

## Compromise at the IWC

Business at the 49th annual meeting of the International Whaling Commission (IWC), held in Monaco in October 1997, was brisk because the usual 5-day meeting had been truncated to 4 days. The US delegation returned with a request for a small take of whales for the Makah tribe of Washington State having withdrawn the same request in 1996 (after finding only limited support for the 'aboriginal needs' of a tribe that had not whaled for over 70 years). Its case was substantially unchanged and still failed to conform to the existing IWC definition of aboriginal whaling (see *Oryx*, 30 (4), 230–232). Nevertheless, the delegation clearly felt bound by the US treaty recognizing the Makah's right to whale.

On this occasion, the Makah quota was included in a proposed amendment to the Schedule of the Convention presented jointly by the USA and Russia. The amendment referred to the entire North Pacific eastern grey whale *Eschrichtius robustus* stock, thereby including the aboriginal subsistence whaling quotas of both the Russian Chukotka tribes and the Makah. The Chukotka peoples' aboriginal needs statement having already been agreed by the IWC, commissioners initially seemed to find it difficult to review the Makah's case without prejudicing that of the Chukotka peoples. Eventually, after much debate, the proposed amendment was modified to restrict takes of the grey whale to those peoples 'whose traditional aboriginal subsistence and cultural needs have been recognized'. The Schedule amendment was then adopted by consensus.

Conflicting interpretations of the amendment resulted in contradictory media coverage. The USA claimed that the Makah had won its quota. Others, more appropriately, noted that numerous countries had spoken out against the US request and that the Makah case was not recognized. The case now moves into the US law courts where perhaps it always belonged.

There were a number of other important developments arising from the meeting (see

**Table 1.** Important developments at the 1997 IWC meeting

### Resolutions agreed

- Environmental Change: the IWC's Scientific Committee was instructed to provide regular updates to the Commission on environmental threats.
- Bycatch: Parties were encouraged to monitor and report whales killed in fishing operations.
- Stockpiles: Countries were encouraged to report on stockpiled meat (trade cannot be monitored if old sources still enter the market).
- Scientific whaling: Japan's scientific whaling programmes were again strongly criticized
- Norway was once again told to stop whaling by the majority of parties. (The Norwegian delegation, as last year, walked out at this point but returned a few minutes later.)
- Administration: An IWC Advisory Committee (comprising the IWC Chair, Vice-Chair and two commissioners) was set up and a formal review of the Secretariat was initiated.

### Other matters

- Japan agreed to limit the use of the inhumane 'electric lance'.
- A further quota of whales was agreed for Greenland's aboriginal hunt.

Table 1), but the most significant initiative – the 'Irish Compromise' – attracted little public debate. The 'Compromise' is a package of measures that, if adopted, would replace the moratorium on commercial whaling agreed in 1982. Its supporters believe that a fresh approach is required because there is so little common ground between the pro- and anti-whaling nations and the Commission appears to be losing control of the situation. Despite the moratorium, Japan and Norway have continued to increase their self-allocated quotas; for example, 1040 whales have been taken in the last 12 months compared with only 425 in 1992. Nevertheless, this figure is still significantly better than the levels taken immediately prior to the moratorium coming into force (e.g. 8585 in the 1984/5 seasons).

The Compromise would require whalers to: (1) renounce 'scientific whaling' (Japan's definition of its current activities) and whaling-under-objection-to-the-moratorium (Norway's current stance); (2) accept an international

trade ban; and (3) refrain from whaling in deep oceans. In return, it is proposed that the IWC would endorse commercial whaling within Japanese and Norwegian waters. Supporters claim that this would close the existing loopholes in the Convention and create a high seas sanctuary.

The Compromise would effectively break the moratorium and give Japanese and Norwegian whalers IWC- (and therefore world-) endorsed commercial takes. However, the Commission represents a forum of 39 countries with very diverse views and it is difficult to envisage this concession being limited in the long term to two of the richer countries if whaling is perceived as a lucrative commercial activity. Should 'coastal whaling' receive IWC-sanction it is also probable that any pro-whaling countries would define 'their' own waters as those within the 200-mile (320-km) Economic Exclusion Zones, which would conflict with the objective of protecting whales in the deep seas.

Enforcing the international trade ban would also be problematic. While the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) is supposed to take a lead from the IWC, an acceptance of a 'coastal' quota might support recent moves at CITES to remove trade restrictions. Moreover, methods to monitor fleets and also to police the meat trade are largely untried, while whaling is an industry proven to be resistant to regulation.

Despite these significant concerns, some conservationists may see merit in the Compromise as a way to limit the activities of the whalers within 'sustainable' parameters. They may also believe that implementation of the precautionary regime developed for whale fishing (the IWC's 'Revised Management Procedure') would serve as an exemplary pilot for the benefit of other fisheries issues. However, whales are not fish. They are inherently unsuitable for sustainable use, being long-lived, slow breeding, and vulnerable to environmental change, and their numbers are incredibly difficult to monitor. Moreover, the resultant whale meat and other products (outside of established aboriginal hunts) would be destined for a luxury market.

