What price a butterfly?

Mark Collins

When is a protected butterfly no longer protected? The answer seems to be when it gets in the way of big business interests, or so a recent case in the USA indicates. The US Fish and Wildlife Service decided in mid-March that part of a mountain containing federally protected butterflies could be bulldozed as long as other areas were maintained in perpetuity for conservation purposes.

The question came to a head when a company, Visitacion Associates, wanted to build almost 3000 houses, shops and hotels on San Bruno Mountain in a sought-after locality on the peninsula of southern San Francisco, California. Already completely surrounded by residential developments and highways, the island-like 401metre-high, 6.4-kilometre-long mountain is a refuge for three attractive butterflies, the mission blue Icaricia icarioides missionensis, the San Bruno elfin Incisalia mossii bavensis and the callipe silverspot Speyeria callippe callippe. The San Bruno elfin occurs in a few other localities. but the mountain is the last stronghold of the other two. The mission blue and San Bruno elfin are designated as Endangered under the 1973 US Endangered Species Act, which makes it illegal to kill or capture them, or to destroy the habitat in which they live—even if this happens to be privately-owned land.

The Act, which is implemented by the Office of Endangered Species in the Fish and Wildlife Service, has seen some notable successes since its inception, but when it came up for a three-year reauthorisation in October 1982 a loophole was introduced which seems unlikely to be in the best interests of threatened species. Amendment 10a now permits 'incidental taking' of Endangered or Threatened species during the course of lawful activities such as building or other forms of development. Application must be made to the Fish and Wildlife Service, which must be satisfied that the impact of the take is minimised and that suitable reparation is made. The Service is part of the Department of the Interior, whose Minister James Watt has the final say. Watt has kept the Office of Endangered Species in a virtual straitjacket ever since he came into office, and is notorious for his antipathy towards conservation.

Visitacion Associates was formed ten years ago specifically to develop San Bruno Mountain, in ignorance of the fact that the mission blue and San Bruno elfin also had a legal claim to the land. It was only in 1978 when the callippe silverspot was petitioned for Endangered status that M. Sherman Eubanks, president of Visitacion, realised the problems he was up against. The petition for the silverspot lapsed, but attention was drawn to the general threat to San Bruno's butterflies. To determine whether they could survive the proposed onslaught, San Mateo County requested Visitacion to pay for a \$400,000 environmental impact assessment by Thomas Reid Associates. After a two-year study the firm's 'Endangered Species Survey' determined that the mission blue and silverspot were threatened by the proposed development, and recommended that the top mountain ridges be completely protected. These proposals claimed to cut the developers' impact by half, leaving 80 per cent (2700 acres, 1093 hectares) of the mountain for the butterflies to live in. The rest could be bulldozed to make way for the new buildings.

The compromise aims to attract funds for maintenance of the remaining habitat by levying an annual tax of \$10.00 on every 10,000 square feet of commercial space, and \$20.00 per home, to be increased annually with the inflation rate: \$60,000 per year will initially be raised, and the butterflies and their habitat will theoretically be maintained in perpetuity. In this way Visitacion claim they can fulfil the requirements of the 'incidental taking' amendment, i.e. not to 'appreciably reduce the likelihood of the survival and recovery of the species in the wild' and to 'carry out activities to minimise and mitigate the impacts of the taking'. Reid's impact assessment formed the basis of Visitacion's application to the Fish and Wildlife Service, which has now been accepted despite substantial public opposition.

Dr Richard Arnold of the University of California at Berkeley spent six years studying the ecology and population dynamics of the three butterflies and has prepared a 'San Bruno Mountain Recovery Plan' under contract to the Office of Endangered Species. He is convinced that the acceptance of Reid's survey can seriously jeopardise the butterflies and other endangered species on the mountain. In a letter to the Fish and Wildlife Service opposing the acceptance of

Visitacion's application he pointed out that the assessment ignored the needs of the butterfly caterpillars and pupae, some of which hibernate underground in rodent burrows or ant nests. In addition, the population studies on the adults were imprecise and the relationships between the butterflies and their food plants are too poorly known. Arnold further maintains that the proposed revegetation efforts to replace the developed areas are impossible in the absence of adequate reserves of seeds, a view supported by the San Francisco chapter of the California Native Plant Society.

