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Yet more moves to control Japan's ivory imports

In the January 1985 issue of *Oryx*, we reported on how Dr Esmond Bradley Martin's negotiations with the Tokyo Ivory Arts and Crafts Association had resulted in a successful conclusion, with the Association promising to take steps to control the ivory trade.

Unfortunately, the Association quickly abandoned the agreement because the Osaka Ivory Manufacturers' Association would not agree to adhere to the same import guidelines, and the independent companies, of which there are many, heavily involved in the ivory trade irregularities were not approached at all.

A new move, however, may ensure that future agreements are less easily broken. In December 1984, at the request of the Ministry of International Trade and Industry (MITI), the Zoogei Bukai (Ivory Importers' Group) was officially established within the Japan General Merchandise Importers' Association. The group brings together, for the first time in one body, the 25 ivory importing companies, plus representatives from the two ivory Associations. Collectively, Zoogei Bukai members account for 98 per cent of the total Japanese ivory import trade.

MITI has already, by issuing an Administrative Guidance, directed Zoogei Bukai to prohibit ivory imports from Burundi and Singapore, to tighten up controls both on imports from Zaire, Sudan, Uganda and Chad, and on all re-exports. These are promising developments but, as TRAFFIC (Japan) points out, they are too late to mitigate the widespread abuse that marked last year's trade. In 1984 Japan imported 473 tonnes of ivory (compared with 475 tonnes in 1983), including 185 tonnes from the Congo, Sudan and Zaire, all countries with export bans, 33 tonnes from Burundi, a major conduit for poached ivory, and almost 100 tonnes from, it was claimed, Uganda, possibly a new route for poached ivory.

The new moves, however, are already having an effect. In January, 18 tonnes of ivory from Singapore with Burundian documents noting Uganda as the country of origin were discovered not to have been sanctioned by the proper Ugandan authorities, and they were refused entry into Japan. Other small shipments coming via Dubai have also been stopped at Customs and are being investigated.

The Administrative Guidance has no real legal authority and depends largely upon the co-operation of the importers for its effectiveness. It is encouraging that the ivory importers have fully co-operated in the cases to date. The Zoogei Bukai offers some real hope in controlling the ivory trade. At its meeting on 8 February 1985, it passed the following four resolutions.

(1) We will try to decrease the amount of imports and refrain from re-exporting ivory, in order to secure the regular import of ivory.
(2) We will co-operate with the African countries in the export quota system which is now under consideration.
(3) We will support the establishment of the Ivory Unit at the CITES Secretariat.
(4) We will co-operate with and exchange information with the CITES Secretariat, TRAFFIC (Japan) and World Wildlife Fund Japan.

Too many Himalayan musk deer being killed

The 'vulnerable' Himalayan population of musk deer *Moschus chrysogaster* is protected to a certain extent. It is listed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which means that trade in its musk, a secretion of the preputial gland of males, is prohibited. However, the trade goes on despite this, and seems unlikely to diminish, since musk is valued very highly. It is probably the most expensive animal product in the world; in the 1970s it cost three times as much as gold.

The demand for musk costs thousands of musk deer their lives every year. Michael Green, in a paper on the musk trade (Green, 1985), expresses the fear that if the level of hunting to supply this trade continues unabated in the Himalaya, the deer population could reach a critically low level from which recovery would be unlikely.

About 320 kg of musk from all species and

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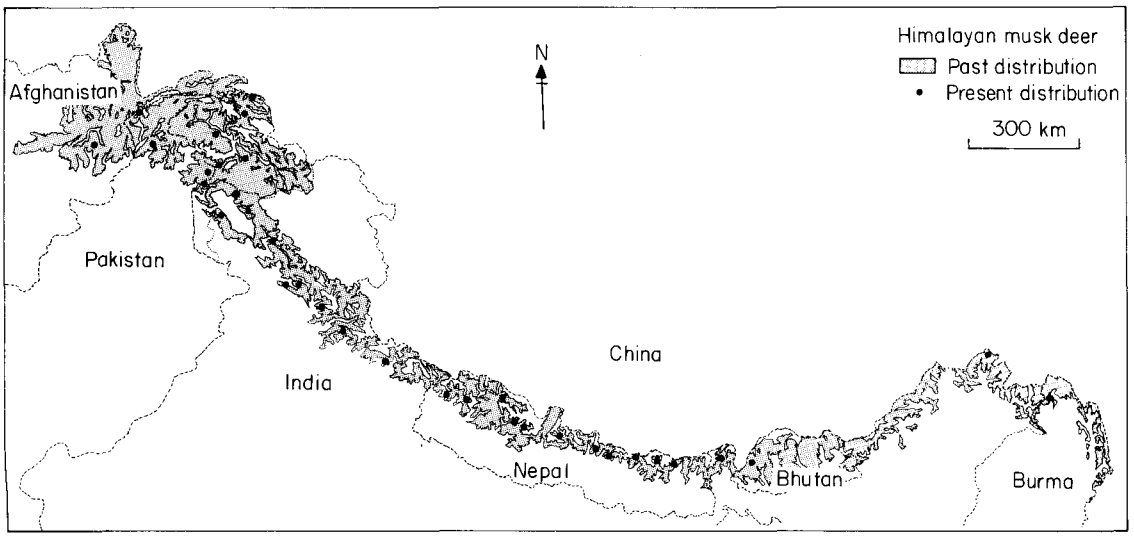