At its worst, the Compromise, if accepted, could be seen as rewarding countries for breaking the spirit of an international conservation treaty. The moratorium was intended to stop all commercial whaling, mainly because it could not be regulated adequately. However, as a result of the key actions of two countries it has never achieved this goal. By approving even a limited volume of commercial whaling, the international community would certainly be offering the whalers an improved political platform for further negotiations.

The next IWC meeting is in Oman in May 1998. By then, it is possible that much behind-the-scene preparatory work for a resumption of whaling will have been undertaken. All Parties need to understand the fullest implications of any deals on commercial whaling because misunderstandings could fundamentally undermine cetacean conservation.

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## Indonesia in flames

Fires have been raging across Indonesia since late July 1997, creating dense smog and pollution over South East Asia, and destroying wildlife and habitat. The fires extend from New Guinea to Malaysia, although they are concentrated in southern Sumatra and Borneo. Both islands had already lost more than 50 per cent of their original forest cover prior to the burning episode and the forest fires are destroying or threatening a number of important forest types, such as heath forests and peat-swamp forests, both of which are particularly vulnerable to fire, which destroys the special soil conditions required for regeneration. Coastal and aquatic systems, such as coral reefs and mangroves, will also be at risk with increased run-off and erosion resulting from the removal of forest cover. Indonesia and Malaysia are rich in biological diversity – both

have over 100 threatened animal species. The survival of many species of mammals – including orang-utan, listed by IUCN as Vulnerable, Javan and Sumatran rhinoceroses, listed as Critically Endangered, and the Sumatran tiger, also Critically Endangered – as well as birds and plants, are at risk from the fires. Orang-utans may be further threatened by increased poaching since the fires. At least 30 adult females are thought to have been shot as they fled from the fires, and their young have been found in villages and along road sides. Conservationists are particularly concerned about fire damage to protected areas, with fires spreading to: Gunung Lorentz Nature Reserve on Irian Jaya, an area that contains most of the island's major vegetation types and 80 per cent of its mammals; Ujung Kulon National Park on Java, which contains one of the most extensive remnant lowland rain forests in the province and provides refuge for the last viable population of Javan rhinoceros; Tanjung Puting National Park in Kalimantan, with the largest expanse of heath forest in Borneo, peat swamp forest and a population of 1000–2000 orang-utans; and on Sumatra, Berbak National Park, which protects peat and fresh water swamp forests.

Scientists claim that the fires are a result of massive government-sponsored land clearance projects – government targets required the clearance of 400 sq km of forest in 1997 – and waste wood is burned once the valuable timber has been removed. In recent years there has been an explosion of land clearance in Kalimantan and Sumatra for large-scale agricultural and forestry plantations. Use of fire for clearing has been banned since August but it continues regardless. Some fires have been started deliberately during land disputes. The Indonesian Ministers of Forestry and Environment have threatened to revoke land-use permits of plantation firms found guilty of intentional burning and it is hoped that further steps will be taken to control burning as a method of land clearance by bringing in a strong fire-management policy and to review land-use policies and procedures. The fires will continue to spread across Indonesia with the delay of the seasonal rains caused by the

El Niño climatic phenomenon, resulting in a long dry season in the western Pacific, which is expected to last until November or December. Severe forest fires also occurred during El Niños in 1982–83, when fires swept through 3.6 million ha of Kalimantan, 1991 and 1994. The World Conservation Monitoring Centre, in association with the United Nations Environmental Programme (UNEP) and BirdLife International, has published a set of data about the regions affected by fire in South East Asia that can be accessed on the internet at <http://www.wcmc.org.uk>, and UNEP has published a series of data from meteorological satellite images, from 4 August, showing the location of the fires and the spread of the smoke throughout the region's atmosphere on its web site at <http://www.unep.org>.

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Sources: WWF, 25 September 1997 and 3 October; WWF Netherlands, 2 October 1997; WCMC, 16 October 1997.

## Veterinary contributions to field conservation

Infectious disease can cause the rapid and unexpected extinction of animal populations and even species. Despite this fact, there are just a handful of veterinarians specializing in non-domestic species, and the majority of them work only with animals held in captivity. In an attempt to redress this balance, a symposium held recently at the 7th International Theriological Congress focused on ways in which vets' expertise might be better applied to field conservation programmes. The symposium, organized by Tony English of the University of Sydney, and sponsored by the World Association of Wildlife Veterinarians and the IUCN/SSC Veterinary Specialist Group, was attended by a mixture of veterinarians and biologists.

The presentations revealed how veterinary involvement can help with the process of

devising species conservation plans. Mark Pokras's (Tufts University) discussion of how detailed necropsies were used to identify threats to common loons in the north-eastern USA was particularly impressive: the study revealed that more than half of all adult mortality on the breeding grounds was caused by lead poisoning, and prompted negotiations with local anglers to halt the use of lead fishing weights. Similarly, Gladys Kalema (Uganda Wildlife Authority) described how an outbreak of scabies in a habituated group of mountain gorillas led authorities in Bwindi National Park to consider preventing tourists with skin complaints from visiting the gorillas.

