

New hope for Queen Alexandra's birdwing

Queen Alexandra's birdwing *Ornithoptera alexandrae*, the symbol of Papua New Guinea's Oro (formerly Northern) Province, is the world's largest butterfly. The female's front wingspan measures 250 mm from tip to tip. While the butterfly itself has been protected by Papua New Guinea legislation since 1966, its habitat has not and is threatened by a new World Bank project. Between 1993 and 1998 an additional 1750 smallholders will start to cultivate oil palms in the area. While the investment, employment and production will provide a much-needed boost for the province's economy, the forest clearance will pose further dangers to the birdwing.

In an attempt to reconcile the conservation needs of the butterfly with those of the people, the Australian International Development Assistance Bureau has contracted an environmental consultancy firm to develop a 5-year conservation and research project. Angus Hutton, who pioneered the butterfly farming industry in PNG (see *Oryx*, 19 [3], 158–162), has been appointed Conservation/Naturalist Consultant for the project. In November 1993 he spent 2 weeks on foot patrols in the butterfly's habitat on the Afore Plateau and in the remote Menagalas and Hydrographer Ranges area. He found the butterfly's range to be three times more extensive than previously recognized – it is now known to extend 150 km further south into the Collingwood Bay area and some 100 km further east into the Musa River catchment area. There is also considerable evidence that it survives in the headwaters of the Manbare/Kumisi rivers (where it was discovered by Alfred Meek in 1906).

An added bonus of the survey was the discovery of healthy populations of the world's second largest butterfly, the goliath birdwing *Ornithoptera goliath*, in several areas.

Despite the exciting new findings, Queen Alexandra's birdwing is still considered to be endangered because of its limited habitat and the continued expansion of the oil palm project. However, there has already been one



Queen Alexandra's birdwing – a new conservation programme has started for this butterfly in Papua New Guinea where its habitat is threatened by expanding oil palm plantations (drawing by Sarah Anne Hughes from *The IUCN Invertebrate Red Data Book*, IUCN, Gland and Cambridge).

major breakthrough – a moratorium has been imposed on all logging in the area. Now that the 5-year research and conservation programme has been approved by the Australian Government and funding has been allocated (\$4.29 million from Australia and Kina0.19 million from PNG) there is new hope for the birdwing butterflies of Papua New Guinea.

Editor

Another new mammal discovered in Vietnam

In March scientists from Vietnam's Ministry of Forestry and the World Wide Fund for Nature found a new species of muntjac in Vu Quang Nature Reserve, northern Vietnam, where the Vu Quang ox *Pseudoryx nghetinhensis* was discovered less than 2 years before. The genetic analysis at the University of Copenhagen confirmed that it is a new species and further tests will be conducted to determine its relationship to other deer species.

The scientists who discovered it are calling it the giant muntjac because it is about one-and-a-half times bigger than the largest

known muntjac *Muntiacus muntjak*. It also has longer antlers, which are bowed rather than recurved, much longer brow tines and massive canine teeth. Estimated to weigh between 40 and 50 kg, the new species also lacks the tuft of hair normally found on the brow and base of the antlers of other muntjac species.

No live specimen has been taken but 19 trophies were found in hunters' homes in the village where trophies of the Vu Quang ox or *sao la* (its indigenous name) were discovered in May 1992. Villagers hunt the muntjac for its meat and, after the wild pig, it is one of the most commonly captured species. Between 15 and 20 animals were trapped locally from July 1993 to January 1994, suggesting that it is relatively abundant.

The Vietnamese Government is doing its utmost to protect Vu Quang, which is obviously very important for endemic species. Since the discovery of the *sao la*, the government has enlarged the reserve from 16,000 ha to almost 60,000 ha and has imposed hunting and logging bans. The WWF is helping to protect the reserve and the soon-to-be-approved 100,000-ha Phu Mat Reserve, 125 km north-west of Vu Quang, along the Laos border. Phu Mat also harbours the *sao la* and other large mammals such as the Asian elephant *Elephas maximus*, tiger *Panthera tigris* and gaur *Bos gaurus*. So far, the new deer has been found only at Vu Quang, which is 10 hours by road from Hanoi. However, it is possible that, like the *sao la*, it may also exist in the adjacent forests of Vietnam's Nghe An Province and in Laos. In March there were unconfirmed reports of a similar find in Laos by a team of scientists from IUCN-The World Conservation Union.

Source: World Wide Fund for Nature.

