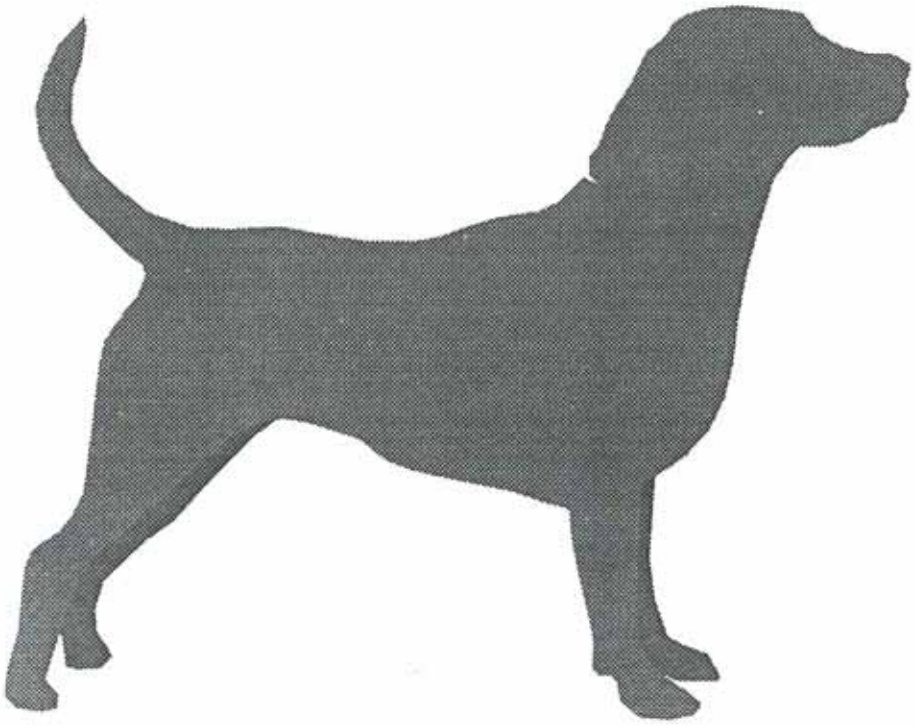
THE FEASIBILITY OF USING CANINES TO DETECT WILDLIFE CONTRABAND



Prepared by: Rob Parry-Jones
TRAFFIC East Asia
Room. 2001 Double Building
22 Stanley Street
Central, Hong Kong
Fax: (852) 2530 0864
Tel: (852) 2530 0587

Table of Contents

THE FEASIBILITY OF USING CANINES TO DETECT WILDLIFE CONTRABAND

Acknowledgements

The compilation of this report was made possible with generous financial support from the Rufford Foundation.

The assistance of law enforcement officers, dog handlers and trainers is also gratefully acknowledged for without imparting their knowledge, experience and insight, this report would not have been possible. In alphabetical order and by agency, the author would like to thank: Inspector J. N Boucher, Sergeant Gil Radke, and Kerry Russel of the Royal Canadian Mounted Police National Police Dog Training School; Mr C. S. Cheung, Endangered Species Protection Officer, Agriculture and Fisheries Department of the Hong Kong Special Administrative Region (SAR) Government; Mr C.C. Leung, Group Head (Investigation), Customs & Excise Department of the Hong Kong SAR Government; Mr W.K. Pong, Head of Canine Operations, Customs and Excise Department of the Hong Kong SAR Government; Ralph Krenz, British Columbia Conservation Officer Service; Rolf von Krogh, Senior Executive Officer, Directorate Customs and Excise, Norway; Dr Rod Livingstone, Head, Vancouver International Airport Sniffer Dog Program and the dog handlers Paul Littlewood and Mike Smith of Food Inspection Canada (formerly Agriculture Canada); Mark Rispoli, Director, MAKOR K-9 Training Centre; Helen Weinert, Quarantine Detector Dog Programme, Australian Quarantine and Inspection Service; and Captain Kim Yates, South African Police Service.

Erin Dean, Wildlife Inspector, US Fish and Wildlife Service (USFWS), deserves particular mention for her assistance, time and hospitality. Gratitude is also owed to Special Agent Brooks, *et al.*, of the USFWS for allowing use of their unpublished report.

Finally, staff of the TRAFFIC Network are gratefully acknowledged for their assistance in collecting and relaying relevant information and contacts.

SUMMARY

The illegal trade in endangered species is an issue of increasing concern for the world's biological diversity. Over 140 countries are Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and are thus responsible for taking steps to prevent illegal trade in wildlife. Detecting illegal trade in any commodity, however, is not an easy task and law enforcement authorities are, for the most part, already stretched to the limit. With increasing volumes of international cargo and the ever increasing number of people travelling abroad, detecting illegally traded wildlife trade is made even harder. To a certain extent, this situation is similar to the illegal narcotics trade in the late 1960s and early 1970s when, in the face of escalating trade, dogs were trained to detect narcotics and, since then, have become a familiar sight around the world.

The use of detection dogs worldwide, chiefly for narcotics, bears testament to the recognised efficacy of canines in locating contraband items in trade. Despite the commitment of governments to prevent illegal trade in wildlife, however, only a few detector dog programmes currently exist around the world to detect wildlife in trade. These programmes, located in the USA, South Africa, and Canada, have limited resources but, nonetheless, clearly illustrate that dogs can be used as an effective law enforcement tool to enhance the effectiveness of CITES and domestic wildlife trade controls. These programmes also serve as useful models for establishing further programmes elsewhere.

To date, canines used in wildlife detection programmes have been trained to detect products ranging from bear gall-bladders, bear bile, ivory and rhinoceros horn to live parrots, abalone, and crayfish. Quarantine detector dog programmes have also shown that canines can also be trained to detect reptiles, birds, eggs, meat, and plant material. Determining which breed of dog should be trained for detection of wildlife would, however, depend upon the wildlife trade profile of the particular region. Although there are recognised breeds used for detection purposes, deciding which breed of dog would be most suitable depends upon various factors including the type of work required of the dog, the environment in which it will be working and how long it is required to work, etc. Generally speaking, most breeds are capable of being trained to detect wildlife, but the difficulty lies in selecting the right individual for the chosen tasks. Furthermore, if a dog is required to search passengers, a visually non-threatening dog, such as a Beagle or a Spaniel, would be suitable and has the added bonus of being a good public relations tool and, consequently, a good public awareness tool.

Cost and policy implications are naturally of concern to agencies responsible for law enforcement. Based on an average costs obtained during the course of this project, initiating or expanding a three year detector dog programme would cost in the region of US$100,000 - although costs will vary considerably from country to country. Costs may be reduced if, for example, a canine already trained to detect narcotics is further trained to detect wildlife products as well. While dividing a dog's talents may be feasible in some countries, operational procedures in other countries, however, may prevent a dog handler from working on, for example, the detection of both narcotics and wildlife. A further concern of some governments may be to decide which agency should take responsibility for checking wildlife imports: while Customs traditionally have experience in handling canines and are required to check imports and exports, the wildlife authority is naturally more familiar with wildlife matters. Although not an insurmountable

obstacle to implementing a canine detection programme, these policy implications are, nonetheless, important considerations which need to be carefully assessed from the outset.

Despite what, initially, may appear to be a relatively high cost for starting or expanding a detector dog programme, the cost implications are minimal when the ability of canines to detect illegal goods are compared to the ability of law enforcement officers. In addition to the fact that canines are able to search more thoroughly any site where contraband goods may be held, further associated benefits of using canines are manifold and include:

- Reducing overall costs of law enforcement.

  In the same time that it would take one dog and one handler to carry out a *relatively thorough examination* of passengers and baggage arriving on a Boeing 747, around 36 Customs officers would be required to carry out a *cursory examination*. The cost of a detector dog programme therefore becomes minimal especially when taking into account the cost of conducting public awareness campaigns, carrying out public relations exercises, and accounting for the safety of enforcement officers, not to mention the fact that law enforcement officers, by nature, can not detect illegal trade so effectively.
- Increasing public awareness;

  The presence of a detection canine naturally stimulates interest from passengers arriving at an airport, etc. The combination of a visually non-threatening breed and an enthusiastic handler increases awareness of wildlife trade amongst the public and, at the same time, sends out a clear message that illegal wildlife trade is an issue taken seriously by the government.
- Improving public relations;

  A visually non-threatening breed and an enthusiastic handler who is willing to answer questions from the public also improves public relations.
- Educating Customs officers and the general public;

  Although Customs officers responsible for intercepting contraband goods, etc., may well come across wildlife products in trade, they may not necessarily be able to recognise the species or know whether it is illegal or not. The presence of a handler responsible for checking wildlife enables the customs officer to seek assistance and at the same time to learn more about the illegal trade in wildlife. Likewise with the general public, the presence of a wildlife officer will enable them to learn more about which species are banned or regulated in trade.
- Enhancing the safety of Customs officers;

  An alert from a wildlife scent detection canine will indicate the presence of wildlife / wildlife products to the Customs officer. Inspection should then proceed with caution in case of, for example, live venomous snakes;
- A deterrent to potential wildlife smugglers.

It is clear that canine detector programmes are a useful asset to enforcing CITES and domestic wildlife trade controls. Furthermore, the additional advantages associated with a canine detection programme, as detailed above, are clear to see and justify the costs of initiating or expanding a detector dog programme. Further discussion with interested and relevant agencies would be required to establish what type of canine programme would be suitable for a particular region, and to determine exact costs for that programme.

Introduction

The illegal trade in endangered species, their parts and derivatives, remains, to this day, a serious threat to the world's biological diversity. With over 140 countries now Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the stated commitment of governments around the world to preventing the unsustainable use of wildlife is readily apparent. Implementing the Convention and enforcing wildlife trade controls require the allocation of considerable financial resources, manpower and expertise. Although there is increasing awareness about the illegal wildlife trade, law enforcement authorities are, on the whole, already stretched to the limit. Detecting illegal trade in any commodity is not an easy task and is one made harder by the increasing volumes of international cargo coming through sea, air and land ports as well as an ever increasing number of people travelling abroad.