The role of clinical interventions by veterinarians attracted more debate. In particular, Dan Rubenstein (Princeton) remarked that vets often fail to appreciate the fundamental differences between wild animals and those held in captivity. Management of zoo animals involves treatment and care of individuals, but it is rarely advisable (or practicable) to take this approach with wild populations. Advances in vets' technical expertise are welcome, but the process of deciding when to apply that expertise to a field situation can be a difficult one. For example, some biologists listening to Janette Wallis and Rick Lee's (University of Texas Primate Center) description of the immobilization of over 100 baboons at Gombe to treat them for a sexually transmitted disease were left wondering whether the money and effort might have been better invested elsewhere.

This question of funding is a crucial element of conservation medicine. As David Sherman (Tufts University) pointed out, virtually all veterinary medicine thus far has been marketed: animal's owners have been willing to pay vets for the care that they provide. In contrast, most wild populations have no owners, and veterinary care must compete for funds with other forms of management. This can lead to some difficult decisions. If donors are willing to pay for clinical care of animals that are perceived to be suffering, should that care be provided at the expense of more urgent ecosystem protection? Jean-Christophe Vie described a veterinary programme that aimed

to rescue animals from 300 sq km of forest flooded following the construction of the Petit Saut dam in French Guiana. The project gathered valuable data on a variety of species, including baseline serology, haematological reference values and protocols for anaesthesia. These data will be useful in the future – but was the \$US4 million that it cost to collect them really money well spent?

Biologists are often concerned that veterinarians overestimate the need for clinical intervention in the field. However, it is the vets who seem to be leading the way with the bridge-building that is needed. The fact that a group of vets chose to arrange such a symposium at a congress where the biologists outnumbered them by around a hundred to one, and to schedule discussions of how their students could be better trained to collaborate with biologists, demonstrates their commitment to teamwork. Biologists must now recognize the contribution that vets can make, and help to guide the process of deciding how much clinical involvement is appropriate in field conservation programmes.

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## Long-term costs of the mopane worm harvest

There is little doubt that the emperor moth *Gonimbrasia belina* is one of the major economically important insects in southern Africa. Its larva is a popular food, the sale of which provides much-needed income for rural families across the region (Quin, 1959; Munthali and Mughogho, 1992). Commonly called mopane worm, after the ubiquitous host tree *Colophospermum mopane*, the larvae are collected during the summer rains, then gutted and dried for consumption (Bartlett, 1996). Dry-weight larval yields around Kasungu National Park in Malawi average nearly 15 kg per ha (Munthali and Mughogho, 1992), while

nutritional studies of dried larvae for a mopane worm cannery in Pietersburg in South Africa showed them to be a valuable protein source (Dreyer and Wehmeyer, 1982).

Recently, Bartlett (1996) described the issues surrounding the use and possible overuse of mopane worms. Growing demand and rising prices in urban markets have increased financial incentives for maximizing harvest volume. This trend has been compounded by recent crop failures, particularly between 1991 and 1993, leading to severe food shortages and virtually no income for those who rely on produce from their smallholdings. These effects have led to local extinction of mopane worms in some areas of Botswana and even armed robbery of mopane worms in Zimbabwe.

An assessment of the current status of *G. belina* across southern Africa and studies of its population biology would seem to be imperative. Such research would provide the baseline data that are essential to reliably determine sustainable levels of use and would be particularly useful for natural resource management programmes, such as CAMPFIRE in Zimbabwe (Child, 1996). However, the multiplicity of factors that bear upon *G. belina* populations suggests that this will be a complicated task, quite apart from any sociological implications. For example, in a recent study in Botswana, Styles and Skinner (1996) compared an area near Bobonong, where mopane worms are seasonally abundant, with the Northern Tuli Game Reserve (NTGR), where they have been absent for 23 years. Although they suggested that larval predation by ants was the main contributory factor to the local extinction in the NTGR, other differences between the two areas, such as leaf chemistry, soil type, rainfall patterns and competition with other herbivores (particularly elephants) may also be influential.

The fact that mopane worm populations in the protected and more remote NTGR have become extinct, while those near the town of Bobonong persist, supports the suggestion that, while overuse may be a contributory factor to mopane worm declines, there are also important ecological issues to be addressed.

The situation is similar across the border in Zimbabwe. According to Colin Bristow (pers. comm.), a conservationist based in the Limpopo Valley to the west of Beit Bridge, mopane worms disappeared from that area in the early 1970s, despite relatively light harvesting pressure.

While its precise influence on larval populations has yet to be clarified, increased harvesting pressure may also have wider effects on the mopane ecosystem itself. During a visit to the Tsholotsho district of western Zimbabwe in July and August 1996, I was shown mopane trees that had been felled during the previous harvest of caterpillars. 'People are so desperate to collect *macimbi* [Ndebele for mopane worm] that they just chop the whole tree down', said Kilton Moyo, a local headteacher and journalist. According to him, this is a new phenomenon and a direct result of recent droughts. He explained that the tallest trees are most at risk, being heavily laden with caterpillars beyond the normal reach of harvesters and easily picked clean once they have been felled. Indeed, Mughogho and Munthali (1995) found that, although mopane worms occurred between 0 and 10 m from the ground, up to 70 per cent were found between 3 and 10 m.

