

Unregulated Falklands fishery threatens wildlife

Falkland islanders are becoming increasingly frustrated at the British Government's failure to safeguard their fishing stocks, according to Simon Lyster, Honorary Secretary of the Falkland Islands Foundation. The seas around the Falklands and South Georgia, which are among the best fishing grounds in the world, were relatively untouched until a few years ago, but are now being heavily exploited by Polish, Spanish, Russian and Japanese trawlers. The trawlers can operate to within three miles of the Falklands' shores because the British Government has failed to declare a 200-mile fishing zone, although it is entitled to do so under international law. There would be immense benefits to the islanders if such a zone were established; it is estimated that there would be an annual income of at least £3 million from licence fees. There would be long-term benefits, too, in that the Falklanders would be able to limit fishing to a sustainable level. The total present catch around the Falklands and South Georgia is almost one million tonnes—the total world catch is only 70 million tonnes—but without careful management the fish stocks are bound to decline in the way that many already have in other parts of the oceans. This would not only ruin the prospects of a long-term fishing industry in the area, but would also have detrimental effects on marine species dependent on fish—seals, penguins, albatrosses and many other seabirds—which abound in the Falklands and require large supplies of food in offshore waters during their breeding seasons. The British Government is holding back from declaring the zone for fear of upsetting diplomatic efforts to improve relations with Argentina. A laudable motive perhaps, but Argentina has no more to gain from a depletion of fish stocks than UK does and the world would not thank Britain for jeopardising the future of a rich marine ecosystem.

Sea otters need more protection

The southern sea otter *Enhydra lutris nereis*, which survives now only in California, deserves reclassification from threatened to endangered, according to a report in *The Otter Raft* (Winter 1983/1984). The subspecies, which originally

ranged from Baja California to at least Washington, and perhaps to south-central Alaska, was considered extinct in 1920, but by 1938 it was known that a small group had survived in California. Census counts by the US Fish and Wildlife Service and the California Department of Fish and Game found that in spring 1983 there were probably only 1163 adults and 122 pups. The population appears to have changed little in size over the past 10–15 years; if anything the data suggest a modest decline since the mid-1970s, when there were probably 1500 otters. Nor does the distribution of otters seem to be altering very much: the northern boundary of the range is still marked by a male group established near Santa Cruz in 1977 and there has only been a small expansion at the southern end.

Although otters do have supporters, there is also some hostility from fishermen, which leads to controversy about whether they should be protected or controlled. Sea otters feeding and playing at the harbour entrance in Morro Bay, where a group established itself in spring 1983, have been delighting an increasing number of otter watchers. Shopkeepers and restaurant owners welcome the otters in the harbour—they are good for business—yet the Morro Bay Chamber of Commerce is reluctant to promote otter watching for fear of antagonising fishermen. Ever since the otters began to recover from the devastation of intensive uncontrolled hunting in the eighteenth and nineteenth centuries the reaction from shell fisheries has been hostile. It is true that when otters reappear in an area they rapidly reduce the shellfish populations and the fisheries dependent on these stocks suffer. The successful establishment of those fisheries in the first place was due to the decline of the otter through hunting and the resultant expansion of the shellfish population, which had previously been held in check by the otters.

The negative impact of otters on shellfish stocks is obvious and dominates discussions on sea otter management, but there is another less obvious impact—and it is a positive one as far as human exploitation of sea resources is concerned. Research by Glenn R. Van Blaricom reveals that sea otters have positive economic effects on kelp yields by consuming large quantities of sea urchins, which are the most destructive con-

Oryx Vol 18 No 3

News and Views

sumers of kelp in California. In that state, giant kelp *Macrocystis pyrifera* is harvested commercially—from 1966 to 1976 annual landings averaged 133 million kg, with an annual crop value approaching \$20 million—and used in the manufacture of a number of valuable industrial and retail products. Kelp harvesting companies have devoted considerable effort and resources to control sea urchin populations. Where sea otters are present, however, sea urchin densities are so low that their influence as grazers is effectively eliminated. The improved growth of the kelp is of direct benefit to those that harvest it and of indirect benefit to fishermen. The kelp forest habitat is important for the maintenance of fish stocks, providing shelter from predators for young fish and increasing the substrate area for organisms on which fish feed. Although kelp abundance is controlled by many factors of which the number of sea urchins is just one, albeit a major one, sea otters, in controlling sea urchin numbers have an important role in the kelp dominated habitat. That this role is not better appreciated is due perhaps to the fact that it might take a decade or more after the arrival of the sea otter for the kelp beds to improve, whereas shellfish populations can be dramatically reduced within months of reoccupation by sea otters. But clearly, the long-term effects do need to be incorporated into the thinking about sea otter management.