Reid and his employers refute these claims and call on the need for a compromise. Local and international antagonism towards the development plan has been shown by those who recognise that where extinctions are concerned, compromise represents yet another nail in the coffin. The current situation on San Bruno has arisen because the former range of the threatened species has already been reduced to a few gems in the urban and industrial setting of San Francisco. For fifteen years the Committee to Save San Bruno Mountain has fought to preserve the integrity of the mountain. Its local members are concerned that the federally endangered San Francisco garter snake Thamnophis sirtalis tetrataenia, which is also included in the incidental take licence, several other rare butterflies and moths, and ten rare and threatened species of plants may be unable to survive in the island-like remnant of San Bruno. The area was singled out for inclusion in the IUCN Invertebrate Red Data Book with 'Threatened Community' status because of the unusual richness and value of its fauna and flora. On an international level, the application for incidental taking was vigorously opposed by over 50 respected authorities that constitute the Lepidoptera Specialist Group of IUCN's Species Survival Commission. They consider Reid's study to be totally inadequate for the assured survival of San Bruno's butterflies.

Director Jantzen of the US Fish and Wildlife Service has hailed the San Bruno plan as a landmark and national example of what can transpire when business, environmentalists and government work together. Nevertheless, a strong body of professional and lay opinion still holds that the development can only cause harm

to the wildlife, with the possibility of yet more Californian extinctions only a few caterpillar-tracks away.

Sierra Leone's Last Forests in Serious Danger

Sierra Leone was almost denuded of forest by commercial exploitation in the nineteenth century. Shifting cultivators moving in their wake destroyed what the loggers left. The remaining primary forest covers only three per cent of the country—compared with 75 per cent 200 years ago—and much of this is found in the Gola Forest. This forest, too inaccessible in the nineteenth century, is now being attacked. Gola West has had all its timber removed, Gola East has been selectively felled by SILETI (a joint venture between the state and an Italian company) since 1975. At the end of 1983 Gola North is to be exploited by a state firm—Forest Industries Corporation—which has received 31 million DM (£8 million) from West Germany for extracting and processing the timber. The record of timber companies in the country is notorious—they work with few or no regulations, evade taxes on timber extracted, leave heaps of logs to rot, and some companies clear-fell—leaving barren lands behind them. A representative of the European Timber Importers' organisation has described the operations of logging companies in Sierra Leone as 'horrible' and in view of the amount of forest left, as 'dangerous'. The problems are exacerbated by corruption in the forestry division, with forestry officials themselves renting out forestry reserve lands to shifting cultivators and removing wood for charcoal.

Scientists working in the Gola Forest in the past five years have been unanimous in their recommendations—that it is of utmost importance to save the last representative primary rain forest in Sierra Leone, the habitat of endangered species such as the forest elephant, bongo, pigmy hippo, red and black-and-white colobus monkeys and the chimpanzee.

SLENCA (Sierra Leone Environment and Nature Conservation Association), which has been campaigning to save the forest since 1977, is a small voluntary body fighting the powerful and influential logging group in Sierra Leone that enjoys

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massive foreign financial backing. SLENCA needs support and is asking organisations and individuals from all over the world to send letters and postcards asking the President* of Sierra Leone to stop all further exploitation of the forest by the logging companies and to follow scientific advice which calls for the Gola and other surviving forests in the country to be declared nature reserves.

Please send a copy of your letter to SLENCA's secretary, Daphne Tuboku-Metzger, Sierra Leone Environment and Nature Conservation Association, PMB 376, Freetown, Sierra Leone, W. Africa.

*His Excellency, Dr Siaka Stevens, President, State House, Freetown, Sierra Leone, West Africa.

Oil on the Waters of the Persian Gulf

An enormous oil slick, estimated in June to cover 8000 square miles, is drifting in the northern waters of the Persian Gulf. It originates from damaged oil wells in Iran's Nowruz field and is increasing by 4000 barrels each day. The trouble began in February 1983, when oil began to seep from a collapsed well which had been damaged by a ship in 1981. On 2 March Iraqi missiles hit three other platforms, setting two on fire and causing a fourth to leak. Political wrangling between Iran and Iraq has so far thwarted efforts to reach the ceasefire agreement necessary to cap the wells; meanwhile the installations of those on fire could melt to the surface of the sea, putting out the fires and thus doubling or trebling the amount of oil spilt.