populations of musk deer enter the international trade each year, and most of it is channelled through Hong Kong. The trade in Himalayan musk is able to continue because of a CITES loophole and a lack of enforcement of protective laws in Pakistan, India, Nepal and Bhutan. Japan is a major importer of musk, and when it became a Party to CITES in 1980 it entered a reservation on the Himalayan populations of musk deer. Thus, under CITES, Japan can import Himalayan musk along with musk from populations of deer listed in Appendix II, which allows the trade under licence. Japan's imports of Himalayan musk averaged 170 kg per year from 1974 to 1980 and, since Japan imports about 80 per cent of all musk in world trade, the international trade in Himalayan musk is thus probably about 200 kg per year.

India banned the export of musk with its 1972 Wild Life Preservation Act, so musk from the Indian region of the Himalaya is probably smuggled into Nepal, from where its export via Hong Kong is alleged to be easier. Nepal prohibited the musk trade with the National Parks and Wildlife Conservation Act in 1973, but the traffic has continued unchecked.

Although the amount of Himalayan musk in the trade is known with a fair degree of certainty, it is more difficult to discover what effect present levels of exploitation are having on the Himalayan musk deer populations because their size is unknown. Michael Green, using a figure of 3.5 animals per sq km (which is the density of a small population in the Kedarnath Sanctuary, Uttar Pradesh) in the only census undertaken, and an estimate of suitable habitat available in the Himalaya as 50,000 sq km, tentatively suggests that the size of the Himalayan population is about 30,000.

Green argues that the 200 kg of musk entering international trade annually represents the killing of 8000 males, with an average weight of 25 g per gland (known as a 'pod' in the trade). However, as the methods used to kill the animals are neither age nor sex specific, females and young males are also killed. Snaring is the most harmful method; only 25 per cent of animals killed in this way may be mature males. In Nepal, Bhutan and Sikkim, the high density and semi-permanence of snares results in the local extermination of some populations in two or three years. Although shooting leaves room for some discrimination, a hunter needs to get within 30 m to make sure of identifying a mature male, and mature males may make up 40–75 per cent of the total number shot. Taking this into account, between 10,700 and 32,000 musk deer are killed to obtain 200 kg of pods. A proportion of these animals must be killed in Tibet on the northern side of the Himalaya, as considerable but unknown quantities are smuggled from Tibet into Nepal. So if, for instance, 100 of the 200 kg originates from the

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south side of the Himalaya, then at least 5350–16,000 musk deer are killed annually, which might be as much as half the Himalayan population.

Green readily admits that these estimates have been reached by much extrapolation of limited data, but they are the best that can be made at present and they leave little room for doubt that an unsustainable level of exploitation is taking place. The demand for musk is unlikely to decrease. Although 80 synthetic musks are now used in the cosmetic industry and only a few exclusive perfumers in France still use natural musk, its use in medicine is more likely to continue, particularly if its therapeutic properties become more widely established.

The answers to the problem of conserving the Himalaya's musk deer lie in the tightening up of CITES regulations and the control of poaching and smuggling. With the growing influx of people into the deer's habitat of sub-alpine forests and alpine scrub to cut fuel and timber, effective protection of the deer within existing parks and sanctuaries is increasingly necessary. Turning to captive-breeding, as China has done, may be too expensive; some government musk deer farms in China have been running at a financial loss, but a practical alternative might be to catch wild animals, extract their musk, and then release them. If this were developed at the local level, villagers would have some financial incentive to conserve the deer.

Reference

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More protection for cycads?
by Sara Oldfield

The degree of protection given to indigenous cycads in South Africa and Zimbabwe is scarcely equalled for any other group of plants in the world. In South Africa, for example, reserves have been created to protect *Encephelartos* spp. in the wild, and provincial legislation lays down strict trade controls. Demand for the superficially palm-like plants is supplied by propagated material produced both by conservation authorities and by individuals committed to conservation.

