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Phil. Trans. R. Soc. Lond. B 1977 **279**, 97-104

doi: 10.1098/rstb.1977.0074

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Conservation in the Antarctic

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Formidable legal and administrative complexities arise from conflicting claims to jurisdiction and the continued absence of generally recognized sovereignty over much of the region. Existing conservation measures fall into three groups: elaborate laws made by governments claiming Antarctic territories, more restricted laws, and simple instructions for particular expeditions. The Antarctic Treaty, 1959, made it possible to begin coordinating all these separate instruments. No claimed jurisdiction has been surrendered or recognized: each government has started to harmonize its own control measures with the 'Agreed Measures for the Conservation of Antarctic Fauna and Flora', 1964. This scheme applied only to land areas and has since been evolving in the light of experience. Although not yet formally approved by all the governments concerned, it is working effectively by voluntary agreement. Different approaches are necessary for conservation of Southern Ocean resources, especially krill. A start has been made with the 'Convention for the Conservation of Antarctic Seals', 1972. There are many outstanding problems: all require effective cooperation between scientific and legal advisers, diplomats and politicians. Mention is made of recent British conservation legislation for South Georgia, the Falkland Islands and the Tristan da Cunha group. Some of the next steps are outlined.

INTRODUCTION

When we consider the conservation of living resources of the Antarctic, it is hardly necessary to think about most of the huge area of the continent itself. We are concerned chiefly with the relatively small ice-free coastal fringes and offlying islands, the subantarctic islands in the Southern Ocean, and above all the Southern Ocean itself, together with its floating ice cover. In the present state of our biological knowledge any northern limit must be arbitrary, especially in view of the many species which are known to make long northward migrations.

Within this limitation, it is expedient for political and legal reasons to consider conservation problems in three distinct parts of this very large region: first, all lands which lie south of lat. 60° S; second, the subantarctic islands north of lat. 60° S; third, the waters and floating ice of the Southern Ocean.

THE POLITICAL AND LEGAL BACKGROUND

To be effective, any conservation measures must be capable of enforcement by a competent administrative authority: that is to say, either an individual government exercising undisputed sovereignty, or, alternatively, some kind of agreed international authority.

The first region comprises all lands south of lat. 60° S lying within what is now known as the Antarctic Treaty Area. Within this area there is a highly complicated and unique juridical situation (Roberts 1966; Anderson 1968; Schatz 1974). Conflicting or unrecognized claims to sovereignty had been building up for more than a century towards a political confrontation about the partition of the last continent to be invaded by man. Under the Antarctic Treaty of

1959, which came into force in 1961, the 12 nations which were then active in the Antarctic agreed to freeze the whole legal situation in respect of claims to sovereignty. The Treaty marked the beginning of a new era in Antarctic politics and provided a basis for the further development of scientific cooperation without political interference. There were three groups of nations interested. The first group included the seven nations which had made territorial claims, but of these only five mutually recognized each other's sovereignty. Second, the United States and U.S.S.R., neither of which had made or recognized any claims in the Antarctic. Third, there were a number of other nations which were active in the Antarctic but did not wish to prejudice their future freedom of action. None of the signatories of the Treaty relinquished any legal rights which they might have possessed in 1959. Seven other nations have now acceded to the Antarctic Treaty, together making a total of 19. In this first region, therefore, south of lat. 60° S, it has been necessary to find some means of harmonizing a very considerable variety of existing national legislation and also the means to make this effective in the Treaty Area. The Treaty specifically refers to the need for preservation and conservation of living resources. It is never easy to trace the published documentation of international agreements. The texts are usually published in several languages at varying dates. At the end of this paper it has only seemed practical to list the most important documents which are most easily available in English. These are the white papers presented to Parliament containing the Recommendations to governments (Great Britain. Parliament 1965, 1967, 1969, 1971, 1973; Scott Polar Research Institute 1976).

The second region – the subantarctic islands north of 60° S – are nearly all subject to internationally recognized or *de facto* national sovereignty. It is thus possible for individual governments to legislate independently in any way they may consider appropriate. Each of these governments have now introduced conservation measures of one kind or another; these differ widely – both in objectives and effectiveness.