In 1991, nearly 50 million people entered the USA by air alone. This number is expected to have doubled by the year 2000. In 1996, a total of 29.6 million passengers and some 1.56 million tonnes of international cargo passed through Hong Kong's Kai Tak Airport. Cross-border vehicular traffic at the three crossing points averaged 24,300 vehicles per day, with goods vehicles accounting for 91% of the traffic. The Kowloon-Canton Railway transported some 1.2 million tonnes of inbound goods and 800,000 tonnes of outbound goods in addition to 48 million passengers. A further 7 million passengers travelled between Hong Kong and China on the various ferry services. The new airport - Chek Lap Kok - which opened in July 1998, is designed to handle 35 million passengers and three million tonnes of air cargo annually. Hong Kong is the world's busiest container port. In 1996, Hong Kong handled about 13.4 million 20-foot equivalent units (TEUs). Hong Kong Port Cargo Forecasts predict that by the year 2016, Hong Kong would be handling 39 million TEUs a year. In other words, over one TEU every second, 24 hours a day, every day of the year. The Hong Kong Port Development Board forecasts that by the year 2006 some 93 million tonnes of freight will be carried on the Pearl River rising to some 139 million tonnes in 2016 (B. Howlett, 1997). With resources already stretched to the limit to search cargo and people, and with increasing volumes of traffic expected, new and improved methods of detection are clearly needed to assist the daunting task facing law enforcement officers as cross-border trade volumes and passengers increase.

A similar pattern of escalating trade in narcotics was noted in the USA in the late 1960's / early 1970's. In response to this illegal trade, a feasibility study of the use of dogs in the detection of narcotics was initiated by US Customs. Recruitment of skilled dog trainers and handlers from various branches of the military service began in January 1970; by the summer of the same year, based on the success of the programme, a second programme was initiated on the Mexican border (US Customs, 1997). Customs canine (K-9) programmes for the detection of narcotics, firearms and explosives, are now a familiar sight around the world and the US Customs alone employs some 600 dogs nationwide. The reason for this is simple: canines have consistently proved reliable in the detection of contraband goods that may otherwise have been missed by Customs officers working without the aid of canines.

The ongoing trade in endangered species, their parts and derivatives, and the increasingly sophisticated methods of smuggling wildlife echo the history of the trade in narcotics. It therefore seems pertinent to explore similar methods of detection, especially when such methods have proved so successful. The purpose of this project was to assess the feasibility of using dogs to

detect wildlife in trade and, if feasible, to examine whether such a programme might be feasible in East Asia. This report documents what is known about the use of dogs in detecting wildlife in trade, examining those programmes which currently use wildlife detection dogs, and exploring the views of experienced dog handlers, trainers and law enforcement officers towards the use of dogs for wildlife detection. Discussions were also held with relevant departments in South Korea and Hong Kong to assess whether a wildlife detection canine programme would be feasible within the current Customs and wildlife departments.

Methodology

There is currently no central agency responsible for collating information on the use of scent detection dogs. A list of people and agencies involved in the use of detection dogs was compiled by writing to government agencies known to be using dogs - either for narcotics, agricultural products or wildlife - and further references were gratefully obtained from these people. Information was gathered, where possible, during visits to the relevant agencies in August and September of 1997.

People and agencies visited included: Mr H. Yoon, Deputy Director, Trade Cooperation Division, Korean Customs Service, Mr M.S. Park, Special Investigation Section, Kimpo Customs House, Korean Customs Service; Mr C. S. Cheung, Endangered Species Protection Officer, Agriculture and Fisheries Department of the Hong Kong Special Administrative Region (SAR) Government; Mr C.C. Leung, Group Head (Investigation), Customs & Excise Department of the Hong Kong SAR Government; Mr W.K. Pong, Head of Canine Operations, Customs and Excise Department of the Hong Kong SAR Government; Erin Dean, Inspector, United States Fish and Wildlife Service (USFWS); Mark Rispoli, Director, MAKOR K-9 Training Centre; Inspector J.N. Boucher, Sergeant Gil Radke and Kerry Russel of the Royal Canadian Mounted Police (RCMP) National Police Dog Training School; Dr Rod Livingstone, Head, Sniffer Dog Programme, Food Inspection Canada (formerly Agriculture Canada); Mike Smith and Paul Littlewood, Detector Dog Handlers at Vancouver Airport.

Where a visit was not possible, information was gathered through correspondence or over the telephone. Information from the South African Police Service (SAPS) was obtained from interviews between TRAFFIC East/Southern Africa and the SAPS. Details of people contacted and / or visited are provided in Appendix I.

Current Applications of Canines Trained to Detect Wildlife Contraband

There are currently three agencies known to be using dogs to detect wildlife contraband: the British Columbia Conservation Officer Service (COS); the US Fish and Wildlife Service (USFWS); and the South African Police Service (SAPS). Customs officers, dog handlers and trainers involved with canine detection programmes for narcotics and agricultural products expressed overwhelmingly positive views towards the use of wildlife detection canines and offered valuable insights into the practical application of using such dogs, as discussed below.

As shown below by the three agencies currently using wildlife detection dogs, it is important that

canine detection programmes are modeled to suit the particular needs of the agency and the wildlife trade profile of the region.

British Columbia Conservation Officer Service

The canine detection team of the British Columbia Conservation Officer Service was initiated by Ralph Krenz in the Spring of 1992. Although the COS uses dogs for many duties including the tracking of problem wildlife such as cougars, tracking suspects involved in illegal hunting of wildlife, outdoor searches to locate missing persons and the recovery of articles for evidence (such as spent bullet casings, knives), etc., attention here will focus on the COS' use of dogs to detect bear gall-bladders. Information presented here on the detection of bear gall-bladders by the British Columbia Conservation Officer Service draws heavily from Ralph Krenz' paper: *The use of dogs in detecting bear gallbladders* (1995). Unless otherwise stated, this paper can be understood to be the source of information included in this section.

The decision to train a canine to detect bear gall-bladders rather than other wildlife scents was based upon a number of factors, including: the increasing frequency of bears being poached throughout the province with only the gall-bladder removed from the carcass; the substantial volume of bear gall-bladders coming into Vancouver from other jurisdictions; British Columbia's ban on the trade in bear parts; and the listing of the Black Bear *Ursos americanus* on Appendix II of CITES. It remained unknown, however, as to whether a canine could reliably discriminate the scent of bear gall-bladders from other scents. An experimental training programme was therefore conducted with the National Police Dog Training School of the Royal Canadian Mounted Police (RCMP). Using training methods already proven effective for the detection of narcotics, it quickly became apparent that canines could easily locate bear gall-bladders. Further tests soon proved that canines could detect dried gall-bladder (which gives off far less scent than a "green" gall-bladder) concealed amongst a number of boxes, some of which contained other bear parts (paws, heads, hides, etc). These results indicated that the scent of a bear gall-bladder differs from the scent of other parts of a bear carcass. The final test sought to determine whether the canine could distinguish between the gall-bladders of bears and other animals. The successful conclusion of this test proved beyond doubt that canines would be an invaluable asset to law enforcement efforts (Krenz, 1995). A Dog Training Log detailing the successful location of bear gall-bladders hidden on an aeroplane in Vancouver International Airport and a Service Dog Report detailing the successful location of 11 bear gall-bladders in a store following the issuance of a search warrant are attached as Appendix II.

When a canine is used to detect particular scents, there are distinct phases that the dog will go through during the search pattern that the handler must recognise and interpret. When a scent is picked up, the canine abruptly alters its search pattern to determine the exact location of the scent. This is termed "showing interest". Once the source of the scent is located, the canine will "indicate" the location to the handler often by whining, pawing or pointing with its muzzle, before sitting next to the source of the scent or scratching intently at the source - depending upon how the dog has been trained. If the dog sits next to the source, this is termed a "sit confirmation" or "passive alert". If the dog starts scratching intently at the source, it is termed an "aggressive alert" (Krenz, 1995; Dean, pers. comm., Sept. 1997) or an "active" response (Weinert, pers. comm., June 1998). Dogs trained to detect fruit and meat, such as the Beagles of Food Inspection Canada - a programme initiated in 1986 - may also briefly "show interest" in sweets

or fish carried by a passenger but, since they are not trained to alert to these items will not give a "sit confirmation". The handler should, however, remain alert and use his / her discretion as to whether the package should subsequently be examined. An illustrative example of the benefits of checking packages where a dog has shown interest occurred in January 1996: 40 reptiles including many rare species were smuggled aboard a courier service flight from Australia. Marked as "fragile electronic equipment" and hidden in socks and pillowcases, they were detected and confiscated three days later in Memphis, Tennessee, after the detection dog had "shown interest" and the handler had decided to check the packages (TRAFFIC USA, 1996). It was, however, noted by Dr Rod Livingstone, and the dog handlers M. Smith and P. Littlewood, of Food Inspection Canada, that it would be impossible to search all baggage where a dog had merely "shown interest" since the dogs are trained to detect certain foodstuffs and will naturally show an interest in others. Problems can therefore arise with flights from Asian destinations since Asian passengers tend to bring a lot of food as gifts (M. Smith and P. Littlewood. pers. comm., Sept., 1997).

The United States Fish and Wildlife Service

The Search and Find Programme of the USFWS was initiated in November 1995 by a USFWS Special Agent and three Wildlife Inspectors together with two volunteer Search and Rescue dog handlers. Three Australian Shepherds and one German Shepherd already registered with the Search and Rescue Programme, and thus trained in obedience and detection work, were used to develop the standards for this pilot project. The initial focus was to determine whether live wildlife could be detected by the dogs.