Provincial and national legislation covering cycads in South Africa and Zimbabwe is backed up by the Convention on International Trade in Endangered Species (CITES). All species of *Encephelartos* are subject to Appendix 1 control, as is *Stangeria eriopus*, a species occurring in South Africa and Swaziland, which is placed in a family of its own. International commercial trade in wild-collected specimens of these plants is banned under CITES. Although the reporting of trade in plants as required by CITES is generally very poor, South Africa's records for the export of artificially propagated cycads are reported in full.

In other parts of the world, protection given to cycads is far from adequate, although the entire group is covered by the trade convention. At least half the species are threatened with extinction, and for many others the situation in the wild is unclear. The current status of the cycads is reviewed in a report prepared by Sheryl Gilbert for TRAFFIC (USA). This draws on species information collected by IUCN's Threatened Plants Unit and on trade data from the CITES annual reports. The TRAFFIC (USA) report shows the extent to which cycads in the wild are still exploited for trade. Of particular concern is the report's revelation that whole populations of rare Mexican cycads of the genus *Ceratozamia* have been uprooted and imported into the US. There are no commercial facilities for the propagation of cycads in Mexico, and dealers in the US supply the market with mature wild plants. Ironically, many of these are re-exported to collectors in South Africa. Recently described species such as *Ceratozamia norstogii* and *C. hildae* have been at particular risk.

As a result of monitoring by TRAFFIC (USA), the plight of *Ceratozamia* spp. is now recognised. The US Government proposed at the recent CITES meeting that the genus be upgraded to Appendix 1 of the Convention.

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Worldwide death of corals
by Sue Wells

At the joint meeting of the Atlantic Reef Committee and the International Society for Reef Studies in October 1984, Dr Peter Glynn, of the Rosenstiel School of Marine and Atmospheric Science at the University of Miami, expressed considerable concern at the recent severe disturbances observed on coral reefs in different parts of the world and, in particular, the bleaching (loss of zooxanthellae from the tissues) and death of soft and hard corals. In the eastern Pacific, between 1982 and 1983, 70–95 per cent of the total coral cover was killed to a 15–18 m depth and some species disappeared locally. Similar disturbances have been recorded in Japan (Ryukyus), Indonesia (north of Jakarta), the Florida Keys, Colombia, French Polynesia, the Tokelau Islands, Australia (the Great Barrier Reef), Mayotte, the Mozambique Channel, Reunion and Saudi Arabia (Gulf coast) and the Galapagos (some of the reefs, for example Floreana, may be extinct).

The timing of all these events showed a close correspondence with the 1982–1983 El Nino sea water warming event (see *Oryx* October 1984). An increase in water temperature of only 2°C above normal is enough to kill corals. However, the story is not entirely straightforward. The bleaching on reefs in eastern Australia coincided with an anomalous sea warming period, which preceded the occurrence of El Nino by one year. In Mayotte and Reunion, much of the coral mortality was attributed to accelerated land clearing, erosion and increased sediment in the water over the past decade. In Tokelau, coral death was correlated with the El Nino-related drop in sea level, which exposed the reef communities and cut off the lagoon, also causing heavy mortalities among fish and turtles.

In Panama, high levels of herbicides were found in bleached coral tissues, and 50–80 per cent of corals died on reefs that bordered onto heavily cultivated land. Eight species were found to contain residues of the herbicides 2,4-D and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), and relatively high concentrations were found in both bleached colonies and in some healthy ones. Subsequent laboratory tolerance tests showed that some corals will die from dilutions as low as 0.1 parts per million of 2,4-dichlorophenoxyacetic acid after exposure for only 24 hours. It was also found that gastropod molluscs that fed on these corals accumulated the herbicides at even higher concentrations.

Dr Glynn is now embarking on a worldwide survey in an attempt to determine whether these events are related to natural recurrent perturbations or to man's interactions with the environment. As he points out, if it transpires that man is having a significant effect, such an impact at a time of natural disturbance could be a major cause for concern.

How an endangered fish was lost

By the time the fish *Gambusia amistadensis* was described in 1973, it had already been exterminated in its sole natural habitat, the Goodenough Springs in Texas, which had been flooded by the Amistad Reservoir. However, Dr Pedon, who described the species, had captured some in 1968 and taken them to Austin, Texas, where they were maintained in an artificial pool at the Brackenridge Field Laboratory. A second population was established in another artificial pool next to one containing a population of *G. gaigei*, but there may have been some inadvertent mixing of these two species resulting in possible contamination of the *G. amistadensis* population.