Turtle eggs as a sustainable natural resource

In the last few years Costa Rica has been developing projects to exploit natural resources in a sustained, rational manner to benefit local

communities. One of these, at Ostional Wildlife Refuge in Guanacaste Province, involves collecting turtle eggs for sale.

In 1986 it was made legal for the local community to collect eggs of the olive ridley turtle *Lepidochelys olivacea*. Ostional is the sole legal source of turtle eggs in the country. Initially the eggs were sold locally but profits were small and in 1989 the Association of Integral Development of Ostional (AIDO), which runs the project, contracted a sales distributor for the national market. A pricing agreement ensures that the eggs cost less than chicken eggs so that they remain available to a wide range of consumers. Most are sold in bars and restaurants as a popular hors-d'œuvre.

Egg collection is strictly controlled and the turtles' nesting behaviour helps ensure that collection is sustainable. During the wet season, from August to December, between one and three mass nesting events (*arribadas*) occur each month. Eggs laid by females arriving early in an *arribada* are often accidentally dug up and destroyed by females nesting later. By confining egg-collection to the early part of an *arribada* only 'doomed' eggs are removed. In the dry season fewer turtles nest and egg collection in this period is also apparently sustainable because the clutches have higher rates of mortality due to the reduced humidity and increased temperature.

The availability of large numbers of turtle eggs at low prices has discouraged the illegal trade: only in one area of the distribution network does demand appear to exceed supply and there is still a low level of illegal commerce as a result.

The AIDO is reconsidering distributing eggs directly to the national market in order to reduce the number of intermediaries and promote commerce at all levels. It would also be wise, say researchers engaged in the Regional Program in Wildlife Management at Costa Rica's National University, to reinvest Ostional's financial gain from turtle egg sales in other enterprises to guarantee income independent of turtles.

Source: Almengor, M.A., Mo, C. L. and Vargas, E. 1993. *Marine Turtle Newsletter*, No. 63, 10-13.

Community management of wildlife in Botswana

Botswana has embarked on a programme to give rural people a greater role in the management of the wildlife resource, with the aims of promoting wildlife conservation and diversifying the rural economy. It was developed after an intensive consultation programme involving local communities and authorities.

Wildlife in Botswana is owned by the state and all citizens are given an equal chance to hunt through a raffle system. However, this system did not take into account the costs met by rural people who maintain the wildlife resource. The Department of Wildlife allocates annual quotas to individual controlled hunting areas (CHAs) based on estimates of biologically sustainable yields. Now, under the Wildlife Conservation and National Parks Act 1992, communities within each CHA may apply to manage their own quotas.

The five villages of Chobe Enclave were the first to exercise this option and in 1993 were given control of their community quota. Village committees have representatives on a board, which made several early decisions:

- to contract a safari company to manage the wildlife quota for safari hunting;
- to conserve animals not shot by the safari company in the hope of obtaining a larger quota the following year;
- to hold only 10 per cent of the revenues earned for the board and to distribute 90 per cent to the participating villages;
- to discuss formalizing their existence as a Trust by drawing up a constitution through elected village representatives;
- to recruit an advisor to help develop the Trust's capacity to represent the community interests in the management of natural resources;
- to recruit, and have trained, a local person to act as a full-time employee;
- to provide labour to support any building work that is carried out to help house the Trust and its advisor.

The Trust made P25,000 in 1993 and may be able to triple its income in the next year or so

from both hunting and photographic tourism. In deciding not to hunt all the animals of its quota the community showed a longer-term perspective, suggesting that economic gains are helping to produce a change of attitude. Wildlife now has a value to Chobe Enclave and not just a cost. The quota for the Enclave was 168 animals; a safari company bought 33, of which 15 were shot. Citizens were also offered the chance to shoot on payment of a fee to the Trust; 29 animals were shot in this way. The balance of 106 was deliberately conserved in the interests of increased incomes in the future. Chobe Enclave is now considering managing tourist facilities and using minor forest products under the Chobe Forest Management Plan.

Community projects are complex and need time to develop fully but it is hoped that more communities follow Chobe Enclave's lead in sustainable rural development.

Source: Winer, N. 1993. Let communities manage their wildlife: the experience of Chobe Enclave. *Kalahari Conservation Society Newsletter*, No. 41, December 1993, 26–27.

Partulidae in crisis

The recent workshop of the Pacific Island Land Snail Group held at London Zoo was a sobering experience. A wholesale revision of individual species status within the Partulidae concluded that the family now includes 40 species that are Extinct in the wild, 31 that are Critical, 5 that are Endangered and a further 45 for which there is insufficient information. The major problem is the introduced predatory snail *Euglandina rosea*.