Birds

Two dogs were first tested on four specific species of psittacine birds:

African Grey Parrot	*Psittacus erithacus*
Double Yellow-Headed Amazon Parrot	*Amazona ochrocephala*
Greater Sulphur Crested Cockatoo	*Cacatua sulphurea*
Military Macaw	*Ara militaris*

Since training the dogs on primary scent sources (live birds) was initially thought to be too stressful for the birds and too cost prohibitive for the programme, secondary scent sources (feathers) from captive bred birds were used for scent familiarisation. The dogs were trained to "alert" to all four species rather than singling out particular species. With feathers only recently taken from the primary source, the dogs gave a strong alert indicating the location of the feathers with a positive confirmation. However, the trainers also noted that with feathers separated from the primary source for some time, the dogs gave only a weak alert to the feathers and were not always able to locate the exact source of the scent. Inspector Dean of the USFWS, however, did not encounter this problem with her wildlife detection dog - "Mason": on 15 April 1998 at the Los Angeles Airport (LAX) passenger terminal, "Mason" gave an alert on a woman entering Los Angeles. Thorough inspection revealed the woman was not carrying any wildlife products but conversations did reveal that she kept a pet parrot in her home (Dean, *in litt.*, June 1998). In other words, the dog had alerted on a residual odour.

Two points of interest arise here: firstly, opinions of canine trainers and handlers are based upon personal experiences which, in turn, are based upon the level of skill in detection exhibited by the

dog and the skill of the trainer/handler. While this can not be avoided, obtaining a broad consensus of opinions and experiences minimises the chances of misrepresentation of a dog's abilities. Secondly, a canine's ability to detect residual scents is of interest for trophies, preserved or taxidermic specimens in trade. Further research, however, would be needed to determine how long a stuffed specimen retains its scent or whether scent contamination from the taxidermy process would mask the scent altogether.

Feathers from conure parrots (*Aratinga* spp.) were then introduced to determine whether the dogs could distinguish between the different species. While the dogs "showed interest" in the new feathers, they did not confirm their presence - an encouraging result which the trainers interpreted as confirmation that the dogs could differentiate the scent of one species from another. Results from the COS and USFWS wildlife detection canine programmes would appear to confirm this.

Having established that the dogs could successfully locate a secondary avian scent source, the two dogs were then introduced to detecting live parrots using tests of increasing levels of difficulty. One dog, "Sierra", was trained to give an active / aggressive alert, while the other dog, "Tailor", was trained to give a passive alert. Extreme care was taken when working with Sierra so as not to injure or stress the birds. Dogs trained to give a passive alert are, however, more suitable for detection of live animals (Dean, pers. comm., Sept.1997). In order to minimise the parrots' stress levels, the birds were first placed in carriers and then into ventilated cardboard boxes. These boxes were then placed inside vehicles. The next stage involved placing birds in cages under a blanket and then placing them on top of freight at a cargo warehouse facility. Finally, and most realistically, dogs were tested on locating live birds which had been placed in carrying containers in vehicles, cargo warehouses and passenger baggage at the airport (Brooks, *et al.*, 1995). The dogs were successful in locating the live parrots in all situations (Dean, *in litt.*, October 1997).

Bear Bile

Preliminary trials were carried out to determine whether the dogs could be trained to detect dried bear bile. Although Ralph Krenz of the British Columbia COS had already carried out pioneering work in the field of using canines to detect bear gall-bladder, the programme had maintained a low profile for three and a half years. Research by the USFWS and Search and Rescue was therefore conducted without the knowledge of the work undertaken by the COS.

Two dogs were selected, one of which successfully demonstrated that it could locate bear bile. Trials were not refined since the purpose of ascertaining whether a dog could detect bear bile had been achieved (Brooks, *et al.*, 1995).

Reptiles

Although the trainers planned to determine whether a dog could detect reptiles, in practice this proved more difficult. This was not due to the dog's capability for scent discrimination, rather it was due to more practical difficulties such as locating parts of reptiles uncontaminated with other scents (through tanning of skins, etc), and familiarising the canine with the scent of a live reptile without causing undue stress or fatalities to the reptile and/or canine. Ultimately it was decided that this would be better left for future research once both trainers and the dogs had further experience (Brooks, *et al.*, 1995).

Establishment of USFWS Canine Programme

In 1996, following the success of the pilot project, a three year old Labrador Retriever (K-9 "Mason", previously trained as a guide dog for the visually impaired), was donated to Wildlife Inspector Erin Dean to continue the programme. "Mason" was trained at the MAKOR K-9 Training Centre to detect bear gall-bladder, bear bile powder and flakes, and live psittacine parrots. The MAKOR K-9 Training Centre, based in Napa Valley, California, trains canines for a variety of purposes, including scent detection, for various agencies including US Customs, Federal Aviation Administration and Canadian Customs.

"Mason" is trained to detect illegally smuggled wildlife being carried by people entering the US through land (Plate 1), sea and air ports as well as wildlife sent by post. Typically, a dog can fully search a car in about three minutes (RCMP, 1990) and 75% of baggage and passengers off a Boeing 747 in about 20-30 minutes, providing that the stream of exiting passengers is controlled (Park, pers. comm., July., 1997; Littlewood, *in litt.*, June 1998). The speed with and extent to which a canine can check baggage is worth noting, particularly in comparison with a fully-trained and competent Customs officer. Assuming that all passengers have two cases and one carry-on bag, a Customs officer can carry out a *cursory* check of each passenger in about three minutes - providing the passenger is cooperative. Taking an average of 300 passengers per Boeing 747, it would therefore take 15 man-hours to carry out a cursory examination of all passengers and their baggage from *one flight only* (Littlewood, *in litt.*, June 1998). Or, put another way, 36 Customs officers would be required to carry out a *cursory examination* in the same time that it would take one dog and one handler to carry out a *relatively thorough examination* of passengers and baggage arriving on a Boeing 747. While this is a theoretical argument (it would be difficult to confine passengers to designated inspection counters for examination and Customs officers are unable to search all travel items), the advantages of using detector dogs are clear to see, for both effectiveness and cost implications.

Upon detecting parrots or bear bile "Mason" will give a "passive alert" which has two distinct advantages over the "aggressive alert" for the work that "Mason" is trained to carry out:

1: it is less threatening to passengers and pedestrians entering the country at airports or border crossings;
2: if live animals are detected, a passive alert will neither harm the animals nor the dogs.

A visit was made with Inspector Erin Dean to the Los Angeles Customs Mail Facility where international mail is held before being cleared by US Customs. Particular emphasis is given by US Customs narcotics detection dogs to packages arriving from Southeast Asian countries. During the visit, mail from Taiwan was reserved for Wildlife Inspector Dean and K-9 "Mason" to check for bear bile products; bear bile training aids were also hidden in mail for training purposes (Plate 2). Mail from China and Southeast Asian countries will also be held for checking in the future. Although no seizures were made from mail originating from Taiwan, certain packages from Southeast Asian countries containing wildlife derivatives were intercepted by US Customs narcotics detection canine programme. Although the detection dog did not *alert* to the packages, it did "*show interest*" whereupon the Customs Officer withheld the packages for further inspection with Wildlife Inspector Dean. Preliminary identification suggests the species intercepted may have been the paws from a species of the family Mustelidae or Viverridae and the pelt of a Slow Loris *Nycticebus coucang* (CITES Appendix II) (Plates 3 and 4 respectively).

Another case of interest also arose, again as a result of Customs intercepting a package, this time originating from Mali. The contents of the package were identified by Wildlife Inspector Dean as stuffed Dwarf Crocodiles (*Osteolaemus tetraspis*) which are listed on Appendix I of CITES (Plate 5).

A similar case also occurred in Canada where two canines from the Canadian Food Inspection Agency alerted their handlers to an abandoned gym bag. Upon inspection, a tupperware container was found inside of which were two venomous vipers. This was reported to the wildlife officers for further investigation. Although the canines of the Canadian Food Inspection Agency have not been trained to alert on snakes, it is likely that their training to detect food items and the pungent aroma of the snakes alerted the canines (Littlewood and Smith, *in litt.*, 12:05:98).

These three cases underscore the added benefits of using sniffer dogs to detect wildlife: the presence of a wildlife inspector enhances the work of other enforcement officers, acting as an awareness and educational tool and increasing cooperation and communication between different law enforcement agencies. Where a canine handler may otherwise disregard packages when a dog has merely "shown interest", or where a wildlife package is intercepted and the species unidentifiable to Customs officers, the presence of a wildlife inspector enables both Customs and the wildlife inspector to perform their tasks more effectively.

Canine programmes, with minimal effort, also act as a very effective public awareness and relations tool. Beagles and other visually non-threatening breeds automatically attract attention and questions from passengers, enabling the dog handler to introduce the dog, to explain what the dog is used for, and thus educating the public about the illegal nature of trade in narcotics, wildlife, etc. Some agencies, such as U.S. Customs, also provide identification cards for the dogs with a picture on one side and details of seizures by that dog on the other side (Plate 6). Cards are distributed to children and interested passengers thereby creating greater awareness at minimal cost.

Seizures by USFWS Canine Programme

Two seizures of wildlife contraband have been made by K-9 "Mason" since the inception of the USFWS canine programme:

1: In February 1997, four separate packages containing a total of 79 grams of bear bile and bear bile products were intercepted by Task Force Blitz[1] at the Oakland Mail Facility in Oakland, California.

2: On 31 March 1997, a juvenile Amazon Parrot (*Amazona* spp., CITES Appendix II) was intercepted at San Ysidro - the border cross point on the California / Mexican border.

While only two seizures are not a high seizure rate, the success of "Mason" and of the canine programme itself cannot, however, be judged on seizure statistics alone. First of all, the increased efficiency of both Customs and wildlife inspection officers, as noted above, more than adequately

[1]Task Force Blitz: US Customs, Fish and Wildlife Service, Agriculture and Food and Drug agencies combined to target all mail arriving at Oakland Mail Receiving Facility, San Francisco.

Plate 1 Mason and Wildlife Inspector Dean checking foot passengers crossing the San Ysidro Mexico/California border.

Plate 2 Mason displaying the "passive alert" for detection of a bear bile training aid hidden in the mail.

Plate 3 Package intercepted by US Customs narcotics detection dog, Los Angeles mail receiving facility and passed to USFWS Wildlife Inspector Dean for identification. Possibly a species of the family Mustelidae or Viverridae.