The third region – the Southern Ocean – is subject to some of the problems with which the United Nations Law of the Sea Conference is now grappling. In addition to the more familiar problems related to the high seas and the sea bed, there are some important additional complications in the Antarctic. It follows from the absence of generally recognized sovereignty in the Antarctic that there is no agreement on the extent of coastal state jurisdiction. This varies from 3 to 200 nautical miles (5.5–370 km) according to which nation is immediately concerned. Furthermore, those governments which recognize no coastal sovereignty consider that consequently there can be no territorial waters at all in the whole Antarctic Treaty Area. Such governments would deny, for example, that it is possible to apply in the Antarctic the idea of Exclusive Economic Zones under the jurisdiction of coastal states to a distance of 200 miles (370 km) offshore. If the Antarctic Treaty is to be preserved, support will probably have to be found for a special régime in the Southern Ocean and that means, among other things, agreement on the extremely difficult problem of defining its northern limit. Of immediate interest is the need to maintain freedom of scientific research in Antarctic coastal waters as well as the high seas. It is worth remembering, also, that the problems of jurisdiction over floating sea-ice wherever it may occur in the world – still remain unsolved except in a small number of regions, such as the Baltic Sea, where some special arrangements have been agreed by the nations most immediately concerned.

LIVING RESOURCES OF THE ANTARCTIC

What needs to be conserved, and what are the chief threats?

The animals of potential commercial value fall into six groups: whales, seals, birds, fishes, crustaceans (mainly krill) and molluscs (squids). Each of these constitute an important part of the Southern Ocean food web. There are complex interactions among these and other groups, which are all competing for food, mainly krill.

Whales are a special case with a disastrous and now fairly well-known history (Gulland 1976). They remain the concern of the International Whaling Commission. This Commission is formed by an altogether different group of nations from the signatories of the Antarctic Treaty. For this and other reasons it is not now regarded as a possible forum for resolving other Southern Ocean conservation problems, however closely related these may be to whales.

We are concerned with six species of seals (Laws 1977). In the present context it is only necessary to remember that some of them may need management (or, as some would prefer to call it, 'preservation') at their breeding places on land; some on fast ice close inshore, within territorial waters; and some – notably the crabeater – on floating ice on the high seas far from land. There are very large numbers of crabeaters and they are vulnerable to commercial exploitation.

Other authors have emphasized the productivity of the Southern Ocean (El-Sayed 1976; Everson 1976). I will restrict my remarks to krill, but this should not obscure the potential importance of several species of fish. Krill probably constitutes the world's largest single remaining unexploited living resource. Man is now starting to exploit this resource. There has been rapid progress in the development of harvesting and processing techniques and research on these matters and marketing possibilities are engaging the interest of a number of governments. Fisheries experts have predicted that 100 million tonnes of krill could be taken annually without depleting the stocks. This is slightly more than double the 1973 total world fish and shellfish catch (Gulland 1970; United Nations Food and Agriculture Organization 1975).

The consequences of irrational uncontrolled exploitation could be very serious indeed for the whole Southern Ocean food web. Despite a great deal of research, the information available about krill biology is still quite inadequate for management decisions. Until much more research has been done there can be little hope of negotiating any realistic international agreements except, perhaps, about the basic need to collect and exchange statistics. It seems likely that – as in the case of whaling – a major industry could develop before adequate measures for rational management can be agreed. This is the most urgent conservation problem in the Antarctic.

There are three other obvious threats to the delicately balanced Antarctic ecosystem. Each of these still needs much more scientific assessment before appropriate administrative measures can be taken with confidence. I refer particularly to the effects of pollution, especially oil pollution in cold waters; the effects of wilful or accidental introduction of alien species, including virus diseases; and the effects of a rapidly growing tourist industry with consequent unintentional disturbance of certain land areas. The second and third of these are already the subject of preliminary international agreements. There is no longer any serious commercial threat that birds will be exploited. But they are likely to remain one of the chief attractions for tourists, and they are also one of the significant links in the ecosystem, both on land and in the sea. The biomass of Adélie penguins is possibly of the same order of size as that of crabeater seals. When-

ever a resource of this magnitude exists, we cannot yet feel confident that existing controls can adequately cover all attempts at exploitation. Penguins and some petrels could be harvested very easily on a sustainable yield basis.

CONSERVATION MEASURES SO FAR ACHIEVED

First in importance, I think, is the 'Agreed Measures for the Conservation of Antarctic Fauna and Flora' drawn up under the Antarctic Treaty with the help of the Scientific Committee for Antarctic Research (S.C.A.R.). This agreement was reached in 1964 (Great Britain. Parliament 1965). It applied only to land areas south of lat. 60° S. It introduced the idea that each nation should revise and harmonize their relevant legislation or standing instructions for expeditions. It had many imperfections, but contained adequate provisions for amendment in the light of experience. There are provisions for 'Specially Protected Species' and 'Specially Protected Areas'. A number of principles were also agreed upon to form the basis for subsequent action. There is a requirement, for example, to report all seals and birds killed in the Treaty Area. This constitutes one of the first internationally agreed monitoring systems of man's direct impact on the fauna of a very large region (Laws 1972, 1973). The 'Agreed Measures' came into force for British citizens by an Act of Parliament – the Antarctic Treaty Act 1967 – which also contains provisions for amendment. The 'Agreed Measures' have since been under continuous review, and experience has made possible some substantial improvements.

