470	460	115	133
Brahminy Starling *Sturnus pagodarum*	1060	3490	520	400		350	906	746	365	965	115	320
Rosy Starling *Sturnus roseus*	62	490	220			196	384	53		36	294	160
DICRURIDAE												
Greater Racket-tailed Drongo *Dicrurus paradiseus*	11	24			1							
CORVIDAE												
Green Magpie *Cissa chinensis*	1	63	2	46	71							
Red-billed Blue Magpie *Urocissa erythrorhyncha*	39	260	54	76	7							
Rufous Treepie *Dendrocitta vagabunda*	50	83	17	125	2							

Wildlife Trade in the UAE - April 1991

A. Kumar

The United Arab Emirates (UAE) resigned from CITES in 1988 and rejoined in May 1990. It is widely believed that upon rejoining CITES, the Government of the UAE issued directives to bring illegal wildlife trade to a virtual halt. Prior to that, the country was probably the most important conduit in West Asia through which illegal wildlife trade, particularly involving species originating from southern Asia and Africa, was channelled. A tradition of free trade and absence of money exchange regulations made this possible.

A brief study lasting three days in April 1991 was undertaken by the author to study the status of wildlife trade in the UAE. In the time available, this was limited to only a few species and products. Contacts with sellers were not followed up very far since the purpose was to establish availability. The following observations were made:

Rhino horn and ivory: One traditional trader in these commodities was contacted. He said that since the trade is now banned in Dubai, he no longer had stocks. However, after some persistence by the author, the trader admitted that he knew of someone who had stocks. In an ensuing telephone conversation in Arabic, it transpired that the dealer in question had stocks of 200 kg (how much of each commodity was not established). The price quoted for African rhino horn was US$1200 per kg; although ivory is no longer on open display, the trader offered to supply several tonnes.

Musk: This was offered at a price of UAE Dirhams 1000 per tola (US$24 per gramme). The shop keeper offering the product had obtained his supplies from India.

Furs and skins: Tanned and half-tanned skins of Cheetah *Acinonyx jubatus* and Leopard *Panthera pardus* were available, though not on open display. These were offered by Somali and Ethiopian traders in Sharjah, one of the Constituent Emirates.

Agarwood: *Aquilaria malaccensis* syn. *A. agallocha,* known locally as 'Oud', is openly on sale throughout West Asia in blocks of different sizes and in chips, and the oil extracted from the wood is used as a perfume. The chips are burned over charcoal and the smoke is used to perfume the body and hair. Agarwood is said to be over-exploited in the forests of South-east Asia and the export of this wood is banned in India. Good quality Agarwood in Dubai can fetch US$5500 a kg.

Live animals: A large variety of species from Asia and Africa were observed in the Sharjah bird market and pet shops of Dubai. Many species were clearly illegal imports, including a Clouded Leopard *Neofelis nebulosa* (later rescued and sent to a zoo). One merchant offered to import Chimpanzees *Pan troglodytes.*

Wildlife is entering the UAE in total disregard of CITES regulations; there would appear to be no effective enforcement measures, and the CITES Management Authority has little or no contact with Customs officials, port authorities or the police.

The author recommends that a comprehensive survey of the trade in wildlife species be conducted in the UAE.

A. Kumar is Director of TRAFFIC India

Venus Flytrap Trade

Nina Marshall

The Venus Flytrap *Dionaea muscipula,* one of the world's best-known insectivorous plants, has been proposed by the USA for inclusion in CITES Appendix II. Submission of this proposal was prompted by recent evidence suggesting that collection of wild plants, compounded by the loss of habitat to development, drainage, and fire suppression, may be causing a substantial decline in populations of Venus Flytrap. This proposal strengthens an earlier draft first submitted for CITES Appendix II listing in 1981; that proposal was withdrawn prior to consideration at the third meeting of the Conference of the Parties.

The Venus Flytrap is endemic to a 320 km expanse of coastal plain ranging from Beaufort County, North Carolina, to Charleston County, South Carolina. The species occurs in the intermediate wet zone between evergreen-shrub bogs and dry sandy regions supporting longleaf pine-wiregrass savannahs. *Dionaea muscipula* is shade-intolerant and requires soil with a high moisture content.

While the plant is easily propagated by leaf-base culture, seeds and tissue culture, and grows to a saleable size within two to three years, significant numbers of wild plants are collected for both the domestic and the international horticultural trade. In 1990, 1 137 227 Venus Flytraps were exported from North Carolina, 70% of which went to the Netherlands. Germany, Japan and the UK also imported large quantities. Although there are no definitive data on the number of plants sold within the USA, in 1981 the quantity was estimated to be between 1.4 and 4.5 million plants.