The remote nature of the island colonies where most of the Partulidae live makes keeping up to date with their status inherently difficult, but predictions of future threats were made using extrapolated data techniques supported by the close correlation between actual and projected predatory progression of *E. rosea* across Moorea. Thus, where *E. rosea* pres-

ence is confirmed on an island and its introduction date is known, forecasts of wild population extinctions can be made.

The damage inflicted by the well-meaning introduction of a species to an alien environment has been proved repeatedly. In this case, an edible snail, *Achatina fulica*, was originally introduced to islands throughout the South Pacific as a source of alternative protein for the Pacific islanders; it escaped and destroyed crops. Although the threat to agriculture proved to be acute and *A. fulica* populations declined dramatically after an initial boom, *E. rosea* was – and is still – being introduced to control *A. fulica*. Unfortunately, these introductions are still being actively promoted by an agricultural college in Guam, despite the massive damage they cause to endemic fauna and despite repeated requests from scientists that no further introductions be made. Instead, unfortunately for the Partulidae, *Platydemus manokwari*, a carnivorous flatworm that preys on molluscs, has been added to the list of recommended biological controls.

It is possible that some species of partulid survive at high altitudes, on the Society Islands (where most of the early research into threatened extinction of partulid species was carried out) and other mountainous groups, where *E. rosea* has so far failed to establish itself. Especially exciting is the possibility that *E. rosea* has not yet arrived on the Marquesa Islands. If so, then despite the threat of an imminent intentional or accidental introduction of 'biological agents' to control *A. fulica*, there may still be time for the seven known partulid species endemic to the Marquesa Islands to be studied in the wild and taken into captivity.

These Marquesan species represent a major radiation of the Partulidae, second only to the radiation of the now virtually extinct species on the Society Islands. Their relationships are of great and increasing scientific interest, with important implications for the history and potential evolutionary future of Partulidae as well as for the nature of evolution itself. Surveys and collections for captive breeding are urgently needed.

The literature available to the workshop demonstrated the paucity of available infor-

mation on the snails' status but there are undoubtedly species extant today that will go extinct within the next 12 months. Many of these species have no captive representatives. Collections from the wild are needed now to save them from the brink of extinction. Captive-breeding efforts are co-ordinated internationally and, if the collections can be made in time, there is space for viable captive populations of all the known threatened species at the institutes involved in the programme. The stated aim of these breeding projects is to reintroduce animals to the valleys from which they are collected.

Future reintroductions now depend on work being done by members of the Pacific Island Land Snail group on predator snail baits, exclusion zones, public education and fundraising. Partulids do not have the advantage of being cute or spectacular in the fundraising stakes but for a relatively low investment in the programme, organizations could be individually responsible for saving entire species for prosperity.

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Elephant management in Zimbabwe – turning a liability into an asset

As in many parts of Africa the people of Nyaminyami District on the southern shores of Lake Kariba share their land with large populations of wild mammals. Twenty thousand people share 2870 sq km of Omay Communal Land, which surrounds the inland borders of Matusadona National Park, with 2000 elephants *Loxodonta africana*, 6000 buffalo *Syncerus caffer*, 15,000 impala *Aepyceros melampus* and lesser numbers of a further 12 species of large mammals.

The elephants are a major source of problems: they damage crops and property and sometimes attack and injure or kill people. Traditionally the problems have been dealt with by harassing or shooting the culprits but

other methods may be more effective, both economically and ecologically.

In January 1989, under the Zimbabwe Government's Communal Area Management Programme for Indigenous Resources (CAMPFIRE), responsibility for wildlife was conferred on the Nyaminyami District Council. A recent paper in *Pachyderm* (Taylor, 1993) describes how the District is attempting to manage elephants in the area to minimize conflict and increase human tolerance of the animals, to improve the livelihoods of the rural poor, to promote sound and sustainable-use options and to enhance conservation.

Development in the area, where the hot semi-arid climate makes agriculture difficult and where the tsetse fly has until recently prevented the import of cattle, is focused on tourism and fishing.

The most lucrative form of tourism at present is safari hunting by clients mainly from North America and Europe. It generates 85 per cent of the total wildlife revenue, elephants contributing 38 per cent of this. For trophy hunting to be sustainable in the long term no more than 0.7 per cent of the total elephant population should be taken annually and the appropriate quotas have been strictly adhered to, with an average of 12 trophy elephants being shot each year. However, Problem Animal Control (PAC) operations introduced to protect people and crops have resulted in an additional average of eight elephants a year being shot. These combined losses amount to just over one per cent of the population – a number that is not sustainable in the long term.