The extent of the damage caused by the disaster on marine life in the Gulf is not yet known. So far prevailing winds have kept the oil clear of most of the southern Gulf but Saudia Arabia has stopped commercial fishing and closed one of its desalination plants. Reports have been received of 50 dead dugongs (almost the entire known Gulf population of this endangered mammal) on the eastern shores, as well as of large numbers of dead marine turtles, dolphins, fish, sea snakes and birds. Apparently the corpses were not obviously oiled and the deaths may not be directly attributable to oil pollution but nevertheless give cause for deep concern.

News and Views

The Gulf is a fragile environment. Its almost landlocked waters are shallow and there is very little outflow into the Arabian sea. Any pollutant dumped is there to stay. It is suspected that tankers, a 100 of which pass through the Straits of Hormuz daily, and coastal industries have used the Nowruz disaster as an excuse to dump oil and waste. But even apart from this, rapid industrialisation, especially for the manufacture of petrochemical products, means more and more contamination by all kinds of toxic waste. Already there are other signs that all is not healthy—the coral is dving and becoming covered with algae. In addition mangrove swamps and shallows, where dugongs browse on sea grass and where shrimps and fish breed, are being filled in for industrial sites. So the oil slick is only one factor, albeit a major one. in the deterioration of the Gulf environment. There was a major initiative taken in 1978 when the eight Gulf nations pledged to co-operate in the event of oil spills and formed, at UNEP's instigation, the Regional Organisation for the Protection of the Marine Environment. Most of the funds pledged at that time have been paid. but the combination of the Iraq/Iran war and the profits to be made from uncontrolled industrialisation seem to be rendering that initiative ineffective.

Will Brazil Lift its Ban on Wildlife Exports?

The Governor of Amazonas, Gilberto Mestrinho, who was elected in March 1983, is proposing to improve the living conditions of Amazonian settlers by exporting timber, as logs, and animal skins from Amazonia. Such exports are at present illegal without the permission of the Brazilian Forestry Development Institute (IBDF) and Cacex (Carteira do Comercio Exterior—the export control authority). He and his supporters claim that the proposal will solve the problems of the Amazonas without having to resort to external aid.

Conservationists are campaigning against the proposed official 'sacking' of Amazonia, saying that it will not only devastate the area but that it will also not benefit the ordinary people there, that it will only bring riches to large exporting companies, to professional hunters, to middlemen and dealers in Europe and the US.

Mestrinho meanwhile, attempting to discredit the opposition, has led a vigorous and vitriolic campaign against ecologists in general.

Meanwhile, greater forces than Gilberto Mestrinho are operating to influence the final decision. In January the details of an agreement between Brazil and the International Monetary Fund (IMF) regarding further loans to the Brazilian Government were published in the Jornal do Brasil. The agreement clearly states that in order to facilitate payments and international transactions it is intended that exchange restrictions are to be lifted on a number of commodities, including skins of wild animals.

As we went to press (in July) Brazil was about to declare its new economic package related to its agreement with the IMF: it was still not certain whether it would include skin exports. The following translation of a letter from the Brazilian Foundation for Nature Conservation stresses the urgent need to fight this latest threat to Brazil's fauna.

Fundação Brasileira para a Conservação da Natureza—FBCN

Rio de Janeiro 13 May 1983

Dear Conservationist Colleague,

In the newspapers and on television the Governor of the State of Amazonas, Gilberto Mestrinho, has been advocating the alteration of the legislation that today prohibits the commerce of skins of wild animals. He claims that the legislation is absurd, taken in Brasilia without considering the realities of Amazonas, and he has stated that he has already asked CACEX for authorisation for the reinitiation of exports of these products.

The governor alleges that the Amazonian caboclo (settler) needs to hunt for his subsistence and that many animals are killed anyway. He argues that legal commercialisation would avoid the poaching and smuggling which occurs now and would permit greater monetary gains for the needy populations of the interior. Through lack of knowledge or bad faith, the governor omits to state that in the period before 1967, when commercial hunting was legal, the species slaughtered and enormous quantities of skins exported in no way correspond to the number of animals hunted for food, as clearly indicated by the table below.