At the main market in Bulawayo, tins of mopane worms, the contents of which might take a young child a few minutes to collect, are sold for the equivalent of just over £1. A few hundred metres down the road, at the tourist craft stalls, the same amount of money could buy a small basket, the fruit of several hours' work by a skilled weaver. I conducted a straw poll of six stallholders in January 1997, at the height of the mopane worm season. Four of the six women admitted knowing that harvesting by tree-felling occurred, although, predictably, all denied that any of their worms had been collected in this manner. Each told me that their *macimbi* had been harvested in Kezi, a district about 150 km south of Tsholotsho, which suggests that the practice may not be a trend specific to one local area.

Certainly, no one would argue that *C. mopane* is in danger of becoming scarce; on the contrary, it is probably the most common tree

species in the lowveld, despite the fact that its straight stem makes it an excellent building material for fences and houses. However, selective destruction of the tallest individuals may have profound ecological consequences, not least for other mopane herbivores such as elephant and the host-specific psyllid *Arytaina mopane*. The huge significance of mopane worms in this system is well illustrated by C. Styles's calculation (in Bartlett, 1996) that they are the chief herbivore of the mopane tree, consuming an order of magnitude more leaves even than elephants.

What is perhaps most worrying about the use of this harvesting method is its implication for the future of the mopane worm itself. Not only might it have adverse effects on future productivity, at least on a local scale, but tree-felling appears to be an indication of the lengths to which harvesters are prepared to go to maximize their return. Research into the extent of tree-felling for gathering mopane worms and the effects of this practice on local populations and the mopane ecosystem is timely, in addition to assessing current status and probable future demand. Until then, the future of the mopane worm, and the people who depend on its use, remains unclear.

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#### References

- Bartlett, E. 1996. Hold the turkey. *New Scientist*, **152** (2061/2), 58–59.
- Child, B. 1996. CAMPFIRE in Zimbabwe. In *Assessing the Sustainability of Uses of Wild Species* (eds R. Prescott-Allen and C. Prescott-Allen), pp. 59–78. IUCN/SSC Occasional Paper No. 12, Gland, Switzerland.
- Dreyer, J.S. and Wehmeyer, A.S. 1982. On the nutritive value of mopane worms. *South African Journal of Science*, **78**, 33–35.
- Mughogho, D.E.C. and Munthali, S.M. 1995. Ecological interaction between *Gonimbrasia belina* (L.) and *Gynanisa maia* (L.), and the impact of fire on forage preferences in a savanna ecosystem. *African Journal of Ecology*, **33**, 84–87.
- Munthali, S.M. and Mughogho, D.E.C. 1992. Economic incentives for conservation: beekeeping and Saturniidae caterpillar utilization by rural communities. *Biodiversity Conservation*, **1**, 143–154.
- Quin, P.J. 1959. *Foods and Feeding Habits of the Pedi*. Witwatersrand University Press, Johannesburg.
- Styles, C.V. and Skinner, J.D. 1996. Possible factors contributing to the exclusion of saturniid caterpillars (mopane worms) from a protected area in Botswana. *African Journal of Ecology*, **34**, 276–283.

## Experimental reintroduction of brown bears in the French Pyrénées

Brown bear *Ursus arctos* numbers in the French and Spanish Pyrénées declined so seriously in recent decades that by the early 1990s only five or six remained in the Western Pyrénées. The once thriving population in the central part of the range was extinct. Now a project bringing together a number of sectors of the community has resulted in experimental reintroduction of three bears in the Central Pyrénées of France. One of the females gave birth to three cubs in 1997.

Acting on a recommendation of a report by the National Committee for Nature Protection in 1993, the Ministry of the Environment decided to carry out an experimental reintroduction of brown bears in co-operation with four municipalities in the Val d'Aran, Haute-Garonne, under the European Union LIFE programme 'Grande Faune pyrénéenne'. Much background work had already been done for such an operation. In 1987 Dr Clouet, Chairman of ARTUS (a French non-governmental organization devoted to the conservation of bears), originally proposed bear reintroduction and had identified the Haute-Garonne, Central Pyrénées, as a potential release site. It had sufficient area of suitable woodland habitat, adequate food resources and a low level of human disturbance, with few herds of domestic animals. Bears had been present there only 10 years previously and their disappearance was due to hunting rather than habitat changes. The main problem facing the project, therefore, was to prevent



One of the anaesthetized bears ready for transport to the Pyrénées (ARTUS).

introduced bears being poached. A campaign was initiated to raise public awareness this culminated in naturalists, hunters, farmers, foresters and government representatives agreeing to work together on the project.