One solution to reducing both the conflict with people and the number of elephants destroyed on PAC would be to combine safari hunting with control measures so that trophy hunters kill problem animals. Elephants are less valuable when killed by control operators because, although their meat and skins can be used, their tusks cannot be exported.

To implement this, safari hunting, which traditionally takes place in the dry season, would have to be brought forward to the wet season when most crop-raiding problems occur. This will have to be done gradually, but

by persuading trophy hunters to accept new arrangements the current kill of 20 bull elephants a year could be reduced to 12 over a period of 5 years. In 1992, for the first time, a quota was set for the number of elephants that could be shot on PAC and four of these were successfully hunted by safari operations as trophy elephants. The revenue, 20 times the amount that would have been obtained by shooting the elephants on PAC, was returned to the affected communities.

Hunting is not the only source of revenue. While non-consumptive tourism – game-viewing, walking and photographic safaris – only accounted for about 6 per cent of wildlife-related income in 1991, it is anticipated that this will grow rapidly over the next 5 years and will generate three times the revenue brought in by hunting.

Between 1989 and 1991 Nyaminyami District earned \$Z1,237,503 (\$US467,397) from its wildlife, and income from this source is set to rise each year. The earnings come from hunting, cropping for meat production, problem animal control and tourism. Elephants are the major focus of these efforts and as the income increases local people are viewing them more and more as assets rather than liabilities.

Source: Taylor, R.D. 1993. Elephant management in Nyaminyami District, Zimbabwe: turning a liability into an asset. *Pachyderm*, No.17, 19–29.

The Nile crocodile in Zimbabwe – a case of sustainable use

Zimbabwe's crocodile ranching programme appears to be one of the few successful, commercial, consumptive wildlife-use programmes operating today. As far back as the 1960's Zimbabwe's Department of National Parks and Wild Life Management (DNPWLM) decided that the best way to improve the conservation status of the Nile crocodile *Crocodylus niloticus* would be to give it a high economic value.

At the time Nile crocodile populations were severely depleted throughout most of the range of the species and in 1973 the species was listed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), banning all international commercial trade. By 1983 Zimbabwe's crocodile conservation programme had been successful enough for the country's crocodile population to be down-listed to Appendix II, allowing the legal export of crocodile products and expansion of the industry.

Crocodile eggs are collected from the wild and hatched and reared on farms. This method helps conserve wild populations because it gives them a tangible value. It does not deplete wild populations because most crocodile eggs laid in the wild do not survive to maturity; it has been estimated that a typical Nile crocodile population can withstand up to 92 per cent of its eggs being removed without declining. However, to ensure that the wild population is not depleted, farmers are required to return around 2 per cent of hatchlings to the wild. This should be more than enough because it has been estimated that even if all eggs were removed, the return of 0.6 per cent as crocodiles 1.2 m long would be sufficient to maintain the population.

Between 1965 and 1987 the DNPWLM gave farmers annual quotas of eggs. By 1987 it was obvious that crocodile populations were thriving and since then permit holders have been allowed to remove as many eggs as they wish, providing they keep accurate records of the number and location of the nests and the number of eggs taken. This information is used to monitor the size of the population. Tens of thousands of eggs are taken each year but there are still an estimated 50,000 crocodiles in the wild and a further 150,000 in captivity.

The crocodiles are killed when around 2 years old and exported under CITES permits, mostly to Europe and the Far East. The hides bring in significant revenue: in 1991 skins worth \$US1.7 million were exported. The market for crocodile meat is much more limited and little is exported. Ways of expanding this

are being investigated – perhaps promoting it to health-conscious markets in the West because of its low fat content.

The Crocodile Farmers Association of Zimbabwe (CFAZ), established in 1978, has been a major force in the development of the industry and fulfils a vital regulatory function. In a joint initiative with the DNPWLM, small-scale community schemes are being devised to extend the benefits of crocodile use to local people, who have suffered some negative effects from the expanding crocodile populations. Crocodiles deplete fish stocks and occasionally kill cattle and people. Under the Communal Area Management Programme for Indigenous Resources (CAMPFIRE), crocodile ranchers pay local communities for egg-collecting rights and also provide employment for local people on the farms.