Plate 4 Package intercepted by US Customs narcotics detection dog, Los Angeles mail receiving facility and passed to USFWS Wildlife Inspector Dean for identification. Possibly the pelt of a Slow loris *Nycticebus coucang* (CITES Appendix II).

Plate 5 Dwarf Crocodiles (*Osteolaemus tetraspis*), listed on Appendix I of CITES. Intercepted by US Customs and passed to USFWS Wildlife Inspector Dean for identification.

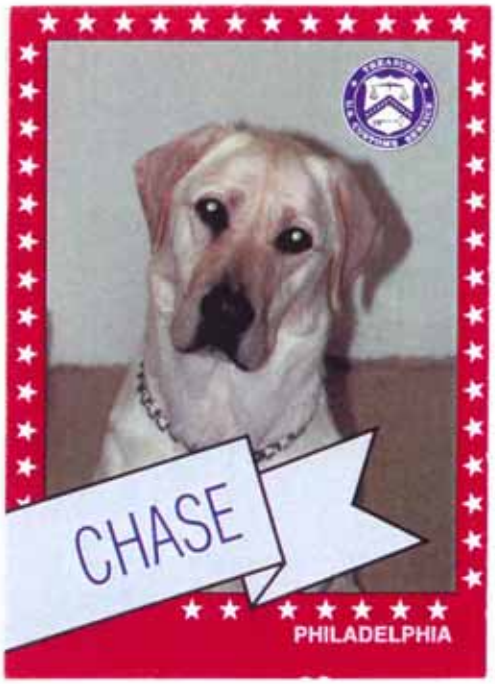
Plate 6 Low-cost public awareness and relations: identification cards for U.S. Customs Narcotics Detection Canines.

1996 Series

MASTER

Tattoo #: C-720
Breed: Labrador Retriever
Age: 8½
Weight: 94 Pounds
Year Started in Customs: 1990
Year Prior Ports Assigned to:
1990–1991: Los Angeles
Largest or Most Notable Seizure: 6 pounds Asian white heroin, secreted inside pictures. Eighty-five pounds cocaine in vehicle awaiting entry to San Ysidro Port of Entry. 693 pounds marijuana in vehicle awaiting entry to San Ysidro Port of Entry. Master was responsible for over 100 seizures from 1 June 1994 to 31 May 1995. The street value of the narcotics seized was in excess of $38,000,000.

YOU CAN HELP MASTER
STOP DRUG SMUGGLING
TO REPORT SUSPICIOUS ACTIVITIES, CALL
1-800-BE ALERT



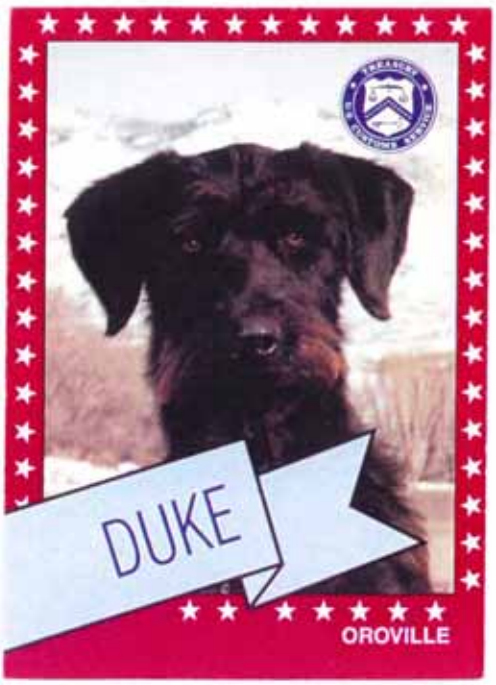
1996 Series

CHASE

Tattoo #: OC-56
Breed: Labrador
Age: 4
Weight: 65 Pounds
Year Started in Customs: 1993
Year Prior Ports Assigned to:
Passive Response Dog

Largest or Most Notable Seizure:
Chase has numerous narcotic seizures to his credit. Chase assisted U.S. Customs agents with the seizure of $186,982 in currency.

YOU CAN HELP CHASE
STOP DRUG SMUGGLING
TO REPORT SUSPICIOUS ACTIVITIES, CALL
1-800-BE ALERT



1996 Series

DUKE

Tattoo #: 0C86
Breed: Giant Schnauzer
Age: 2
Weight: 60 Pounds
Year Started in Customs: 1994
Year Prior Ports Assigned to:
1995: San Luis, AZ
Largest or Most Notable Seizure: Duke found 28 pounds of marijuana in the rear seat of a car, 53 pounds of marijuana in the front and rear bumpers of a car, 86 pounds of marijuana in the dash, rear seat and quarter panels of a car, 371 pounds of marijuana in a false bed of a pick-up truck, and 26 pounds of cocaine in the gas tank of a truck.

YOU CAN HELP DUKE
STOP DRUG SMUGGLING
TO REPORT SUSPICIOUS ACTIVITIES, CALL
1-800-BE ALERT

justifies the presence of a wildlife canine handler. Furthermore, it is necessary to look at the environment in which USFWS Inspector Erin Dean works: although the Los Angeles Customs Mail Facility is known to receive packages containing wildlife parts and derivatives, "Mason" is trained to "confirm" on bear bile only. Bear bile is known to be used in traditional East Asian medicines (Chinese, Japanese and Korean systems of traditional medicine). As the largest oriental community of California is to be found in San Francisco and not in Los Angeles, it would therefore be pertinent to concentrate "Mason's" efforts at the Oakland Mail Facility - the main receiving facility for international mail going to San Francisco - rather than in Los Angeles (Dean, pers. comm., Sept., 1997). The seizures of bear bile- by Wildlife Inspector Dean and K-9 "Mason" at Oakland Mail Facility are testament to this: the one time that K-9 "Mason" checked mail at this facility resulted in the seizures of 79 grams of bear bile and bear bile products. Due to financial and temporal constraints, however, it is currently not possible for Wildlife Inspector Dean to revisit Oakland Mail Receiving Facility, particularly since dog handling constitutes only a minor part of her many other duties.

The current situation at the border cross point at San Ysidro also presents obstacles to the most effective use of canines. Most bird smuggling is thought to occur at night, on weekends, or when it is cool outside (Dean, pers comm., September, 1997). Wildlife Inspector Dean, however, works from 8.00am to 4:30pm Monday to Friday thus reducing the chances of detecting illegal wildlife trade. The layout of the border crossing at San Ysidro further exacerbates the problem of detecting illegal wildlife trade: San Ysidro is divided into the pre-primary inspection, where cars queue before passing through the Customs check-point (the primary booth), and Secondary Clearance to where cars selected by Customs officers are referred. Cars and people are selected on suspicion of carrying narcotics but they are *not* selected for suspicion of carrying wildlife. US Customs officers, who are armed and wear protective clothing, patrol dogs in the pre-primary area, but USFWS Inspectors have only recently been afforded bullet proof vests and back-up when available. Thus, they have only recently been able to patrol the pre-primary area. Therefore the only cars which Wildlife Inspector Dean was able to check with a canine, until recently, were those cars passing through the border crossing between 8am and 4:30pm and which had been referred to Secondary Clearance on suspicion of Customs violations. Such a system is not conducive to the detection of illegally traded wildlife given the working hours of the wildlife detection dog and since bear bile is not a wildlife derivative commonly found in trade across this border crossing.

The project would most probably result in increased seizures if more wildlife detection dogs were employed and based in San Francisco for the detection of bear bile. It remains to be seen whether seizures of wildlife contraband will increase now that cars in the pre-primary area can be checked.

South African Police Service

The canine detection programme of the South African Police Service (SAPS) was initiated in 1993 by Captain Dykes to detect elephant ivory and rhinoceros horn. Due to financial difficulties the programme was suspended, recommencing in 1996. As if financial difficulties were not enough, the ivory and rhinoceros horn detection dog then died the same year and with it, the canine detection programme. Important information, however, had been obtained during the training exercises, with the dog having a high success rate for the detection of rhinoceros horn (Capt. Yates., *in litt.*, October 1997). Although it appears that bird feathers, when separated from

the primary scent source, gradually lose their scent, Capt. Yates reported that the dog was able to detect ivory regardless of how long the ivory had been taken from the elephant, whether it was buried, stained or painted, or mixed with a variety of bones and horns. Only rough ivory was tested and therefore further research would need to be carried out to determine whether a dog could detect worked and polished ivory. Although the dog was trained to detect the ivory of elephants only, Capt. Yates reported that hippopotamus ivory would not present any problems (Capt. Yates, *in litt.*, October, 1997).

In December, 1996, the SAPS initiated a canine programme to detect abalone and Cape Rock Lobster with a Border Collie, "Tammy", based in Cape Town. A collie was chosen since this breed has a high work rate, is medium sized, and has excellent sniffing abilities (Capt. Yates, *in litt.*, October, 1997). The size of the dog is important to take into account since too small a dog will not be able to scale large obstructions and too large a dog would not be able to enter confined spaces. Since the dog is also required to work close to people, it was trained to give a "passive alert" upon the successful detection of contraband, thereby also enhancing the already non-threatening image of a Border Collie.

Trials have revealed that the canine is capable of detecting lobsters in the holds of fishing boats even in the presence of a variety of other fish species and strong smells. Abalone have also been detected under piles of kelp, in thick bush and in cars and buildings. From July to September 1997, there have been 5 cases with 16 arrests. A further two seizures were recently made, although they are still *sub judicae*, and included the discovery of ZAR 23,000 (US$4,580) worth of abalone and a recent seizure of 108 undersized abalone weighing 7 kg and with a market value of ZAR 700 (US$140). As of June 1998, the detection canine has recovered approximately ZAR 130,000 (US$25,890) of abalone (Yates, *in litt.*, 4 June 1998).

Scent Discrimination

What scents can a dog be trained to detect?