There was also the question of where to obtain the bears. A molecular genetic study of brown bears (Taberlet and Bouvet, 1994) showed that, of remaining bear populations in Europe, the one in Slovenia was most closely related to the Pyrenean population. It was also sufficiently similar ecologically and ethologically to be a satisfactory source of animals for translocation. An evaluation of health risks was also carried out (Arquillière, 1995) to determine the sanitary status of the source population in order to devise methods to prevent the accidental introduction of pathogenic agents (Madic *et al.*, 1993). Fortunately, the brown bear is a particularly robust and disease-resistant animal and the large population of Slovenian bears was found to be largely free from disease. Only the presence of arboviruses, particularly the flavivirus responsible for human tick encephalitis, made it necessary to ensure that all animals selected for translocation were treated to remove the parasites that carry these viruses. In order to avoid any risk reinfestation after the animals had been released it was decided to administer a long-lasting antiparasitic drug to prevent any subsequent transmission of these viruses to Pyrenean ticks.

Slovenia has about 350 bears and some 30 hunting licenses are granted each year. In order to help maintain the bear population artificial feeding sites are provided in spring and autumn, supplied with carcasses of domestic stock from local slaughter houses, and maize and fruit, according to the season. Potential capture sites were selected by Slovenian wardens and the capture team (seven to eight French, Slovenian and Croatian people led by Djuro Huber of the veterinary faculty of Zagreb University) set the traps. Each trap was connected to an alarm that enabled the capture team to reach it within an hour of its being sprung.

Two female brown bears, aged 8 and 5 years, were captured on 18 May and 5 June 1996, respectively, in the region of Kocevje. On 1 May 1997 a 9-year-old male was captured from the same area. All captured bears appeared to be in good health and were easily anaesthetised with a mixture of ketamin and xylazine administered by a hypodermic needle shot from a gun. The animals were thoroughly examined, samples were taken for various studies and each individual was fitted with an ear tag, transponder (electronic chip) and a Telonics radio-tracking collar. Antibiotic and antiparasitic treatment were administered before moving the bears into a cylindrical cage, which had been specially designed for the long journey. All this took place within 70 minutes of the anaesthetic taking effect.

During transport great care was taken to minimize contact with humans. Adequate ventilation was provided and a supplementary air-conditioning system enabled the maintenance of a suitable temperature when external temperatures were very high. Video equipment enabled the animals to be observed from the driver's cab. Drinking water was provided but the bears were not fed during transport. The journey to the central Pyrénées, a distance of some 1500 km, took 21 hours for the first and third bear captured but 23h 40 minutes for the second because of unexpected difficulties encountered crossing the border between Slovenia and Italy. The bears stayed calm during transport, only showing disapproval at the sight of humans. The releases took place approximately an hour after arrival at the release site. Blood tests revealed that the females were free from disease and that only the male had once had contact with a virus, canine parvovirus. Faeces are being collected during the monitoring process to detect bacterial infection or any change in parasite load.

This experimental reintroduction is being carefully monitored and to date appears to be very successful. The second female, which had mated in 1996 before it was captured, gave birth to three live cubs in 1997. The bears' presence has been fully accepted by local people, notably the hunters, who are participating in the project. Hunting parties with dogs are not allowed to enter the area where the bears are located and logging has been stopped, with compensation paid to local communities. Livestock owners who lose sheep to bears will also be compensated. However, because most of the predation occurs at night and on unattended herds, it is hoped that farmers may reintroduce the use of the shepherds and sheep guard dogs, such as the famous Pyrenean mountain dog.

Acceptance by local people has been crucial to the project's success and the economically beneficial measures introduced – including help in setting up new employment opportunities in the villages – were of undoubted importance to the process. All the participants of the project are continuing to work together to ensure that the brown bear continues to

survive and to play an important role, both ecologically and as a flagship for Pyrenean conservation.

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#### References

- Arquillière, A. 1995. Evaluation des risques sanitaires préalablement à la translocation d'une espèce sauvage: l'exemple de l'ours brun. *Bulletin d'Information sur la Pathologie des Animaux Sauvages en France*, **12**, 95–102
- Madic, J., Huber, D. and Lugovic, B. 1993. Serological survey for selected viral and rickettsial agents of brown bear (*Ursus arctos*) in Croatia. *Journal of Wildlife Diseases*, **29** (4), 572–576.
- Taberlet, P. and Bouvet, J. 1994. Mitochondrial DNA polymorphism, phylogeography and conservation genetics of the brown bear *Ursus arctos* in Europe. *Proceedings of the Royal Society London*, **B. 255**, 195–200.

#### Postscript

A hunter killed the female bear that had given birth to cubs on 27 September. Apparently, he panicked when he saw the animal coming towards him and killed it at short range with a single shot. Only two cubs were left at the time of the shooting and it was decided to leave them in the wild in the hope that they will be able to fend for themselves. Some years ago three cubs survived the winter after a similar incident in the Cantabrian Mountains in Spain. It is clear from this incident that, despite earlier hopes, hunting is not yet under complete control in the area.

## Hunting of green turtles at Tortuguero, Costa Rica

In turtle conservation circles, Tortuguero beach in Costa Rica is famous for its green turtle *Chelonia mydas* population. It is not only one of the most important nesting sites for this endangered species in Central America but is also where Archie Carr pioneered research on

this turtle. Tortuguero has experienced many changes since the first green sea turtle was tagged there in the 1950s, and many biologists working in the area are concerned about the future of the turtles. Of particular concern is the current controversy over permits that allow commercial hunting of this species.