Collection of wild Venus Flytraps in North and South Carolina is illegal on public land and on private land without the owner's consent. While South Carolina has reported only infrequent episodes involving illegal collection, North Carolina has recorded numerous cases, primarily involving collection from private land (see *TRAFFIC Bulletin,* 12(1/2):28). In response to continued illegal collection and increased habitat destruction, North Carolina recently listed *Dionaea muscipula* as a species of Special Concern, effective 1 June 1991. Under this listing, collection from private land requires the written permission of the landowner, and is valid for 180 days. It is illegal to sell unlawfully-collected Venus Flytraps. Fines of US$100-US$500 can be levied for a first offence, and US$500-US$1000 for a subsequent offence.

For further information on the collection and trade of Venus Flytrap, contact TRAFFIC USA.

Nina Marshall is Program Officer at TRAFFIC USA.

PUBLICATIONS AVAILABLE

Wildlife Trade Laws of Asia and Oceania
by David Nichols, Kathryn Fuller, Erica McShane-Caluzi and Eva Klerner-Eckenrode. Edited by Andrea Gaski and Ginette Hemley.

1991. 510 pp. Published by WWF/TRAFFIC USA. US$50.00 plus US$2.00 costs.

An analysis of the laws that govern wildlife trade in Asia and Oceania, including a list of protected and regulated species for each country.

Medicine from the Wild
An Overview of the U.S. Native Medicinal Plant Trade and Its Conservation Implications
by Douglas O. Fuller.

1991. 28 pp. Published by WWF/TRAFFIC USA. US$7.50.

A synthesis of the current literature, opinions and personal observations collected during 1991 on trade in indigenous medicinal herbs.

A North American Free Trade Agreement
The Impacts on Wildlife Trade. Vol. 1 & Vol. 2.
by Debra A. Rose

1991. Vol. 1(38 pp). Vol. 2. Appendices(90 pp). Published by WWF and The Conservation Foundation. US$13.50 (set).

Looks at past and potential effects of free trade agreements on wildlife trade, particularly the implications tariff cuts under the proposed North American Free Trade Agreement (NAFTA) may have in increasing wildlife trade between the USA and Mexico, and the potential burdens this could place on implementing and enforcing controls.

The Asian Trade in Bears and Bear Parts
by Judy A. Mills and Christopher Servheen

1991. 113 pp. Published by WWF/TRAFFIC USA. US$15.00.

TRAFFIC USA has examined the trade in bears and bear parts in eleven Asian countries in order to determine the scope of the trade, the incentives that drive it and potential ways of easing the pressure such trade now places on the world's eight bear species.

All the above publications can be ordered from WWF Publications, PO Box 4866, Hampden Post Office, Baltimore, MA 21211, USA.

ANNOUNCEMENTS

IVth World Congress on National Parks and Protected Areas

Caracas, Venezuela
10-21 February 1992

Parks for Life: Enhancing the Role of Protected Areas In Sustaining Society.

For additional information contact:

Jeffrey A. McNeely, Secretary General, IVth World Congress on National Parks and Protected Areas, IUCN, Avenue du Mont-Blanc, CH-1196 Gland, Switzerland.

Eighth Pan-African Ornithological Congress

Bujumbura, Burundi
30 September-5 October 1992

Further details from Michel Louette, 8 PAOC, Africa Museum, B-3080, Tervuren, Belgium.

The Second World Congress of Herpetology

University of Adelaide, South Australia
29 December 1993-6 January 1994

The programme of the Congress will cover a wide range of topics including: Evolution and Genetics; Systematics and Distribution; Physiology; Ecology; Ethology and Conservation and Captive Care.

For registration forms, and more details about the Congress, write to: University of Adelaide, Department of Zoology, Box 498 GPO, Adelaide, South Australia 5001, Australia.

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TRAFFIC is supported by WWF - the World Wide Fund for Nature and IUCN - the World Conservation Union - to monitor trade in and utilisation of wild plants and animals. As the majority of the Network's funding is provided by WWF, the Network is administered by the WWF Programme Committee on behalf of WWF and IUCN.

The mission of TRAFFIC is to enhance, in accordance with the principles of the World Conservation Strategy, the conservation of biological diversity by: monitoring and reporting on trade or other forms of utilisation of animals and plants and their derivatives; identifying areas of such utilisation that may be detrimental to any species, and; assisting the Secretariat of, and Parties to, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and other appropriate bodies in facilitating the control of trade and in curtailing possible threats to species created by trade or other forms of utilisation.

The TRAFFIC Network shares its international headquarters in the United Kingdom with the World Conservation Monitoring Centre.