The next international achievement was the 'Convention for the Conservation of Antarctic Seals', signed in London in 1972 (Great Britain. Foreign and Commonwealth Office 1972; Great Britain. Parliament 1973*b*). All the details of this had been the subject of prolonged study by individual scientists. The coordinated advice of S.C.A.R. was again most important in providing an independent international source of scientific advice.

This Convention is a separate effort by the parties to the Antarctic Treaty. It was needed because the 'Agreed Measures' and other arrangements made under the Treaty could not give any protection to seals in the sea or on floating ice. It was also necessary to have a separate agreement to which a wider number of governments could adhere without first having to accede to the Antarctic Treaty.

The Convention applies to the sea areas south of lat. 60° S, though provision is made for reporting catches in the area of floating sea-ice north of 60° S. It is complementary to the 'Agreed Measures' under the Antarctic Treaty and replaces earlier 'Guidelines for the Voluntary Regulation of Antarctic Pelagic Sealing'. The Convention recognizes the importance of antarctic seals as a resource and the need to regulate any future harvesting. Provision is made for special permits, exchange of information and scientific advice, future meetings of the contracting parties, review of operations at regular intervals and for amendments.

An Annex to the Convention specifies Permissible Catch Limits (which are subject to review) of 175 000 crabeater seals, 12 000 leopard seals and 5000 Weddell seals in any one year. These limits are extremely conservative. Ross seals, elephant seals and fur seals are completely protected and the adult stock of Weddell seals is protected during the period when it is concentrated on fast ice and therefore vulnerable to sealing. There is a close season between 1 March and 31 August, and a series of six sealing zones, each of which is to be closed to sealing from year to year in rotation. Three seal reserves are listed in which it is forbidden to kill or capture seals except under permit.

Provision is made for the exchange of information on all seals killed and details of ships involved. When an industry begins, reports of the number of seals killed or captured will be made to S.C.A.R. and biological information will be provided to S.C.A.R., which can also request additional information or material. This provision for independent scientific advice is, I think, of the greatest importance.

There is also provision for the adoption of further measures, when an industry starts, such as a scheme of international inspection. Because of the low level of the permissible catches, the provision for reporting the catches and stopping sealing and for further meetings to consider necessary action, there is no doubt that it provides protection for the Antarctic seals which has previously been lacking.

Like all international agreements, this Convention is not perfect. It is a compromise. There would have been no point in a stricter agreement which would not be ratified by the few nations likely to go sealing. This is an important aspect which often seems to escape the notice of conservation enthusiasts. It is the first international agreement to make detailed provisions for conserving species before a potential industry has developed. It could provide an important precedent for action in other fields. The Convention requires seven ratifications before it enters into force for each ratifying government. At the present time four have ratified (France, Norway, United Kingdom and South Africa).

When this Convention enters into force, application of the Antarctic Treaty Act 1967 will be extended for British citizens to cover the high seas south of lat. 60° S. Indigenous mammals (other than Cetacea) and birds will then be protected at sea as well as on land in the Treaty Area (Great Britain. Parliament 1973 *a*).

Time on this occasion does not allow discussion of all the conservation legislation which is relevant. I propose therefore to focus attention on the most recent British conservation measures, and especially those for South Georgia. The new law for South Georgia, which derived partly from the 'Agreed Measures' achieved under the Antarctic Treaty, came into force in 1975 (Falkland Islands Government 1975). In this, there are four main ideas to which attention should be drawn:

(1) The idea that all killing and exploitation in the island and its territorial waters should be subject to permit systems.

(2) *Specially Protected Areas* are being designated to preserve their ecological systems. It is the aim of the administration to keep *everyone* out of these selected control areas and to preserve them totally undisturbed by man for comparison in later years, but the conditions attached to each entry permit are left to successive administrative authorities, who must be satisfied that there is a 'compelling scientific purpose' which cannot be served elsewhere.

(3) *Sites of Special Scientific Interest* are being designated where scientific investigations may be jeopardized by accidental or wilful disturbance. Permits to enter these sites can be issued only for compelling scientific purposes which cannot be served elsewhere, and provided that the actions permitted will not interfere with the scientific investigations for which the site was designated. When designated, each of these sites must have its own management plan, explaining the particular reasons for its designation.