The preceding section clearly shows that canines can be trained to detect wildlife in trade. In fact, canines can be trained to detect anything providing that it has a scent (Krenz., pers. comm., January 1997). Narcotics dogs, for example, are trained to detect marijuana, despite the fact that there are numerous different strains of marijuana. According to Mark Rispoli of the MAKOR K-9 Training Centre, it would be possible for a dog to be trained to detect each individual strain of marijuana. Located in Napa valley amidst the vineyards of the region, the MAKOR K-9 Training Centre was approached by a winery to train a dog to detect cork infected with a pathogen which ruined the wine. The trials proved successful although running a canine programme proved prohibitively expensive for the winery (Rispoli, pers. comm., Sept., 1997).

On 11 March 1998, U.S. Customs found two gall-bladders marked in Chinese as "Bear Gall-bladder". These gall-bladders were hidden for scent detection training by USFWS Wildlife Inspector Dean's canine - "Mason". The dog did not alert to the gall-bladders and subsequent chemical analysis revealed that the "bear gall-bladders" were in fact pig gall-bladders (Dean, *in litt.*, June 1998). In other words, the canine detection programmes of the USFWS and the COS indicate that a canine can successfully differentiate between taxa. The COS canine programme

also demonstrates, as noted earlier, that a canine can be trained to detect and differentiate between specific parts of the same species. Research conducted by Russia's Tiger Protection Society (TPS), founded in 1993, has further demonstrated that a canine can be trained to differentiate between individuals of the same species. Based on methodology used by the Russian Ministry of Home Affairs special centre of criminology, B.N. Krutova and K.T. Sulimov, in the mid-1980s, pioneered the technique of Tiger censusing with canines in the South Sikhote Alin region of the Russian Far East. Six hundred scent samples were collected over a five year period from which the two specially trained German Shepherd sniffer dogs identified a total of 22 Tigers. Smell samples took the form of scats, urine marks, hair rubbings and scratch markings. This sniffer dog method revealed that the pug mark census conducted previously over-estimated the number of Tigers in the reserve by 40%. Further, it was established that between 1993 and 1997, six Tigers disappeared from the 13 individuals resident in the first year of censusing (Anon., 1998).

The scents a dog can be trained to detect therefore depend upon what the handler requires the dog for, and the training and motivation of the dog and handler. Those dogs currently detecting wildlife in trade, as noted above, have been trained according to the wildlife trade profile of the region and the particular taxa which the handler wants the dog to locate. When setting up a canine detection programme for wildlife in trade it is therefore important to know what taxa are in trade and to then assess which taxa are of the highest priority. Hong Kong, for example, has a variety of different taxa intercepted in trade at land, sea and air ports (Appendix III). Deciding which taxa to train a dog to locate in a given region would depend upon which taxa were of the highest priority for law enforcement officers.

How many scents can a canine detect?

Canines employed to assist in law enforcement are trained with a specific purpose in mind. In total, a firearms and explosives dog can detect around 21 scents as they are trained to recognise 12 base scents or combinations thereof which are usually associated with firearms or explosives (Russel, pers. comm., Sept., 1997; Rispoli, pers. comm., Sept., 1997).

The Beagle Brigade of Food Inspection Canada in Vancouver International Airport are trained to detect fruit and meat - each type of fruit or meat having a particular scent. Although no trials have been carried out to determine the actual number of scents this represents (there being no need to determine this), Dr Livingstone estimated that the dogs could discriminate between around 70 - 80 different scents (Livingstone, pers. comm., Sept., 1997). The canines used by the Quarantine Detector Dog Programme of Australian Quarantine and Inspection Service - initiated in 1992 - are also trained to detect a large number of products including fruit, meat, plant material, eggs, birds, reptiles and bees. Of interest is that the canines from this programme have also indicated on plants which they were not trained on, such as cannabis (providing it was not totally desiccated). It is thought chlorophyll in plant matter may have been the "trigger" (Weinert, pers. comm., June 1998). The SAPS fire dogs can detect up to 18 different solvents used for igniting fires although the wildlife dog is trained to detect abalone and crayfish only. That the SAPS wildlife dog can detect two scents reflects only the purpose for which the dog is trained rather than the scent discriminating talents of the dog.

Maintenance of the dogs scent discriminating abilities, rather than the training of dogs for scent discrimination, is the main limiting factor. If a scent is left idle for a time, then the dog will not

pick up on the scent (Rispoli, pers. comm., Sept., 1997). Maintenance is a daily process and thus a time consuming exercise: the more scents the dog is trained to detect, the more work and time the trainer must invest to continually reinforce the dog's scent discriminating abilities. The number of scents that a canine can detect is therefore dependent upon the number of scents that the dog is needed to detect and how practical it is to train and maintain the dogs abilities.

Great care must also be taken to ensure that the scents used for training are neither contaminated nor hold particular associations for the dog. During a training exercise at Vancouver International Airport, it was noticed that the Beagles were confirming the presence of agricultural products in baggage which did not contain the said items. It transpired that these bags had been held in the airport and the dogs were therefore associating the scent of the airport with what they believed they were expected to locate. Training was modified as a result. Similar problems were pointed out by US Customs officers who stressed the importance of having new people carry training aids for the dogs. Training aids carried by the handlers themselves were not so effective since it was not possible to determine whether the dog associated with the scent of the trainer or the training aid.

Dividing Talents

To the dogs, it does not matter whether they are searching for narcotics, wildlife or explosives since motivation to locate the scent is derived from the desire to please the handler and to receive a reward. Since the techniques for training a dog to detect, for example, narcotics and wildlife, are the same then it would certainly be possible to train a dog to detect both narcotics and wildlife (Krenz, pers. comm., Sept., 1997). In a manner of speaking, the Quarantine Detector Dog Programme (Australia) has already shown that a canine can be used to detect both wildlife products and narcotics: as noted earlier, the canines are trained to detect a variety of products including plant material, fruit, eggs, reptiles and bees, etc. The dogs have alerted on cannabis when checking for other products for which they are trained to detect - possibly because they alerted on the chlorophyll present in plant matter (Weinert, pers. comm,. June 1998). A dog already trained to detect narcotics could be further trained to detect wildlife products in just a couple of weeks (Russel, pers. comm., Sept., 1997). While this option would avoid the cost of purchasing and training separate dogs for detection of narcotics and wildlife, the number of scents the dog is required to detect should not be too high as considerable time is required to maintain the dog's scent detection abilities, and furthermore, one runs the risk of "overloading" the dog with such a multitude of scent profiles that the dog may become confused thereby resulting in false hits (S/Sgt. Radke, *in litt.*, 1 June 1998).

One potential problem noted by Helen Weinert, Assistant Manager, Quarantine Detector Dog Programme (Australia), was if two contraband items were hidden within the same bag/package: a dog trained to detect both wildlife and items controlled by quarantine would alert the handler who, upon closer inspection of the bag, might locate, for example, a banana only. The handler might well confiscate the banana and then allow the passenger to continue on his/her journey, and therefore not locate the narcotics. While certainly a feasible scenario, it could be overcome by increased vigilance by the inspector upon detection of any contraband item.

Certain policy and logistical implications would also need to be considered. In the US and

Canada, canine handlers are trained and certified to work on specific products. Thus a handler trained and certified to work with a wildlife detection canine would be unable to work with narcotics as well (Krenz, pers. comm., January 1997). In South Korea and Hong Kong, however, the canine and handler are employed for detection purposes only: once a contraband product is located, a Customs officer is called upon to handle the matter. Therefore, dividing the talents of a canine to detect wildlife products and narcotics might be a feasible option. Indeed, Customs & Excise Department and the Agriculture and Fisheries Department (AFD) of Hong Kong commented that dividing the talents of a canine might be more cost effective whilst also meeting the requirements of Customs & Excise as well as those of the AFD (Leung, pers. comm., March 1998; Cheung, pers. comm., March 1998). Further detailed discussion would be required, however, due to the complex policy and funding implications this option presents.

Selection of a Canine for Scent Detection

Breed

The breed of dog selected for law enforcement activities depends entirely upon the type of work that the dog is required for. The training of dogs for police work, originally developed in Ghent, Belgium, at the turn of the century, for example, used the more fiercesome looking dogs such as Riesenschauzers, Rottweilers, Doberman Pinschers and German shepherds. Over the years, the German shepherd has become accepted throughout the world as one of the most effective law enforcement tools for police work. This is not only due to the intimidating psychological effect their presence has on people, it is also because they have consistently displayed the versatility and strength required of a police dog (RCMP, 1990). Other dogs commonly used for police work include the Belgian Shepherds: Tervuren, Laeken, Groenendale, and Dutch Herders Hound / Brindle.

Food Inspection Canada and the US Department of Agriculture, in contrast, use Beagles, a visually non-threatening breed but highly effective for the task that they are required to perform. Since the Beagles are also required to check passengers' hand luggage, thereby coming into close contact with passengers, the non-threatening image and the "sit confirmation" upon the detection of scents are extremely important factors for the success of the programme. Due to their friendly image, Beagles also act as a very effective public relations and education tool. The Quarantine Detector Dog Programme (Australia) also use Beagles for checking passengers arriving by air and from cruise liners although larger non-specific breeds are used to check pit baggage at international airports, international mail receiving facilities, and courier parcels. These larger breeds (including Cattle dog crosses, a Springer Spaniel and a Kelpie cross) are trained for an "active" response and will thus not be used to check passengers (Weinert, pers. comm., June 1998).

Dogs used for the detection of narcotics carried by people also require a non-threatening appearance. Thus, commonly found breeds include Labrador Retrievers, Golden Retrievers, and Springer Spaniels. According to Mark Rispoli, however, Labrador Retrievers or Belgian Malinois are more suited to hot and humid conditions than other breeds which easily become tired in such climates.

Opinions on which breeds perform best will differ from person to person and according to what the dog is required to do. Hence the Quarantine Detector Dog Programme (Australia) uses different breeds depending upon the type of work required of the dog. The most important consideration is first to decide what tasks the dog will be required to do, what taxa the dog is required to detect, in what environment the dog will be working and for how long, etc. Once these decisions have been made, the task of selecting the breed is automatically narrowed down. The difficult part from then on is *not* the training, rather it is selecting the right individual with the right temperament to carry out the selected tasks in the chosen environment (von Krogh, pers. comm., June 1998).