Meanwhile, sea otters still drown in shallow water fishing nets, along with seabirds, sea lions, and harbour porpoises. The US Marine Mammal Commission regards this as responsible for the apparent lack of population growth in recent years and say it could jeopardise the continued existence of the population if the annual take is exceeding replacement yields. The measures so far taken to reduce this cause of mortality have not been sufficient—it has been estimated that more than 100 otters could be dying this way each year.

Opportunity to protect Sri Lanka's turtles should not be lost

Sri Lanka occupies a unique position in the sea-turtle map of the world, according to Jack Frazier of the Smithsonian Institution. Five of the seven

species of sea turtle, all of which are listed as endangered in *The IUCN Amphibia-Reptilia Red Data Book*, nest on its beaches. But there, as elsewhere, the turtle populations are rapidly declining. In a recent report published by the Center for Environmental Education, Shekar Dattatri, a research associate at Madras Snake Park, and Dharmin Samarajiva of Colombo, Sri Lanka, stress the urgency of protecting Kosgoda, Sri Lanka's finest sea-turtle rookery. The small village of Kosgoda, 45 miles (72 km) south of Colombo, has a gently sloping beach fringed by *Pandanus* palms and coconut groves. It is relatively undisturbed for 3 km and only a single light faces the sea. Four species of turtle nest there regularly: the extremely rare leatherback *Dermochelys coriacea*, the heavily exploited green turtle *Chelonia mydas*, the olive ridley *Lepidochelys olivacea* and the hawksbill *Eretmochelys imbricata*. The numbers nesting there are unequalled on other Sri Lankan beaches, except for those that have been made wildlife reserves, such as Yala National Park and Bundala Bird Sanctuary. The Wildlife and Nature Protection Society of Sri Lanka maintain a turtle hatchery there, which is looked after by a fisherman and his family. The villagers are co-operative and there is virtually no poaching in the area. The situation augurs well for the creation of a reserve. But the Government has made no moves towards doing so yet and a large tourist complex may soon be built nearby. This is sure to create more human disturbance as recreational use of the beach increases and may involve establishing lights, which disorient turtles, on the beach. Such developments have had disastrous results elsewhere on the island; nearby Bentota, for example, is saturated with tourist complexes and no turtle nesting has occurred there in the past few years.

The authors found in their extensive survey of the island that turtles are being killed for their meat, and in the case of the hawksbill, for tortoiseshell, and that nests are being plundered. These activities are illegal, with penalties of three-month prison sentences or Rs 250 (£16) fines, but enforcement is very poor and convictions are too few to discourage others. Wild pigs and jackals also dig up eggs. Rapid and haphazard tourist development is transforming the last few undis-

News and Views

turbed beaches into brightly lit areas unfit for nesting, and many turtles are drowned in the new, large nets made from synthetic fibre that have largely replaced the small traditional fishing nets. It is doubtful, say the authors, whether any population can survive such sustained and severe exploitation for much longer.

The Sri Lankan Government would be taking an important step for conservation if it were to establish its first reserve specifically for nesting turtles at Kosgoda. It would be even more impressive if it were also able to effect some of the report's other recommendations, which range from establishing and managing sanctuaries on other nesting beaches to encouraging hotel managers to run turtle hatcheries and to organising an island-wide crackdown on turtle offenders.