As a result of its economic value, the Nile crocodile is one of the most-studied species in Zimbabwe and the results of the research are useful not only there but in other countries that might wish to embark on similar schemes. While the crocodile ranching programme is not without problems, it does demonstrate that controlled use can benefit the conservation of a species and its habitat.

Source: Pinchin, A. 1994. Conserving the Nile crocodile in Zimbabwe – the value of sustainable yield utilization. *International Zoo News*, 41 (2), 19–24.

Rhino dehorning in Zimbabwe – is it working?

Zimbabwe's programme to protect rhinos by removing their horns appeared to receive a setback last year when it was discovered that 80 dehorned rhinos had been killed by poachers. The programme started in October 1991 with the dehorning of 59 white rhinos *Ceratotherium simum* in Hwange National Park. In 1992, because of intensifying poaching, the government wildlife authorities initiated a nationwide dehorning programme for

both black rhinos *Diceros bicornis* and white rhinos. By September 1993 212 black rhinos and 120 white rhinos had been dehorned.

From the outset, the Department of National Parks and Wildlife Management (DNPWLM) considered the dehorning programme as a crisis management tool to be pursued in tandem with a continuing anti-poaching and law-enforcement effort. However, in Hwange National Park, vital anti-poaching operations virtually ground to a halt during the first quarter of 1993 – the consequence of a severe funding and personnel shortfall resulting from government-imposed austerity measures in conjunction with the International Monetary Fund's economic restructuring programme for Zimbabwe. In spite of the fact that the wildlife tourism sector is one of Zimbabwe's most productive economic assets, the DNPWLM was forced to retrench 259 game scouts and to remit 10 per cent of the 1991/92 budget to the Treasury in early 1993. In essence this resulted in the curtailment of most field operations in Hwange until the new budget became available in June. During the first 5 months of 1993, the 14,000-sq-km Hwange National Park was virtually unpoliced.

In the absence of active protection, it appeared that dehorning was ineffective as a deterrent to poachers. However, it is now known that dehorning must be performed annually to be effective and most of the white rhinos killed had been dehorned more than a year previously: most were carrying 100 mm of new anterior horn and 40 mm of posterior horn regrowth – an amount equivalent to the horn naturally borne by a juvenile black rhino. Of the 58 black rhinos dehorned more recently only four were killed by poachers.

Because poachers had also killed some newly dehorned rhino, some observers suggested a calculated syndicate effort to drive up the value of stockpiled rhino horn by ordering poachers to eliminate all rhinos. There is little evidence to support this theory. Others have speculated that horn stubs are valuable enough to attract poachers, but there are no reliable data to indicate what financial returns poachers receive for stubs. To date, no

horn stubs from dehorned rhinos have been confiscated in international trade or identified in consumer markets.

A statement made by a Zambian poacher apprehended in Hwange National Park suggests another reason – if valuable time is spent tracking a rhino and it turns out not to have horn, it may be shot anyway because poachers do not want to be side-tracked by repeatedly following the spoor of hornless animals. This explanation is supported by the fact that poachers have not shot freshly dehorned rhinos in Matobo National Park south of Bulawayo and did not shoot rhinos in Hwange after the initial dehorning of white rhinos in 1991. In addition, horn bases are not always removed.

Antipoaching work has now resumed and in September 1993 Chipinge Safari Area and Matobo, Hwange and Matusadona National Parks were identified for designation as Intensive Protection Zones (IPZs). Collectively they had 80 black and 40 white rhinos and more individuals were to be translocated into Matusadona. If properly implemented, the IPZs probably hold the only hope for the survival of rhinos on government lands. Zimbabwe's rhino populations in some of the privately owned conservancies – particularly the lowveld Save Valley, Chiredzi River and Bubiana conservancies – have expanded since the translocations of founder groups in 1986. These conservancies inhibit poaching in several ways, including offering rewards to informants and dehorning. There has been no rhino poaching in the Bubiana and Chiredzi River conservancies to date and none in the Save Valley for 2 years.

It seems that dehorning is still worthwhile, especially given the present terrific onslaught of poaching in southern Africa. However, the short periods necessary between dehornings will lead to additional costs, and protection by guards in secure areas will continue to be necessary into the foreseeable future.

Sources: *TRAFFIC Bulletin*, 14 (2), 45–46; Milner-Gulland, E.J., Leader-Williams, N. and Beddington, J.R. 1993. Is dehorning African rhinos worthwhile? *Pachyderm*, No. 17, 52–58.