Gender and Drive

Opinions on which gender is more suited to detection work varied from person to person. Male dogs were often cited as having a higher aggression drive, necessary for police work and thus more commonly chosen by the RCMP. It was, however, also noted by some that certain male dogs will show interest in the scent of receptive females, thereby distracting it from it's job. Strict training can help eliminate this problem although a female dog will, naturally, not show such interest. Whatever gender, selection of a dog for training is based largely on the display of a high play drive and a willingness to please the owner. Dogs selected for police work will, in the early stages of training, also need to display a good tracking ability, a good bite for criminal apprehension and the ability to detect and locate different scents. A dog required for the detection of wildlife, on the other hand, will not need the aggression or bite capability required of a police dog, but will nonetheless need to display a high drive.

Training and the Working Life of a Canine

A dog's working life begins from the moment it starts training. Usually dogs are taken on between the ages of eleven and sixteen months when they are most responsive to training (RCMP, 1990). Typically, dogs are either selected from breeders, as with German Shepherds bought by the RCMP from Europe, or are selected from dog pounds (where discarded and unwanted dogs are housed), as with many of the US Customs Narcotics Detection dogs. Only around 18% of dogs taken on for police dog training will actually make it through the selection process; dogs that do not display the requisite attributes or suffer from medical problems will not be taken on for full training (Russell, pers. comm., Sept., 1997). Dogs bought by the RCMP from breeding centres in Europe have already undergone basic obedience, tracking and aggression training. Further training of the canine for scent detection work will take around eight weeks. By comparison, training the canine for police work will take three to four and a half months for the dog and handler - depending upon the experience of the handler (Russell, pers. comm., Sept., 1997).

Training for scent discrimination ranges from 8 - 12 weeks depending upon the dog and the experience of the handler (Rispoli, pers. comm., Sept., 1997; Radke, *in litt.*, December, 1997; Dr Livingstone, *in litt.*, 20 October 1997; Pong, pers. comm., March 1998). The first 4-6 weeks are spent on scent discrimination training for the dog only and then a further five weeks or so are spent training the handler with the dog (Rispoli, pers. comm., Sept., 1997; Livingstone, pers. comm., Sept., 1997). Initial introduction to scents are made either in a "scent free" area, such as a field in the country where the dog is gradually introduced to the scent, or through "box training"

where the item is placed in a box thereby concentrating the item's scent and familiarising the dog with the uncontaminated scent. Incentive for the dog to locate the scent is based on a reward system, usually either a tug-of-war with a towel (which the dog wins) or a food reward (Plate 7). It is the desire to please the handler and to gain the reward that motivates the dog to continue working (Dean, pers. comm., Sept., 1997).

Follow-up training was also recommended by some trainers, the purpose of which is to ensure that the correct techniques are being used, that the dog and handler have adapted to the environment in which they work, and to smooth out any problems or bad habits that may have arisen since training began. Duration of training depends upon the training centre: the MAKOR K-9 Training centre recommends on-site follow up training to take place three months after initial training; and the RCMP recommends that the dog and handler return for a refresher and assessment course after 6-9 months and thereafter for an on-site refresher course once per annum.

A dog is able to work for considerable periods of time providing that they are given sufficient rest periods whilst they work and that longer rest intervals are interspersed throughout the day. US Customs' dogs sometimes work a 16 hour shift with their handlers including breaks and rest periods (Dean, *in litt.*, October 1997), although on average, a dog will work for 8 hours per day, including rest periods, with each working session lasting approximately 20-30 minutes (Pong, pers. comm., March 1998). A dog's full working life is around 8-9 years (Rispoli, pers. comm., 1997; Pong, pers. comm., March 1998) although this will depend upon the motivation and health of the dog. US immigration has one dog that is now 12 years old and still carrying out a full days' work (Dean, *in litt.*, June 1998). In some countries, when a dog retires from active service the handler may keep the dog since a close bond will have been formed over the years.

Training of the handler and familiarity of the handler with the dog is as important as the training of the dog since the handler must be able to recognise the most subtle of signs displayed by the dog. A dog handler will therefore work with one dog only to ensure familiarity between handler and canine. The handler must also be physically fit and motivated as a lack of motivation will be reflected in the dog (Livingstone, pers. comm., Sept., 1997).

Certification, Policy and Logistical Implications

In order for the handler (and sometimes the dog) to be able to appear in court as expert witnesses in the US and Canada, both the dog and the handler must be certified with a recognised training centre / dog school. Certification, in short, means that on a given day, in given conditions, the handler and the dog succeeded in detecting certain concealed items with over 90% accuracy. Certification of the dog and its handler must take place every year. USFWS Wildlife Inspector Erin Dean and her dog "Mason" are both registered with the MAKOR K-9 Training Centre - the largest detection dog training centre outside of US Customs; the British Columbia COS canine - "Renko" - and his handler Ralph Krenz are both registered with the British Columbia COS although training was acquired through the RCMP. The British Columbia COS requires that Dog Training Logs and Service Dog Reports (Appendix II) are maintained throughout as part of the certification procedures. In South Africa, the SAPS Border Collie and Captain Yates are registered with the SAPS itself.

Providing that the dog and the handler are certified, evidence detected by the canine and subsequently uncovered by the handler is accepted in court in the US and in Canada. The canine is generally regarded as a tool assisting the law enforcement officer to uncover hidden contraband - similar to an X-ray detecting firearms, etc., in luggage.

Different countries, however, have different policies regarding certification and the role of canines in detection work. For example, canines from the Quarantine Detector Dog Programme (Australia) are not required to be certified. In Hong Kong canines employed by Hong Kong Customs & Excise Department were trained and certified with the Royal Air Force (RAF) in the UK. Dogs are not required to be certified with any other authority in Hong Kong and neither are they required to appear as "expert witnesses" in a court of law. The situation is the same in South Korea where dogs were certified in the US where they were trained but are not required to be certified in the country. Upon detection of narcotics by a canine in South Korea and Hong Kong, the dog handler will alert a Customs officer who will then proceed with the search and seizure. Therefore, once the canine has located the narcotics, its function is complete although the dog handler may be required in a court of law to testify.

In Hong Kong, Customs & Excise Department and Agriculture and Fisheries Department both noted that the different roles performed by each department might give rise to certain problems in establishing a wildlife detection canine programme. Although Customs & Excise have experience in handling canines and are required to check imports and exports through Hong Kong, the AFD are more familiar with wildlife matters. As noted above in the section on "Dividing Talents", this problem might be overcome by training a dog to simultaneously detect narcotics and wildlife products. One advantage of such a programme could be that Customs & Excise become more familiarised with issues pertaining to wildlife trade. Further complications, however, might arise since the two departments are under the direction and supervision of different policy bureaux which naturally have different priorities. Which department would be responsible for using canines to detect wildlife, and whether it would be feasible to divide the talents of a canine requires further discussion with the relevant authorities.

Additional policy concerns include the employment of government staff. New staff can not be employed on a trial basis and then dismissed if the programme proves unworkable. A financial commitment would therefore need to be made from the outset were a wildlife detection canine programme to be established. It might, however, be possible to overcome this financial problem by dividing the talents of a dog: training a canine already employed for detecting narcotics to then detect wildlife products as well would reduce the costs significantly since neither a new canine nor a new handler would need to be employed. Such an option would require further discussion with the relevant authorities.

Discussion has, for the most part, so far centred around checking passengers and baggage, etc., entering a country. The Quarantine Detector Dog Programme (Australia), however, was approached by The Biodiversity Group[2], some years ago, to see whether it would be possible to

---

[2]The Biodiversity Group (formerly the Australian Nature Conservation Agency, formerly the Australian National Parks and Wildlife Service). The Biodiversity Group was formed in 1975 as the principal nature conservation programme of the Commonwealth Government of Australia, and is a programme of the Commonwealth Environment Portfolio.

Plate 7 USFWS Wildlife Inspector Dean rewarding Mason with a tug-of-war for successful detection of the bear bile training aid.

check passengers, etc., leaving Australia. While it is definitely feasible for canines to do this, there are logistical issues which would need to be addressed as the operational procedures differ from those for passengers, etc., entering a country. For example, passengers are not required to pass through Customs when leaving the country and thus a new system would need to be devised to enable checking of passengers. So far, no commitment has been made although this remains a possibility (Weinert, pers. comm., June 1998).

Costs of Acquisition, Training and Maintenance

The cost of training and maintaining a dog is dependent upon many factors, not least the cost of living in any particular country. Costs between canine training schools will also vary as will the cost of maintaining a dog if it is kept in kennels or privately at home. For example, USFWS Wildlife Inspector Dean, who owns her dog, covers veterinary bills, food and maintenance while the USFWS covers training, training items, supplies, and kennel costs. Whether the dog is kept in a kennel or kept at home depends entirely upon the structure of the programme, the personality of the dog and / or the handler. Some handlers believe that the dog works better if it is kept in kennels. Others noted that if the kennel is stressful, then the dog may be too tired to work during the day.

The cost breakdown given in Table 1 is intended to provide an estimate as to the overall costs of acquisition and training of one dog. It should, however, be stressed that the costs provided in this table are estimates only - based upon average costs provided by various agencies and canine training centres.

Table 1 Cost Estimate for Starting and Maintaining a Canine Detection Programme

Acquisition and Training	US$
Acquisition of dog (range: US$140 - 7000)*	3,500
Basic scent detection and obedience training (range: US$6500 - 7460)**	6,980
Follow up training** / ***	850
On-site follow up training** / ***	1,280
Further annual on-site training** / ***	515
Sub-total #.1	**13,125**
Maintenance fees per dog per annum	
Food and general maintenance (range: US$1000 - 1500)	1,250
Veterinary bills (range: US$190 - 1500)	700
Equipment (leash, mask, brush, bowl, comb, etc.) per dog (range: US$150 - 700)	425
Training materials (towels, briefcases, wooden crates, etc) (range: US$45 - 900)	475
Sub-total #.2	**2,850**
Total	**15,975**

Source: based on average of costs provided by RCMP; MAKOR K-9 Training Centre; USFWS; South Korea Customs Services; Hong Kong Customs & Excise Department, and the Detection Dog Programme, Food Inspection Canada.