Egypt's first marine park

Ras Mohammad, at the tip of the Sinai peninsula, has long been famous to SCUBA enthusiasts as one of the most spectacular diving sites in the Red Sea. The density and diversity of reef life is unsurpassed, with schools of brilliantly coloured fish, abundant corals, molluscs and other invertebrates, as well as turtles, rays and sharks. Numerous large open water fish visit the reefs,

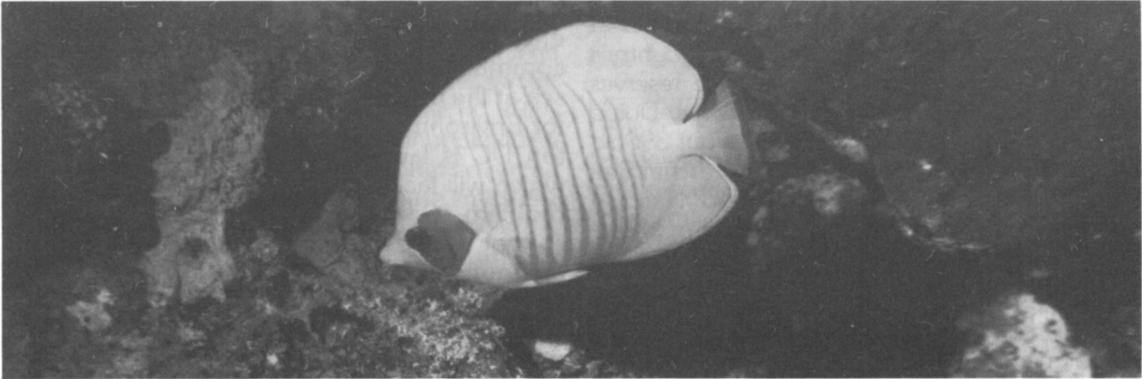
and a major attraction is George, a tame 150 lb (68 kg) Napoleon wrasse which thrives on hard-boiled eggs fed to him by divers. The water is exceptionally clear, swift currents around the headland keeping it remarkably free from the pollution that is affecting so many of the Red Sea reefs. The hilly desert landscape of the peninsula is inhabited by sand fox, fennec and gazelle and a variety of birds. The largest raptor migration in the world, from Africa to Asia and Europe, passes over Ras Mohammad, white storks are frequently seen on passage, and ospreys breed in the vicinity.

Under Israeli administration, Ras Mohammad received some 3000–5000 visitors a year and was fast becoming a popular tourist resort. Nevertheless, major efforts were being made to protect the reefs and terrestrial wildlife, and there was therefore considerable concern among conservationists when the Sinai was handed back to Egypt in 1982. However, in November 1983, Ras Mohammad was declared Egypt's first marine national park. In fact, events over the last two years may have benefited the wildlife; the number of divers on the reefs has declined and a heavy military presence has made access to many areas difficult or even impossible. Although visitors to Ras Mohammad have increased recently,



Na'ama Bay, on the edge of the Ras Mohammad Park, is currently the main diving and tourist centre (*Susan Wells*).

News and Views



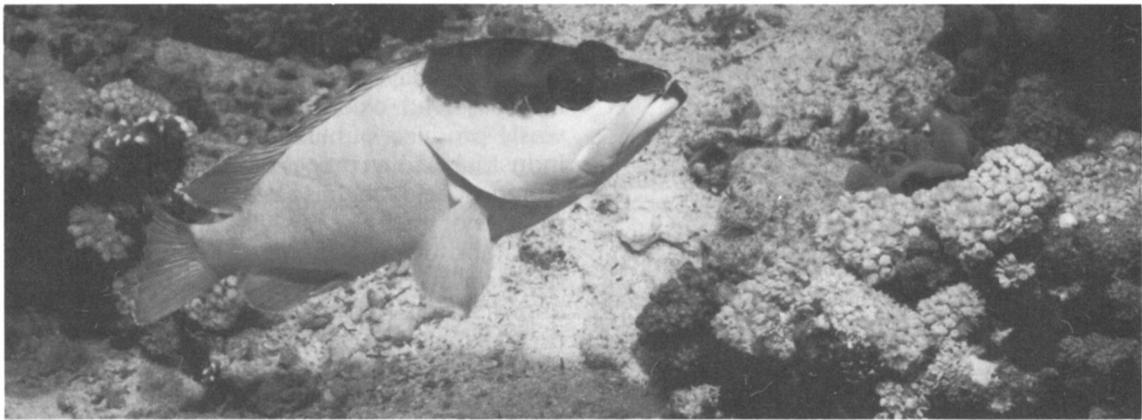
Lemon butterfly fish *Chaetodon semilarvatus*, at Gordon Reef, Ras Mohammad (Susan Wells).

the area is currently under little pressure. The local diving centres help to enforce the legislation prohibiting spearfishing and collection of marine organisms, although isolated spearfishing incidents do occur. The Bedouins have traditionally collected molluscs and fished on the reefs but their impact is negligible.