From June to September each year green turtles arrive to nest on the 35 km of beach between Parismina and Tortuguero, Costa Rica. Every female that nests there has survived an enormous range of hazards, particularly predators, and may have taken several decades to reach reproductive maturity (Balazs, 1995). Once it has nested it may be 2–3, or more, years before it returns (Carr, 1983). While the green turtle is adapted to survive high levels of natural predation on eggs, hatchlings and immature turtles, direct and indirect human activities are making survival increasingly difficult for this species. Poaching of adult turtles, digging up nests for eggs, dogs eating eggs and hatchlings, human activities affecting nesting beaches and adult turtles dying as bycatch in fishing nets continue to take their toll. An additional but perhaps lesser known threat to mature turtles is killing by commercial hunters.

The green turtle is of great importance to the community of Tortuguero, the tourism industry, the Tortuguero National Park and the conservation of biodiversity. It is also of international concern, travelling the Caribbean waters off other coasts when it is not nesting in Costa Rica. In Tortuguero, local businesses and individuals benefit from and are connected in various ways to the turtle. Additionally, the turtle is an important resource for generating tourism. However, there is another group of people that has been benefiting from this species but has little regard for its future.

A governmental institute of Costa Rica (Instituto Costarricense de Pesca y Acuicultura, INCOPECA) has been granting permits to commercial fishermen to hunt 1800 green sea turtles each season. The institute admits that no research has been done to justify this quota (Report, Defensoria de Habitantes, 1997). In addition, while Costa Rican law

prohibits fisherman from taking turtles within the park, the institute grants permits in full knowledge that very few turtles are available outside the park and that the fishermen enter the park to hunt the turtles. The official hunting season runs from 1 June to 31 August but the fishermen ignore the season limits.

The resultant situation presents difficulties for the park personnel who have inadequate resources to enforce the law and patrol the park's 35 km of shore and 500 sq km of marine park. The fishermen enter the park via the sea by boat and, while they sometimes catch turtles at sea, they seem to prefer the easier method of taking them as they emerge from the sea to nest.

The primary market for turtles is the city of Limon on the Caribbean coast. On 1 October 1997 I found turtle meat and eggs being sold openly in the centre of the city. On 4 October I returned to Limon with several colleagues to learn more about the turtle products being sold. In the city centre we found fresh meat (the vendors told us the turtles were killed that morning), turtle flippers, turtle intestines, developing eggs taken from a female when she was butchered, turtle eggs and smoked turtle meat. While Limon appears to be the primary market, it is also feared that turtle products are being sent inland, as far as the capital, San José (where I have personally observed turtle eggs that were not part of the Ostional legal egg harvest programme, which sells eggs in marked bags).

The village of Tortuguero does not permit commercial turtle hunting by the villagers and so, while the villagers are expected to protect the turtle resource, fishermen from Limon (3 hours south by boat) are harvesting turtles commercially, with no regard to the conservation or management of the species. The estimated slaughter of turtles is greater (possibly three times or more) than the number allowed by the permits, according to conservation area staff. This number does not include the illegal, non-commercial poaching of both turtles and eggs, nor does it include additional hunting pressure on the population in Nicaragua and Panama.

Early in 1997, a group of concerned citizens,

scientists and conservationists formed a committee (the Comisión Socio-Ambiental de la Región de los Cantones de Guacimo y Pococi) to tackle the problem of the commercial hunting of the green turtle. The result was an appeal to the court system through a 'recurso de amparo' (a constitutional legal action) seeking to stop all hunting until sufficient information concerning the turtle population became available to make a scientifically sound decision, until the long-term economic risks to all concerned are properly considered and until the future of the green turtle is guaranteed. While the efforts of the committee and other groups who joined to help resulted in a temporary court order to stop the turtle slaughter (all previously issued permits were declared void and no new permits were issued), a legal technical error resulted in the constitutional court deciding against this attempt to stop the hunting. While poaching was reported even during the period when hunting was suspended and even though the legal action was not completely successful, the case heightened awareness and stimulated greater discussion of the problem. We now await the complete written court decision and possible recommendations it may make. We hope that it will at least urge the fishing institute to reconsider permission for commercial hunting.

The green turtle is an important local, regional, national and international resource. It faces a number of threats to its survival. Commercial hunting is but one. Effective turtle conservation measures will need to take into account the cultural aspects of consumption of turtle eggs and meat, devise education programmes, control illegal hunting, improve institutional management capacity and co-operation, find economic alternatives for turtle fishermen who truly depend on the resource and integrate conservation biology into the decision-making process. The recent legal action by concerned citizens, scientists and conservation groups, and the continuing efforts that will follow are attempts to address one inadequately researched, inadequately managed and improperly controlled pressure against the green turtle. Appropriate follow-up work after review of the constitutional court's

decision, when this is released, will be necessary if we are to ensure that the green turtle in Costa Rica is conserved.