In 1974, stocks of several species of endangered fish, including *G. amistadensis*, were taken to Dexter National Fish Hatchery, New Mexico. When it was discovered that the *G. amistadensis* had come from the possibly contaminated second population, they were replaced with specimens from the original population at Austin. They and their descendants apparently flourished. In 1979, however, a researcher discovered that only the mosquito fish *G. affinus* was present in the pool at Dexter, which was supposed to contain *G. amistadensis*. A check back to the original pools at Brackenridge revealed that one had dried up and the other contained only *G. affinus*. It appears that *G. affinus* had either been present, undetected, in the original collection of *G. amistadensis*, or had been introduced since, and although the two species did once coexist at

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Goodenough Springs, *G. amistadensis* had been unable to hold its own against *G. affinus* in artificial conditions.

This loss of captive stocks of an endangered species, argue Clark Hubbs and Buddy Lee Jensen (*Copeia,* 1984(2), pp. 529–530), illustrates the possible hazards of attempting to maintain declining species in captivity. Not only may the modified environment favour a potentially contaminating species, but the different environmental conditions may exert unnatural selective forces on the captive populations so that the descendants become progressively different from the original stock.

Footnote

Gambusia affinus, the mosquito fish, is a voracious predator from the south-eastern USA, which has been introduced into many parts of the world to eradicate mosquito larvae. Unfortunately, almost everywhere it has been introduced, it has gradually wiped out most or all of the native mosquito-destroying species of fish; in its native haunts, it is kept from too much destruction by naturally-evolved enemies, and smaller fish have evolved to hide from it. Editor.

Asian animals with promise
by Russell Kyle

The main, domestic, large animals of the world were all first domesticated in Asia: cattle, pigs, sheep, goats, buffalo, horses and camels. Although they have all enjoyed a vast amount of research, there are a number of lesser-known Asian species that have been relatively ignored by animal husbandry, and these are the subject of a report from the US National Research Council. Most of these species are already dwindling fast in the wild due to the familiar problems of hunting and loss of habitat, and the report points out how urgent it is to study ways in which they can be saved, not only for the sake of conservation, but also for any possible economic merits that might be revealed.

The first subject of the report is the banteng *Bos javanicus.* These are the most colourful of all the wild cattle, the bulls being a glossy brown to black and the cows a vibrant deep chestnut, and both sexes having white stockings and a large white rump patch. There are 1.5 million domesticated banteng in Indonesia, and they have been the subject of a limited amount of economic research

Bull gaur.

mainly carried out in Australia. In the wild, no more than a few thousand banteng survive, distributed in isolated pockets through South-East Asia, Borneo and Indonesia. The suggestion for research is that they might prove the best adapted domestic herbivore in the deciduous, monsoon forest pastures of South-East Asia.

Other wild cattle that have enjoyed hardly any research at all include the gaur *Bos gaurus,* with the merit of being the largest of the wild cattle, and the kouprey *Bos sauveli,* which may already have been exterminated as its only habitat was at the epicentre of the Vietnam war. The most recent, possibly authentic, sighting in the wild was in 1982, when five animals were reported in Thailand near the Kampuchean border.

There are also a number of members of the pig family that have scarcely received any interest from agriculturalists. These are the bearded pig *Sus barbatus,* the Sulawesi warty pig *S. celebensis,* the Javan warty pig *S. verrucosus,* the pygmy hog *S. salvanius,* and the babirusa *Babyrousa babyrussa,* which are all inhabitants of eastern Asia. The report is not able to point to any obvious economic merits in any of these pigs, partly because nobody has yet tried to look for them, but more research would help towards their conservation, even if it did not ultimately reveal any agricultural potential.

Reference

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Californian condor *(David Houston).*

Can the Californian condor survive?
by David Houston

The Californian condor *Gymnogyps californianus* is the largest bird in North America, and one of the most spectacular. It is, I suppose, only fitting for such a dramatic bird that its fight for survival has now reached a cliff-hanging finale. Last autumn's census indicated that 15 birds remained in the wild. The latest census, in April 1985, indicates that about half of these birds have died during the winter and there are probably only eight wild condors left.

The Californian condor is a cathartid vulture and, like the related Andean condor *Vultur gryphus,* feeds only on carrion. Sub-fossil remains show that at one time the condor roamed over much of western North America, from North Carolina down to Baja California, and as far west as Texas. They probably fed among the great herds of buffalo and other large mammals of early America. The contraction of their range must have started with the arrival of the European and the elimination of the large herds, and by historical times their range had shrunk to the extreme west coast. Today they are found only in a small crescent of mountains to the north of Los Angeles.