Note: * *Purchase cost of a dog varies considerably depending upon the origin of the dog. Some dogs, are obtained from animal rescue centres - US Customs dogs and some Beagles acquired by The Vancouver Canine Detection Programme, Food Inspection Canada, being notable examples.*

** *costs provided are exclusive of expenses.*

*** *The Customs Dog Unit of the Hong Kong Customs and Excise Department does not carry out follow up training. Costs provided by the Hong Kong Customs Dog Unit included all expenses and associated expenses for training of the handler and dog in the United Kingdom but not for purchase cost of the dog. Cost provided was US$19,380. Thus, total cost for acquisition, training including all expenses for dog and handler may be estimated as US$22,500.*

Accessory costs, such as a vehicle for transport, vehicle maintenance and fuel, a transport kennel, and various training aids may not be applicable for countries which already have canine programmes in operation. Estimates for certain costs, however, are provided in Table 2 for reference and as a guide to start-up costs or expanding an existing programme. Costs for the building of kennels, are *not* included and running costs will vary considerably depending upon cost of living in a particular country.

Table 2 Cost estimate for Accessories

Accessories	US$
Vehicle	10,000*
Vehicle kennel and accessories	100
Washing machine for bedding, towels, etc.	1,000
Total	**11,100**

Source: adapted from costs provided by USFWS; South Korea Customs Services;
Note*: vehicle cost in Hong Kong would be around US$14,000

Costs must also include the salary of the handler. The average annual salary for a dog handler differs considerably between Hong Kong (US$34,200 including benefits) and South Korea (US$14,000 excluding benefits). Table 3 combines the totals of Tables 1 and 2 to provide a general guide to the overall costs of purchasing, training and maintenance (for one year) of one dog for South Korea. This total does not, however, include expenses associated with training - such as airfare, accommodation, board and lodging, etc.

Table 3 Total Estimated Cost of Establishing a Canine Detection Programme and Maintenance for One Year in South Korea

Item	US$
Purchase and Training	13,125
Maintenance	2,850
Accessories	11,100
Handler's salary in South Korea	14000
Total	**41,075**

Source: adapted from costs provided by RCMP; MAKOR K-9 Training Centre; USFWS; South Korea Customs Services; Hong Kong Customs & Excise Department, and the Detection Dog Programme, Food Inspection Canada.

Table 4 provides an estimate of costs associated with establishing a wildlife detection canine programme in Hong Kong based on the cost estimates given in tables 1 and 2 and further details provided by Customs Dog Unit, Hong Kong Customs & Excise Department.

Table 4 Total Estimated Cost of Establishing a Canine Detection Programme and Maintenance for One Year in Hong Kong

Item	US$
Estimated purchase cost of one canine	3,500
Training and expenses for handler and dog	19,380
Maintenance	2,850
Accessories*	15,100
Handler's salary	34,200
Total	**75,030**

Source: adapted from costs provided by RCMP; MAKOR K-9 Training Centre; USFWS; Hong Kong Customs & Excise Department, and the Detection Dog Programme, Food Inspection Canada.
Note*: the higher cost for a vehicle in Hong Kong is included

Taking three years as the minimum viable period for a wildlife detection canine programme, the total costs of establishing and maintaining such a programme for South Korea and Hong Kong are detailed in Table 5 and Table 6 respectively.

Table 5 Summary of Costs for a Three Year Programme in South Korea

Item	US$
Purchase, Training and Maintenance	20,649
Accessories	11,100
Salary	42,000
Total	**73,749**

Table 6 Summary of Costs for a Three Year Programme in Hong Kong

Item	US$
Purchase and Maintenance	29,630
Accessories	15,100
Salary	102,600
Total	**147,330**

While the cost of establishing and maintaining a wildlife detection canine programme appears quite high, total cost relative to the direct and associated benefits of such a programme, however, is small - as explained in the "Discussion" section. Furthermore, the cost of establishing a wildlife detection programme could be lowered substantially if a dog already trained to detect narcotics is further trained to detect wildlife products. As noted above, this option would only be possible where certification procedures allow, such as in Hong Kong or South Korea, although further discussions with the relevant authorities are required to ascertain whether, in fact, this would be

compatible with their existing canine detection programmes. Finally, it should be noted that certain government agencies have no precedent for accepting financial donations from non-government organisations.

Discussion

Just as the increase in human traffic and drug trafficking in the late 1960s / early 1970s led to the creation of new and improved methods of detecting narcotics, so the continuing growth of human traffic and cargo in the 1990s calls for the creation of improved methods for detecting the increasing trade in wildlife. There can be no doubt that dogs are an extremely useful tool for the detection of illicit goods - as witnessed by the use of detection dogs worldwide.

The certification of the three wildlife detection programmes detailed above demonstrates that canines can be used to detect wildlife products including bear gall-bladders, bear bile and flakes, live parrots, abalone, crayfish, ivory and rhinoceros horn and that the canines are able to differentiate between, for example, gall-bladders of pigs compared to gall-bladders of bears. Quarantine and Food Inspection Detector Dog programmes have also shown that canines can be trained to detect reptiles, birds, eggs, meat, and plant material. Of particular interest for this study is that specimens which the dogs have been trained to detect, such as ivory, maintain their scent even when disguised with other scents (such as covering ivory with paint or tea) and even after they have been separated from the primary scent source for long periods of time.

As pointed out by all wildlife and narcotic detection canine handlers, a canine could certainly be trained to detect wildlife products other than those which canines are already able to detect. To ensure a successful detection programme, the wildlife trade profile of the particular region should first be determined to ascertain priority species for detection whereupon further trials and training would need to be conducted.

Cost and policy implications are naturally of concern to agencies responsible for law enforcement. An estimate for the cost of establishing and maintaining a wildlife detection canine programme is provided although, as noted in the text, this is based upon various costs provided from various agencies and training centres and is dependent upon where the training takes place, the cost of living in the country, and what type of programme is established, etc. If a canine already trained to detect narcotics is further trained to detect wildlife products as well, the costs could be significantly reduced. If an entirely new programme is established, however, then the costs could be higher than the estimate provided since kennels may need to be built, etc. Nonetheless, cost implications are acceptable when associated benefits are considered - as detailed below.

The most obvious advantage that detection dogs have over humans is that they are able to check more thoroughly and more rapidly any site where illegal goods may be held including cargo, post, passengers arriving by air, land or sea, aeroplanes, and warehouses, etc. Further associated benefits include:

- Reducing overall costs of law enforcement.

  In the same time that it would take one dog and one handler to carry out a *relatively thorough examination* of passengers and baggage arriving on a Boeing 747, around 36 Customs officers would be required to carry out a *cursory examination*. The cost of a detector dog programme therefore becomes minimal especially when taking into account the cost of conducting public awareness campaigns, carrying out public relations exercises, and accounting for the safety of enforcement officers, not to mention the fact that law enforcement officers, by nature, can not detect illegal trade so effectively;

- Increasing number of passengers and volume of cargo checked;

- Increasing public awareness;

  The presence of a detection canine naturally stimulates interest from passengers arriving at an airport, etc. The combination of a visually non-threatening breed and an enthusiastic and open handler increase awareness of wildlife trade amongst the public while also sending out a clear message that illegal wildlife trade is an issue taken seriously by the government.

- Improving public relations;

  A visually non-threatening breed and an enthusiastic and open handler who is willing to answer questions from the public improves public relations while also increasing awareness.

- As an educational tool for Customs officers and the general public;

  Although Customs officers responsible for intercepting contraband goods, etc., may well come across wildlife products in trade, they may not necessarily be able to recognise the species or know whether it is illegal or not. The presence of a handler responsible for checking wildlife enables the Customs officer to seek assistance and at the same time to learn more about the illegal trade in wildlife. Likewise with the general public, the presence of a wildlife officer will enable them to learn more about which species are banned or regulated in trade.

- Enhancing the safety of Customs officers;

  An alert from a wildlife scent detection canine will indicate the presence of wildlife / wildlife products to the Customs officer. Inspection should then proceed with caution in case of, for example, live venomous snakes;

- A deterrent to potential wildlife smugglers.

Recommendations

The many advantages of employing a wildlife detection canine are clear to see. Before the recommendations listed below may be implemented, however, there are certain steps which would first need to be taken. Further discussions would need to be held with the relevant agencies of the country to determine the type of programme to be established. This may be one of the following: a new canine detection programme for wildlife products; a new canine detection programme dividing the talents of a canine to detect narcotics and wildlife products; retraining a canine from an existing narcotics detection programme to detect wildlife products as well as narcotics. Once the type of programme has been decided upon, further detailed discussions on cost requirements would be required and the wildlife trade profile of the region established to determine species of concern which are prevalent in trade in the region. Following these steps and using this report as a solid base of information, the following recommendations are put forward:

- Seminars on law enforcement, such as CITES law enforcement seminars, should point out the advantages of investing in canines to assist in detecting wildlife contraband;
- Canines trained to detect wildlife contraband should be employed in key wildlife smuggling ports;
- Government funding or, if unavailable, non-government funding should be allocated for implementation of a wildlife scent detection canine programme;
- The feasibility of sponsorship of a wildlife scent detection canine could be explored;
- Pilot programmes for wildlife scent detection dogs should be established for a minimum of three years;
- Evaluation of new programmes should be carried out periodically;
- Information on seizures of contraband wildlife should be submitted to the CITES Secretariat for dissemination to other Parties interested in initiating wildlife detection canine programmes. Canine programmes already up and running may also like to consider submitting information on seizures to the CITES Secretariat for dissemination to other Parties. Seizure information would be useful for documenting trade routes and trends. Since contraband items are, for the most part, seized at the point of import, information relayed back to the Parties would serve to inform them about the wildlife leaving their country. Theoretically, seizures of wildlife contraband by already established canine detection programmes may provide incentive for other Parties to establish canine detection programmes. The TRAFFIC Network would be happy to assist the CITES Secretariat in the compilation and analysis of seizure information.