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#### References

- Balazs, G. 1995. Growth rates of immature green turtles in the Hawaiian Archipelago. In *Biology and Conservation of Sea Turtles* (ed. K. Bjorndal), pp. 117–125. Smithsonian Institution Press, Washington.
- Carr, A. 1983. *Chelonia mydas*. In *Natural History of Costa Rica* (ed. D. Janzen), pp. 390–392. University of Chicago Press, Chicago.
- Defensoria de Los Habitantes. 1997. *Expediente No. IO 1575-23-96 Informe Final con Recomendaciones*.

## Fishes are wildlife too – it's official in Australia

Australia has officially recognized its marine fishes as wildlife. Under the recently amended Wildlife Protection Act, all exports of animals belonging to the suborder Syngnathoidei (Family Syngnathidae: seahorses, seadragons and pipefishes; and Family Solenostomidae: ghost pipefishes) will require government-issued permits as of 1 January 1998. These permits will be granted only for exports of animals derived from captive-breeding programmes or from approved management plans. Prior to this landmark decision by the Federal Government, all marine fishes were exempt from the Act and from the controls on international trade it provided.

Australia is to be congratulated, not only for setting an important precedent in recognizing that fishes can be wildlife too, but also for adopting a precautionary stance in the face of the excessive and ever-increasing world-wide exploitation of syngnathids. Australian waters harbour one-quarter to one-third of all seahorse species, many of which are heavily fished in other parts of their range for use in traditional medicines, and as aquarium fishes

and curios. The number of seahorses in exploited populations throughout Asia appears to be declining markedly and Australia, in moving to protect these animals, may help to ensure their long-term survival.

The decision is especially relevant given the recent proposals for large-scale seahorse aquaculture in Australia. The conservation value of these culturing efforts is often questionable, and these new restrictions will provide much needed checks and balances on these projects. It is hoped that the Australian Government will administer these controls well, undertaking appropriate research and management initiatives. The Australian decision seems to reflect increasing recognition of the threats to syngnathids. On 1 June 1997, the European Union began monitoring all imports of seahorses, and Hong Kong is considering doing the same.

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### Agreement for small cetaceans

The Second Meeting of the Parties to the Agreement for Small Cetaceans in the Baltic and North Seas (ASCOBANS) met in Bonn, on 17–20 October. The Parties agreed a number of resolutions, the most important of which addressed bycatch. In this resolution they agreed that the aim of ASCOBANS can be interpreted as ‘to restore and/or maintain biological or management stocks of small cetaceans at a level they would reach when there is the lowest possible anthropogenic influence’. They also defined an ‘unacceptable interaction’ as being a total anthropogenic removal above 2 per cent of the best available estimate of the population and then recommended that the competent authorities needed to address the removal of harbour porpoises *Phocoena phocoena* in the central and north North Sea as soon as possible. There is currently an

estimated minimum annual bycatch of 4450 harbour porpoises in this area.

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### The African wild dog – conservation planning for Southern Africa

Following the publication of the IUCN/SSC *Action Plan for the African Wild Dog* (see p. 34), a recent meeting in Pretoria sought to carry forward the recovery process for this endangered species in Southern Africa. The meeting, organized by IUCN/SSC’s Canid Specialist Group and Conservation Breeding Specialist Group, brought together conservationists and wildlife managers from several African countries, as well as conservation biologists from Europe and North America.

Southern Africa holds the best hope for wild dogs’ long-term survival. With a population numbering over 100 in contiguous areas of north-eastern Namibia, northern Botswana and western Zimbabwe, and further populations each numbering several hundred in the Kruger, Kafue and Luangwa National Parks, Southern Africa contains more than half of Africa’s remaining wild dogs. In contrast, wild dogs are extinct across most of West Africa, and depleted in much of East Africa. The only substantial population outside Southern Africa is in and around the Selous Game Reserve and Ruaha National Park in Tanzania.

Wild dogs’ sharp decline over the past 30 years can be traced to habitat fragmentation and persecution. They live at very low densities and range widely, so the majority of national parks in Africa are too small to hold viable populations. Even in very large reserves such as Kruger and Hwange National Parks, more than half of adult mortality is caused by road accidents, persecution and accidental snaring on the park borders. In response to

these threats, the highest priority for wild dog conservation is to maintain (and, ideally, expand) large areas of contiguous land managed for wildlife.

Delegates to the Pretoria meeting discussed several ways in which wild dog population recovery might be achieved in Southern Africa. Of these, perhaps the most important was how wild dogs might be conserved outside national parks. Wild dogs are extremely unpopular with both livestock farmers and game farmers, most of whom shoot them on sight. In fact, the real economic impact of wild dogs is poorly known, but returning to traditional husbandry practices may well minimize losses of domestic stock, as well as creating local employment. There is a very real need for conservationists to work with farmers to minimize conflict between wild dogs and people. This will probably involve establishing predator conservation zones (and, likewise, areas where farmers are not expected to tolerate large predators on their land). Encouraging progress has already been made: when the Save Conservancy was established in south-east Zimbabwe recently, it was re-colonized by wild dogs almost immediately.