Skins exported from the state of Amazonas alone during 1950-1965

Species	Quantities
Black caiman Melanosuchus niger and	
spectacled caiman Caiman crocodilus	7517,226
River otter Lutra enudris	3170
Capybara Hydrochaeris hydrocaeris	498,868
Iguana Iguana iguana	1650
Collared peccary Tayassu tajacu	220,447
Giant otter Pteronura brasiliensis	7510
Jaguar Panthera onca	11,016
Cobra, various species	1703
Cats Felis spp	7912
Amazon manatee Trichechus inunguis	121,725
White-lipped peccary Tayassu pecari	198,989
Brockets Mazama sp	222,859
	Total 8804,637

Source: Carvalho, J.C.M. 1966. A Conservação da Naturezae Recursos Naturais na Amazonia Brasileira.

I do not believe that legislation of skin exports will impede smuggling; in the 1960s I observed regular smuggling of thousands of crocodile and wild pig skins across the frontier with Peru. Besides this, if the commercialisation of skins in Amazonia is authorised it would in fact be extremely difficult to restrict it to the region.

The lamentable pronouncements of Sr Mestrinho become more worrying when it is verified that, in the understanding with the IMF substantiated in Letter of Intentions and in the Technical Memorandum of Understanding, both divulged in the edition of 7/1/83 of the Jomal do Brazil, there are the following tracts, indicated below.

Letter of Intentions, Paragraph 26—During the first year of the agreement with the Fund, the authorities intend also to eliminate a number of exchange restrictions of lesser impact, in an effort to facilitate the payments and international transactions and substitute them wherever necessary by measures of a non-exchange nature.

Technical Memorandum of Understanding, Paragraph 6—The small exchange restrictions referred to in Paragraph 26 of the Letter are . . . II quotas of contribution of coffee, cacao and skins of wild animals

In addition it is suspected, but still not confirmed, that CACEX and another high-level govern-Oryx Vol 17 No 4

mental organisation are studying the feasibility of modifying the legislation to permit the export of skins.

At present professional hunting and the commerce of species of wild fauna and their products are prohibited by the Law 5.197 of 3/1/1967. This legislation, although largely disrespected, constitutes a great victory for the conservationists and needs to be uncompromisingly defended by all those who value nature. Many species of our fauna, decimated by illegal hunting and by the degradation or elimination of their habitats, are declining rapidly in numbers. In a country in which it was never possible to exercise even reasonable enforcement of conservation legislation, it would be a devastating blow to our natural ecosystems to allow the return of exploitation of wild animal skins, under the malicious pretext that it would avoid illegal exports and allow greater control.

The FBCN, profoundly alarmed by the publicity given to the inopportune and unqualified proposals of Sr Mestrinho, by the position stated in the understandings with the authorities of the IMF, and by the rumours of a possible alteration of the Faunal Protection Law, are appealing to all conservationists to speak out, by all means possible with the greatest urgency and intensity, so that the weight of public opinion will go against any attempt to alter or distort that law. Letters or telegrams to the President of the Republic, to the Ministry of Agriculture and the Congress Members, as well as interviews and letters to newspapers would be some of the measures that could be taken to oppose those who wish to auction the Brazilian fauna.

We believe that, uniting our efforts, it will be possible to avoid this attempt against our already devastated natural heritage.

Signed Ibsen de Gusmao Camara—President of FBCN.

War on Wolves in Alaska

News and Views

Although wolves have been eliminated from most of the US they still exist in significant numbers in Alaska. Wayne Hall, Director of the Alaska Wildlife Alliance, writing in *Not Man Apart* (June 1983) fears that Alaska's Department of Fish and

Game (ADFG) seems determined to change this situation. The wolf is designated as a 'big game' species and as a 'fur animal', and each year about 1000 are killed by trappers in possession of \$3.00 licenses. In addition there are many illegal and unreported killings. ADFG wishes to reduce wolf numbers by even more drastic means, arguing that they are competing with man for moose and caribou.

In 1976 the Department began to shoot wolves from aeroplanes and helicopters in an area south of Fairbanks where it claimed the moose population was depleted. ADFG laid the blame firmly on wolves and severe winters, ignoring the possibility that over-hunting by humans might be a factor. Although the aerial shoot was claimed to be an emergency short-term measure it has continued ever since, expanding to cover 70,000 square miles of interior Alaska and seeking to reduce wolf numbers by 70 per cent in certain areas. Radio-collared wolves are used to locate and eliminate entire wolf packs.