The marine park will undoubtedly increase the potential for tourism in the area but a management plan is being prepared with this in mind. The park will be zoned to include a strictly protected area for scientific research and diving, buffer zones on either side, and a development zone where the main recreational facilities and an interpretative centre will be located. There is still a long way to go before the park is operational but £160,000 has been allocated for administration, the Egyptian Wildlife Service has appointed a

conservation officer, and several Egyptian scientists are actively involved. The US Fish and Wildlife Service is planning to assist with the training of wardens and staff as, through the activities of Dr Eugenie Clark, the US has been supporting this project for many years. Friends of the Red Sea, a group run by Jill Myers in the UK, has also been instrumental in the park's creation, and is currently investigating means of organising a marine survey of the area. One aspect of concern is that among the park legislation banning all environmentally damaging practices lies a clause permitting fishing and hunting under certain conditions which can be set by the administration. It is to be hoped that advantage will not be taken of this loophole, and that the future of Ras Mohammad and, of course, the survival of egg-eating George, is now assured.

Susan M. Wells



The blacktip grouper *Epinephelus fasciatus*, one of the commonest fish at Ras Mohammad, is extremely tame (Lawson Wood).

Nepal: a new park and a new reserve

Nepal's most recent addition to the country's network of national parks and wildlife reserves are Khaptad Wildlife Reserve and Shey-Dolpo National Park. The former covers about 390 sq km of high-altitude grassland and forests in Seti Anchal, western Nepal. Shey-Dolpo National Park covers approximately 145 sq km of Himalayan wilderness in the Dolpo area, where tourists are not allowed. The park contains Nepal's second largest lake, Lak Phoksundo, at 3600 m above sea-level and harbours snow leopards, musk deer and blue sheep. Nepal's new total of five national parks and four wildlife reserves cover more than 4.5 per cent of the country.

Sanat K. Dunghal, Smithsonian Tiger Ecology Project, GPO Box 38, Kathmandu, Nepal.

The entanglement problem

Several articles and news items in *Oryx* in recent years have referred to the deaths of marine animals, seabirds, turtles and fish that have become entangled in discarded fishing nets. The extent of the problem is not known but it is believed to be enormous. One scientist estimated that 145,000 trawl-net fragments, ranging from small pieces to those large enough to entrap and kill a whale, are discarded in the Bering Sea and Aleutian Island area of Alaska each year alone. World-wide, there are probably millions of net fragments drifting in the seas and they are taking a heavy toll. Scientists have estimated that 50,000 northern fur seals drown in abandoned nets each year, more than twice the annual take of seals for fur. The population of this species has dropped by about half from its 1940s level of three million. On the Hawaiian atoll of Lisianski Island in 1983, four of the 26 pups of the endangered Hawaiian monk seal had to be cut out of nets caught on the coral. A grey whale died in a gill net (later identified from the shark fishery of southern California) in Palix River in Washington State. At least 29,700 murrelets are killed each year in nets off the coast of California (this is more than 17 per cent of the area's murrelets). There are seemingly endless similarly disturbing statistics.

There are laws to prohibit dumping of nets at sea

but they are difficult to enforce and even if current efforts by the US Government to remind fishing communities of the regulations pay off, nets in the sea at the moment will drift for years. The Center for Environmental Education (CEE) in Washington DC is launching an Entanglement Project, which will tackle some other ways of solving the problem. It may be possible to tag nets chemically so that their owners can be identified if the nets are found adrift or washed up. It may be possible to return to using nets made from fibres which degrade more quickly if abandoned. CEE is working with the National Marine Fisheries Service in the US to evaluate possible solutions and is also preparing to monitor and to clear debris from certain key areas of the sea where marine life is particularly threatened.

Acidification threatens the southern hemisphere

Acidification, a pollution problem associated mainly with northern Europe and North America, could also menace areas near industrial centres in the southern hemisphere. The results of an enquiry by IUCN have revealed that acidification of the soil has already been recorded at danger levels in some parts of Brazil and air pollution of a kind likely to cause acidification is rife in the Eastern Transvaal Highveld of South Africa. Elsewhere, careful monitoring is in progress to detect signs of the problem well in advance. Australia and Thailand, for example, are both potential victims of their own industrial pollution, yet both are determined to be forewarned and forearmed.