The South African organizers of the meeting were keen to promote wild dog conservation locally. At present, South Africa contains one viable wild dog population – in Kruger National Park – but local conservationists hope to establish a second. This plan faces one major problem: the South African landscape is highly fragmented and contains no reserves with suitable habitat that even approach the 10,000 sq km or so needed to sustain a viable wild dog population. Much of the meeting was, therefore, devoted to discussion of how reintroduction might be used to establish a managed metapopulation in a network of small fenced reserves, each containing one or a few packs. Computer simulations carried out at the meeting established that this would, in theory, be possible: the Kruger population could be 'harvested' for animals to be translocated without threatening its survival, and the genetic viability of the metapopulation could be maintained by moving animals between the reserves every 5 years or so.

Despite these encouraging findings, the practical problems involved in such a plan were highlighted at the workshop. One pack had already been established in the fenced Madikwe Game Reserve, and this was to provide a model for further reintroductions. However, in the month before the meeting a rabies outbreak occurred in the pack: the only survivors were those captured and held in captivity to protect them from infection. This draws attention to the need for intensive (and expensive) management of such tiny populations. In practice, this may not be a problem. Private reserves are willing to fund such management, because wild dogs attract tourists and represent a good financial investment.

Establishing a managed metapopulation is valuable as long as it is funded by the reserves themselves, but it must be borne in mind that programmes of this kind have a rather low priority for wild dog conservation in Africa as a whole. A metapopulation established inside fenced reserves can never be self-sustaining and must not compete for funds with programmes for the conservation of larger populations that are viable without intensive management. The South Africans' long term hope is to encourage game farming on land between the fenced reserves and, ultimately, to remove the fences. If feasible, such plans offer truly exciting possibilities for the recovery of wild dog numbers in Southern Africa.

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## **Illegal wildlife trade through New Zealand**

New Zealand has become a key stopover point for traffickers in Australian birds illegally taken from the wild, according to a report from TRAFFIC Oceania. Birds and eggs are smuggled into New Zealand by light aircraft and then exported to Europe, Asia or the

US. The country introduced a law to implement the Convention on International Trade in Endangered Species (CITES) in 1989 but the report claims that the laundering of illegally caught birds has increased since then. Every year at least 600 birds from species listed under CITES are exported. Inadequate monitoring of captive breeding has been identified as to blame. Captive-bred birds can be legally exported but there is no register of aviculturists listing numbers, species or breeding status of birds and the Department of Conservation may not use DNA tests to determine a bird's parentage. TRAFFIC is calling for the law to be amended to allow for DNA testing and a register of exotic birds.

Source: *Forest & Bird*, August 1997, 38–43

## Tigers over-estimated

I would like to respond to the news item, 'Tigers over-estimated', in the Briefly section of *Oryx*, 31 (4), 232. As a co-ordinator for the range-wide 1996 winter survey of Siberian tigers, and as a partial sponsor for the work with trained dogs, I am in a unique position to comment on the claim that Siberian tigers have been 'overestimated'. Your news piece cited an article by a journalist, not a scientist, and consequently is filled with numerous errors and erroneous assumptions. I will mention only five. The scientists working on the method that employs dogs to identify individual tigers have never claimed that the range-wide survey has overestimated tigers by a factor of two (in fact, they participated in that survey) – only a journalist made that claim. Secondly, extrapolation from one 100-sq-km study area to the entire range of tigers, some 150,000 sq km, is something a scientist is unlikely to do, but a journalist did without hesitation. Thirdly, accuracy of the dogs has never been critically tested, so we do not know what kind of errors are incorporated in that methodology. Fourthly, the Siberian, or Amur tiger is *Panthera tigris altaica* (the subspecies is

not denoted in your piece). Finally, the survey was conducted primarily through the sponsorship of a USAID Environment Policy and Technology Project, with additional financial support from WWF-Germany – it was not carried out by WWF, nor were any WWF personnel involved in the survey.

I am not attempting to defend those results of the survey that pertain to estimating the number of Siberian tigers in the Russian Far East (it was only one objective of that survey, which was also designed to delineate the existent range of tigers, and status of prey base). Attempts to count rare and elusive animals, especially one like the Siberian tiger, which occurs at extremely low densities (less than 1/100 sq km), are fraught with difficulties. Indeed, there are problems with the methodology employed, or for that matter, with any methodology that seeks to estimate animal numbers over 150,000 sq km.

We are in the process of conducting a sensitivity analysis to develop an estimate of the potential error associated with this count. At the same time, we are in the process of trying to verify the accuracy of the dogs by collecting samples from tigers in UK and USA zoos. The work being conducted with dogs is exciting and potentially invaluable. Methodologies to count tigers vary greatly across range states, but use of dogs may prove to be the single methodology that can be consistently applied across the entire range of tigers. But for now, the methodology is a great idea that requires rigorous testing.

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### Reference

Matyushkin, E. N., D. G. Pikunov, Y. M. Dunishenko, D. G. Miquelle, I. G. Nikolaev, E. N. Smirnov, G. P. Salkina, V. K. Abramov, V. I. Bazylnikov, V. G. Yudin and V. G. Korkishko. 1996. Numbers, distribution, and habitat status of the Amur tiger in the Russian Far East: 'Express-report'. Final report to the USAID Russian Far East Environmental Policy and Technology Project.