There is no sign that ADFG will abandon its strategy. In December 1982 the Alaska Board of Game voted to continue killing wolves by statesponsored aerial hunts. This despite the fact that caribou numbers are increasing throughout the state, even in places where 'vital' wolf control was suspended by court injunctions. The Western Arctic Herd, for example, has increased to a point where there is currently no bag limit. Moose too, in the middle-Kuskokwim River drainage, increased even though the department failed to kill as many wolves as it claimed, in 1979, to be necessary to enable the herd to recover. Between 1980 and 1982 only one wolf was killed; by 1982 moose numbers had jumped from 1500 to 3000, 1000 higher than ADFG's goal. ADFG's somewhat irrational reaction was to increase its moose population goal to 4000 and to recommend destroying 40 more wolves; at the same time its proposals to lengthen moose hunting seasons and allow hunting of female moose were approved by the Board of Game.

The department's policy has been criticised by many biologists, including former members of staff, and public feeling runs high in favour of the wolves. One victory has been won for the wolf. The ADFG proposed to kill several hundred wolves in Kenai National Wildlife Refuge because

they were infested with lice. The lice do no real harm but do cause wolves to scratch and lose some fur which had led trappers to complain about the loss of pelt value. The US Fish and Wildlife Service stepped in, a series of public meetings was held, expert evidence was heard, and a decision taken that no wolves in Kenai should be killed in the winter of 1982-83. Instead an experimental drug was to be used to treat infested animals.

The wolves' supporters may be gaining some ground but while more than 1000 wolves are still killed annually and the aerial hunt continues there is still much to fight for. And there is ADFG's next move to watch for: it wants to institute grizzly bear 'reduction' in an area where 'experimental' wolf eradication failed to produce more moose.

Industrialisation of the Arctic: what will it mean for the mammals?

Until recently the major impact of man on the mammals of the Arctic Ocean has come from over-harvesting. For example, bowhead whales Monodon monoceros and walruses Odobenus rosmarus for ivory, and bowheads and white whales Delphinapterus leucas by the Inuit for food, continues to cause concern.

But a new threat faces the survival of Arctic mammals—the growing industry concerned with the exploration for and exploitation of hydrocarbon resources. In a recent review Ian Stirling and Wendy Calvert* (1982) describe ten major resource extraction projects anticipated to take place between 1983 and 1986 in the Canadian Arctic. Most are for oil and gas exploration and extraction, and oil companies hold leases which virtually cover the western Arctic, high Arctic and coastal areas of eastern Baffin Island and Labrador. Many of the resources will have to be extracted by pipelines or ships through marine areas; the preferred shipping route, from the high Arctic east, passes through Lancaster Sound and

*Stirling, I. and Calvert, W. 1982. Environmental threats to marine mammals in the Canadian Arctic. Polar Record, 21, 134, 433.

Balaena mysticetus were reduced to very low numbers by commercial whaling at the beginning of this century and are now considered endangered. Today the over-hunting of narwhals into the waters of Baffin Bay and Davis Strait between Canada and Greenland.

If all the projects currently being proposed were approved, then Lancaster Sound, one of the richest areas for marine mammals in the Arctic, could become the site of offshore drilling and production, year-round shipment of natural gas from Melville Island and oil from the Beaufort Sea, extended-season shipment of ore from at least two mines, and extensive shipping to provide logistic support for all these projects.

The potential environmental devastation the projects could cause is enormous: winter blow-outs at oil wells, which may be uncontrollable until the following summer, and accidental oil spills are the most likely cause of large-scale damage. Not only might the prey-species populations of marine mammals be severely affected but the oil may have direct effects on the mammals themselves. The effects of oil contamination on marine mammals are poorly studied. It is not even known whether these animals can detect and perhaps avoid oil. But oil fouling the water where whales and seals surface to breathe could cause irritation of skin, eyes and nostrils, fouling of baleen plates and internal damage from ingestion. Experiments have shown that Polar bears with oiled fur are unable to thermoregulate effectively and that oil ingested in grooming may be lethal. The studies also indicated that bears can be saved if cleaned and treated promptly but the problems of catching and cleaning bears after widespread contamination would be great, if not insurmountable.