REFERENCES

Anon. (1998). *Sniffer dogs for census.* TigerLink News Vol.4 (1) April 1998.

Brooks, J., E. Dean-Pilkington., W. A. Myers., S. D. Serena. (1995). *A Tool to Assist in the Detection of Smuggled Wildlife.* United States Fish and Wildlife Service. Unpublished.

Howlett, B. ed. (1997). *Hong Kong 1997. A Review of 1996.* Hong Kong Government Printer, Hong Kong.

Krenz. R. (1995). *The Use of Dogs in Detecting Bear Gall Bladders* in Rose, D.A., and Gaski, A.L, 1995, Proceedings of the International Symposium on the Trade of Bear Parts for Medicinal Use, 9-11 September 1994, Seattle, Washington, USA. TRAFFIC USA / World Wildlife Fund, Washington, DC, USA.

Royal Canadian Mounted Police. (1990). *Police Dog Services.* Royal Canadian Mounted Police, Communications and Media Relations Directorate for Crime Prevention and Victims Services Branch and Police Dog Services.

TRAFFIC USA. (1996). Newsletter. TRAFFIC USA, Vol.15 (2) April 1996.

US Customs. (1997). *Ports of San Ysidro, Otay Mesa, Tecate, Calexico, & Andrade Narcotics Seizures.* Southern California Customs Management Center. Unpublished.

APPENDIX I

Persons visited

Canada - RCMP
Inspector J.N. Boucher
RCMP National Police Dog Training School
P.O Box. 6120
Innisfail
Alberta, Canada
Zip Code: T46 1S8
Tel: 403 - 227 - 3346.
Fax: 403 - 227 - 1522

Sergeant Gil Radke
RCMP National Police Dog Training School
P.O Box. 6120
Innisfail
Alberta, Canada
Zip Code: T46 1S8
Tel: 403 - 227 - 3346.
Fax: 403 - 227 - 1522

Kerry Russel
RCMP National Police Dog Training School
P.O Box. 6120
Innisfail
Alberta, Canada
Zip Code: T46 1S8
Tel: 403 - 227 - 3346.
Fax: 403 - 227 - 1522

Canada - Food Inspection Canada
Dr Rod Livingstone
Head, Sniffer Dog Program
Food Inspection Canada (formerly Agriculture Canada)
Airport Postal Outlet
P.O. Box 24349
Richmond, B.C., V7B 1Y4

Paul Littlewood
Inspector, Detector Dog Handler
Email: plittlew@direct.ca

Mike Smith
Inspector, Detector Dog Handler
Vancouver Airport

Canada - US Customs
Robert L. Freer
Detector Dog Handler
Anti-Smuggling Team
Customs Traffic Operations
Vancouver British Columbia

Cliff Davidson
US Customs Canine Enforcement Officer
Vancouver British Columbia
Tel: 604 278 7422
Fax: 604278 4203

Hong Kong
Mr C. S. Cheung
Endangered Species Protection Officer
Agriculture and Fisheries Department
Tel: 2733 2521
Fax: 2376 3749

Mr C.C. Leung
Group Head (Investigation), Prosecution, Intelligence & Investigation Bureau
Customs & Excise Department
Rm. 1017., 10/Fl Rumsey Street Car Park Building
Central Hong Kong
Tel: 2852 1413
Fax: 2541 1987

Mr W.K. Pong
Head of Canine Operations,
Hong Kong Customs and Excise Department
Direct Tel: 2769 8542
General Fax: 2362 4614

South Korea
Yoon, Heon
Deputy Director
Trade Cooperation Division
Korean Customs Service
Tel: (82) 2 512 2317
Fax: (82) 2 512 2209

Park Man Seok,
Special Investigation Section,
Kimpo Customs House
Korean Customs Service

Torill H. Strand Larsen
Senior Executive Officer
Directorate of Customs and Excise
Fax: 47 22 17 15 97

Dr. Pierre Vivier
Agriculture Canada
Tel: 514-476-1223
Fax: 514 476 1416

Helen Weinert
Assistant Manager
Quarantine Detector Dog Programme
Australian Quarantine and Inspection Service
Tel: 61 2 6272 4567
Fax: 61 2 6272 3276

Captain Yates (*also visited by TRAFFIC East / Southern Africa - South Africa)*
South African Police Dog School
Tel: (+ 27) 12 353 9400 or (+27) -12 - 353 9428
Fax: +27 12 353 9413
Email: kimels@smartnet.co.za

United States
Erin Dean
Inspector, U.S. Fish and Wildlife Service
Division of Law Enforcement
185 West F Street
Suite 440, San Diego, CA
92101-6025, USA
Fax: 1-619-557 2997
Tel: 1-619 557 5794

Mark Rispoli
MAKOR Canine Training Centre
1199 Cuttings Wharf Road
Napa, California
Tel: 1-707 252 4600
Fax: 1-707 252 1300

Persons contacted

Mark Declunder
Technical Attache
World Customs Organisation
Rue de l'Industrie, 26-28
B-1040 Brussels
Belgium
Tel: 32-2-508-4379
Fax: 32-2-508-4229

Rob Gray
Heathrow Dog Trainer
Tel: 0181 910 3784
Fax: 0181 910 3833

Ralph Krenz
Conservation Officer
British Columbia Conservation Officer Service
Nelson, B.C
Telephone: (250) 354-6397
Fax: (250) 354 6332

Rolf von Krogh
Senior Executive Officer
Directorate Customs and Excise
Anti-Smuggling Division
Oslo, Norway
Office Tel: 0047 2286 0374
Office Fax: 0047 2217 1597

APPENDIX II

94/3

CONSERVATION OFFICER SERVICE
SERVICE DOG REPORT

Date: 94.01.28 Time of Incident: N/A Depart: _____ Arrive: 1455

Conditions Indoor X Outdoor ___

Temp: ____ Wind direction _____ Wind speed _____ Precip: _____ Cloud cover ____
Light conditions: _____

Agency: SIU/C.O.S. Officers attending OLSEN, BRESSOR, HAYDEN, VANDAMME, VANSPRANG, HILGIMAN.
Dog handler: KRENZ Dog: RENKO
Location: [redacted], VANCOUVER

Details of request: CONDUCT SEARCH OF STORE FOR BEAR GALLS, DURING EXECUTION OF SEARCH WARRANT.

Action taken: BEGAN BY SEARCHING SMALL ROOMS IN BACK OF STORE. UPON ENTERING SECOND ROOM, RENKO INDICATED A PLASTIC GARBAGE CAN. CONTINUED SEARCH, RENKO INDICATED A COUNTER UNDER THE CASH REGISTER. NO OTHER INDICATIONS GIVEN.

Individuals particulars: [redacted]

Description of area searched: STORE AND BACK ROOMS.

Exhibits recovered: 11 GALL BLADDERS.

Diagram over

APPENDIX II

CONSERVATION OFFICER SERVICE

DOG TRAINING LOG

HANDLER: KRENZ CANINE: RENKO

DATE: 93.01.07 LOCATION: VAN. INTL. AIRPORT

EXERCISE: TRACKING ____ SEARCH ____

PROPERTY ____ OBEDIENCE ____

DETECTION GALLS BUILDING ____

OTHER ____

TIME START: 1140 TIME DELAY: 45 MIN TIME END: 1200

QUARRY: GALLS

WEATHER: TEMP: 10 °C WIND DIRECTION: N/A

CONDITIONS: OVERCAST ____ CLEAR ____

RAIN ____ SNOW ____

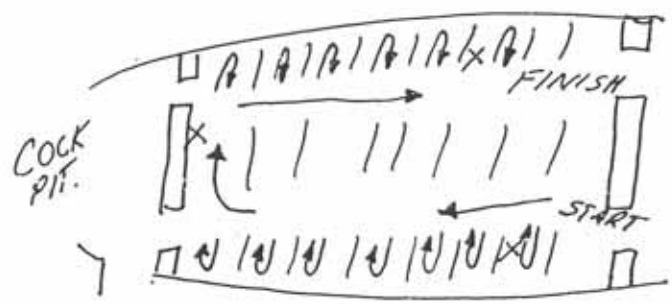
FOG ____ FROST ____

AREA CONDITIONS: PAVEMENT ____ DIRT ____ GRAVEL ____

GRASS (S) (M) (L) CEMENT ____ BUSH ____

DESCRIPTION OF EXERCISE: DETECTION TRAINING @ INSIDE DC 10 AIRCRAFT PASS. COMPARTMENT. 3 GALLS HIDDEN AT X's. RENKO INDICATED ON ALL 3, AUTO SIT ON LAST HIDE. TRAINER COMMENTS - DON'T USE DETAILING IF DOG IS SEARCHING ACTIVELY. TOO SLOW WITH AUTO SIT.

DIAGRAM:



APPENDIX III

Seizures of Endangered Species (excluding fish) in Hong Kong by Air, Sea and Land Ports of Entry, 1996

Species	Ports of Entry		
	Air	Train	Sea
Elephant	Tusk, worked ivory	Worked ivory	Worked ivory, scrap/cut piece/powder
Hippopotamus			Teeth
Felidae	Skin, skull, paw (claimed), medicines (claimed)	medicine (claimed)	Penis (claimed), medicine (claimed)
Rhinoceros	Horn, horn bowl		
Bear	Gall bladder (suspected), paw		
Musk	Pod		
Monkey	Live	Live	
Slow loris	Live	Live	
Saiga antelope	Horn		
Pangolin			Stuffed
Eagle	Stuffed	Live	
Parrot	Live	Live	
Owl	Live	Live	
Lizard	Skin, stuffed head		
Crocodile	Stuffed, stuffed head, skin, meat (claimed), paw (claimed).		
Snakes	Live, skin	Live, carcass, carcass in wine	
Land tortoise	Live		
Soft shell turtle	Live, dead		
Sea turtle	Stuffed, carapace	Stuffed	Stuffed
Coral	Skeleton, live		
Giant clam	Live		
Butterfly	Mounted		
American ginseng	Root		