The main active ingredients of acid precipitation are dissolved oxides of sulphur and nitrogen, waste products of burning fossil fuel and certain industrial refining processes. In Europe and North America, acid rain has already killed or damaged millions of trees and has killed fish in hundreds of lakes and rivers. In South Africa, the potentially most serious acidification problem derives from enormous oil-from-coal refineries, coal-burning power stations and other industrial complexes clustered round Johannesburg and Witwatersrand. Most of the pollution occurs during South Africa's dry season, when atmospheric conditions are stable. The airborne sulphur and nitrogen

Oryx Vol 18 No 3

oxides remain in one place for some time and some are inevitably deposited on the veld. The planned expansion of coal-burning power station operations in the region means that by 1985 about 2.25 thousand tonnes of sulphur dioxide a day will be released into the atmosphere over the Eastern Transvaal; 80 per cent of these emissions will stay within an area of about 3000 sq km, a potential deposition of 221 tonnes per sq km per year. The equivalent figure for the Ruhr basin in Germany, a notorious source of acid rain pollution, is 260 tonnes per sq km per year from all sources. These levels are almost bound to set the Eastern Transvaal at grave risk of acidification in the near future, if the process has not already begun. The Council for Scientific and Industrial Research is setting up a chain of sampling stations to measure rainwater acidity and dry deposition in the Eastern Transvaal and adjacent areas. Existing monitoring sites, at Cape Point and in the Kruger National Park, form part of a Global Precipitation Chemistry Monitoring Network organised from the University of Virginia, USA.

In Australia, the Commonwealth Government is establishing six rainwater acidity monitoring stations in potential danger areas. Only one area, near Sidney, has so far yielded serious signs of acidification, but the acid rain there is considered to be a very local effect. In Brazil, soil in the eastern part of Sao Paulo State is very acid, but it has not yet been firmly established whether the origin is industrial or not. The highest acidity values are found in Cubatao and Sao Jose dos Campos, both within an hour's drive of the capital and its seaport Santos, where air pollution has been a problem for a long time. In Thailand, where air pollution is evident in many urban areas, no reliable data are yet available, but the Office of the National Environment Board has begun an air pollution research programme.

Although industrialisation of the southern hemisphere is on a small scale compared with the northern hemisphere, the acidification menace exists and can only increase, unless the lessons the North has learned the hard way can be used in the South to help prevent the phenomenon. Acidification proceeds slowly and only when the natural buffer effect of soil and water is broken does the problem abruptly manifest itself in biological damage.

News and Views

Is it time for a biological survey of the US?

Less than one-third of the species that occur in the US have been described taxonomically and most species surveys have been *ad hoc* and concerned with discrete groups of organisms in limited geographical areas, writes Michael Kosztarab in *Science* (233, 4635). Only a few states—California, Florida, Illinois, New York and Ohio among them—support biological surveys. A dearth of identification manuals, even for economically important groups, makes carrying out environmental impact studies difficult. And because so little is known about the distribution and biology of so many of the species that may be encountered, such studies are necessarily superficial. If conservationists are to have an effective voice in shielding natural habitats from the worst of man's activities, they must at least know what species are there, their status and distribution, and as much as possible about their biology and ecology. Unless more is known, at least some conservation efforts are going to continue to be frustrated. The 97th US Congress was able to defeat all the proposed amendments to the Clean Air Act concerning acid rain because the legislators wanted more detailed information on the effects of acid rain, and the basic taxonomic data needed to assess the effects were not available.

The US is lagging behind other countries: Canada, Australia, Hungary, India, Israel, New Zealand, Saudi Arabia, South Korea and the USSR all are carrying out comprehensive biological surveys, some of which were started more than 60 years ago. There is a proposal, however, supported by four national and two regional scientific organisations, with a total of 150,000 members, for a Biological Survey of the US. It would establish a survey to describe the plants and animals of the US, fund basic taxonomic research on the biota, and produce identification manuals, species catalogues, atlases of biotic surveys, group classification systems and other publications. This proposal has been set before the Senate Committee on Environment and Public Works. It would be of tremendous benefit to all agencies concerned with wildlife and its conservation if it received both approval and adequate funding.