The birds are difficult to census and there is some controversy over early figures, but Karl Koford, in the first major study of the condors undertaken from 1939 to 1946, estimated a population of 60 birds. There is no doubt that their numbers have continued to decline steadily, and in the last six months this process has accelerated alarmingly. Many factors have been considered responsible, such as habitat loss, shooting and egg collecting, pesticide and other poisoning, even birds striking power lines or becoming trapped in tar pits—but there is little concrete information.

There has been an unusual amount of controversy and disagreement among those concerned for the condor. Some blamed disturbance for the decline, and maintained that if the birds were left in peace they would be more likely to survive. This approach was also taken by those with a romantic attachment to the condor and the wilderness which it represents. Others maintained that the species had declined so fast that the wild population might not be viable. They favoured intensive research to learn more of the birds' requirements and causes of mortality, combined with the capture of some wild birds for a captive-breeding programme. These two approaches were completely incompatible, and many years were spent in heated arguments and antagonism while the condors continued to die.

Minds became concentrated in the late 1970s, by which time it was obvious that serious action would be needed to save the condor. Some organisations changed their attitudes, and the Condor Recovery Programme was formed with representatives from a range of Federal and State agencies, together with organisations such as the Audubon Society and the Zoological Societies of San Diego and Los Angeles. A detailed research programme was agreed for the wild condors and approval given to establish a captive-breeding population. Perhaps this was the only way forward, but the involvement of so many organisations and individuals led to an excess of bureaucracy in the first few years.

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Research on the wild birds in recent years has suggested that reproduction is not a cause for concern, as birds were breeding well. Excessive adult mortality has probably been the cause of the population decline. The fitting of radio transmitters to wild birds has given valuable information on movements and especially on causes of mortality, because it enables birds to be located quickly should they die. One bird is believed to have died from lead poisoning, possibly from eating lead pellets from a deer that had been shot, and another condor died from cyanide poisoning. Although the causes of the recent seven deaths are as yet unknown, the future of the remaining birds looks bleak. For this reason, permission is now to be sought to catch all the remaining birds and bring them into captivity.

The establishment of birds in captivity is being undertaken at San Diego Wild Animal Park and the Los Angeles Zoo, where impressive facilities have been built for the rearing and keeping of birds as far away from human contact as possible. Many years of preparatory work have been undertaken on Andean condors and other cathartid vultures by these zoos and by the Patuxent Wildlife Research Centre to practice every aspect of a breeding programme, from incubation of the eggs through to the methods used to release the young birds back into the wild. Other cathartid vultures breed well in cages, and we must hope the condor will do likewise. The chief source of birds has been from taking eggs from the wild, and there has been a very high success rate with this captive-rearing. This removal of eggs was originally resisted by many people because it was believed that the condors could lay only a single egg a year; however, during intensive watches on wild nests, it was found that when a first egg was broken accidentally, the birds could relay. It is now known that a condor can lay up to three eggs a season, and last year permission was given to take all the eggs from the wild birds. The aim of this programme has been twofold. Firstly, by artificially rearing the young and then releasing them when fully grown, the reproductive output of the wild population can be greatly increased. In the wild, a pair of condors rear only one chick, and if they complete the breeding season they do not breed the following year. By removing the eggs for captive-rearing, up to three eggs can be taken every year, so that a maximum of six chicks could be captive-reared for every single chick left in the wild. Secondly, a group of birds could be held in captivity until they reach breeding age at perhaps 8 or 10 years, and then used for breeding. This would again supply birds to release back to the wild, and also keep a reserve of birds in captivity. Largely as a result of this rearing programme over the past three years, there were 16 birds in captivity last year. However, plans to expand the captive population and to release some young back into the wild have now been set back by the collapse of the wild breeding population. Last year five pairs of condors nested. This year only one pair has returned. This spring they produced three eggs, all of which have been taken for captive-rearing, although one of the chicks has subsequently died.

The main hope for the condor's survival now seems to be in captivity. However, 11 of the captive birds come from only two pairs of wild condors, and so the genetic pool represented in the present population is dangerously small for a breeding programme. It will be several years before we know whether the birds will breed in captivity. The bigger problem is the future of wild condors in America. Clearly, some aspects of their present environment, as yet unidentified, are leading to their extinction. It is now probably too late to learn where these dangers lie. Maybe the species can be maintained in captivity, but the eventual aim must be to re-establish a viable wild population. The loss of the condor ought to be telling us something about the environment in California. Perhaps there are too many commercial interests in the present range of the condor to risk their re-establishment in the forseeable future—but it is known that condor populations once existed in more protected areas, such as the Grand Canyon, and maybe that is where their only hope of a future will lie.