Sound is another source of damage or disturbance. Aircraft noise has been shown to affect the behaviour of walruses at haul-out sites but nothing is known about its effects on other icedwelling mammals. Underwater noise may create serious problems. Seismic blasting may already have reduced numbers of ringed seals Phoca hispida off North Slope, Alaska and now seismic sounding is not permitted in waters beyond a depth of 5.5 m after 20 March each year. Offshore seismic surveys must be non-explosive to reduce the risk to marine mammals.

All seals and whales are highly vocal under water. their sounds being used in social organisation and possibly for hunting by some species. The under-

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water noise produced by ships is sufficient to disrupt signals and damage the animals' receptors. Extrapolating from World War II cruisers, it has been calculated that tankers passing a vocal species more closely than 100 m could impair or totally block communications between animals more than 100 m apart, and it is suggested that noises generated by liquefied-natural-gas tankers could cause hearing damage and nausea. With almost 900 ship-passages per year expected by 1995 and future tankers much larger and noisier than any presently used in the Arctic, there will be little peace for marine mammals.

There are substantial gaps in the knowledge of the ecology of Arctic Ocean mammals in relation to environmental disturbance. There is not even adequate baseline information on distribution, abundance and reproduction. It is imperative that this situation be remedied if we are to minimise the most damaging consequences of the industrialisation of the Arctic.

Birds of Seal Sands Threatened by Unnecessary Reclamation

The last remaining 430 acres of Seal Sands in the Tees Estuary in the county of Cleveland, UK, whose mudflats are important wintering grounds for waders and wildfowl, may be destroyed by the owner, the Tees and Hartlepool Port Authority. The Authority's powers to reclaim land in the estuary expire in June 1984 and it is promoting a Bill in Parliament to extend these powers beyond that date. The Cleveland County Council, Stockton Borough Council, the Nature Conservancy Council, Cleveland Trust for Nature Conservation and the Royal Society for the Protection of Birds objected to the Bill but agreed to withdraw their objections if an amendment were made to make the power to reclaim subject to planning permission. The Port Authority refused to accept the amendment and has indicated that it now intends to reclaim Seal Sands before its present power to do so expires. There is no need for further reclamation at the site, even according to the Port Authority; much of the 1100 acres reclaimed since 1969 lies idle and unused. Seal Sands is an SSSI and site of international importance listed under the Ramsar Convention on Wetlands.

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One Costly Result of the Wildlife and Countryside Act

Boulsbury Wood in Dorset, UK, is ancient enough to be mentioned in the Domesday Book and with its rich assemblage of rare plants is perhaps the most diverse woodland in southern England. Its owner, Viscount Cranborne, had plans to destroy it for conifer plantations and one-third has already been converted with the help of grants from the Forestry Commission. The Nature Conservancy Council has now designated the remaining 145 ha an SSSI and has agreed to pay £20,000 per year, index-linked to rise with inflation, for the next 65 years, to leave the wood as it is. The Viscount, according to a report in New Scientist (98, 1360), says that he will spend the money on employing additional estate workers and is adamant that there will be no public access to the wood.

Under the Wildlife and Countryside Act (1981) there are only two ways to protect an SSSI from destruction: one is to buy the land outright, the other to convince the owner to enter into a management agreement, with or without compensation. In practice the NCC does not use its powers of compulsory purchase so it does seem that NCC's slender purse will be severely hit for years to come if many more owners follow Cranborne's example.

Obituary

Nicola Boissard, who died on 1 May after a long and most distressing illness, came to work for the Fauna Preservation Society, as it then was, in 1971, more or less as her first job, apart from a period of voluntary service overseas in Guatemala. From then until she left in 1975 she was a pillar of our very small office and one of those stalwarts on whom the Society has relied for many years past to do far more than the call of duty requires. Wonderfully courageous in her long months of illness, she was lively and cheerful even when she knew death was only months, or even weeks away.

Those who would like to remember her can contribute to the Peter and Nicola Boissard Cancer Research Project, c/o Corbould, Rigby & Co., Solicitors, 50 Welbeck Street, London W1M 8EP.