(4) *Areas of Special Tourist Interest* are being designated. These are selected areas which are representative of wildlife and scenic beauty where the effects of tourist activity can be systematically assessed. The aim is to restrict tourist visits to specified localities until more is known about their effects. There is now a prohibition to land in South Georgia for mountaineering or

other 'recreational' purposes except in these designated areas, or with a special permit to visit other places.

These same ideas are now being applied on a much wider scale to the Antarctic Treaty Area. The Recommendations of the Eighth Antarctic Treaty Consultative Meeting of 1975 made substantial advances in this direction (Scott Polar Research Institute 1976). The negotiators on that occasion were not afraid to admit that earlier mistakes had been made and could be rectified. None of us should be ashamed to admit that the Antarctic provides many quite new political problems, and that an experimental approach is prudent.

Without going into details, I wish to draw attention to the recent revised conservation legislation enacted for the Falkland Islands (Strange 1972; Falkland Islands Government 1964, 1970), and the Tristan da Cunha group (St Helena Government 1976). In both cases these have been designed to meet the special needs of the islanders.

THE NEXT STEPS

The next steps involve many international organizations with interests in Southern Ocean resources. These are the Scientific Committee on Antarctic Research (S.C.A.R.) and the Scientific Committee on Oceanic Research (S.C.O.R.), both of the International Council of Scientific Unions (I.C.S.U.). Among the interested organizations of the United Nations are the Intergovernmental Oceanographic Commission (I.O.C.) of UNESCO, the Food and Agriculture Organization (F.A.O.), the International Whaling Commission (I.W.C.), the United Nations Environment Programme (U.N.E.P.), and the United Nations Development Programme (U.N.D.P.). Many decisions about the Southern Ocean are bound to be affected by the outcome of negotiations of the United Nations Law of the Sea Conference (U.N.L.O.S.C.) at its next meeting in New York in August 1976.

S.C.A.R. has played – and I hope will continue to play – a key rôle. In response to requests by the Intergovernmental Oceanographic Commission and the Antarctic Treaty governments, S.C.A.R. has set up a group of specialists on living resources of the Southern Ocean. This group first met at the Scott Polar Research Institute in Cambridge in October 1975 (S.C.A.R. 1976). A special meeting will be held under the auspices of the Polar Research Board of the U.S. National Academy of Sciences at Woods Hole in August 1976. The Eighth Antarctic Treaty Consultative Meeting held in Oslo in June 1975 devoted much of its time to the problems of Antarctic marine living resources and placed this subject on the agenda for their ninth meeting to be held in London in 1977. It is hoped that before then a great deal more preparatory work will have been done.

The legal difficulties are such that prolonged delays are inevitable in bringing any international Antarctic agreements into force. However, a useful device has been introduced into Antarctic Treaty affairs – this is the principle of 'Interim guidelines'.

Every Recommendation made to Antarctic Treaty governments has to be formally approved by all the governments which participated in its negotiation before it becomes legally binding on any of them. To avoid unacceptable delays, all the governments have found it possible to give rapid approval to Recommendations which urge voluntary action during the period before certain proposals come legally into effect. For example, although the 'Agreed Measures for the Conservation of Antarctic Fauna and Flora' have already been backed by national legislation in most of the countries, they are still not binding as an international agreement. Indeed they are

being revised faster than most governments can manage the necessary legislation. From the beginning, however, all the governments have taken appropriate administrative action to put these measures into immediate effect. This rather frail system works only because all concerned want to make it work.

CONCLUSIONS

In all of this vast region it is believed that, so far, man has been responsible for the total extinction of only two distinct species and two local subspecies of more widely distributed forms – all birds of subantarctic islands. The number of currently ‘endangered species’ in the same region is probably about ten.

While a promising start has now been made towards appropriate conservation measures for Antarctic lands and for most of the subantarctic island groups, it will be apparent that we still have a very long way to go if the Southern Ocean ecosystem is to survive the depredations of mankind without disaster.

In many of the most important objectives of conservation in the Antarctic we are being overtaken by events – both political and economic. Economic developments probably cannot be halted, but they can be adjusted through a series of compromises.

This means national and international negotiation about appropriate measures. But diplomats cannot hope to negotiate any sensible international agreements without adequate scientific guidance. Let us remember the story of Antarctic whaling. In the early stages, when it might have been politically possible to enforce sensible controls, the essential scientific advice was lacking. In the later stages, when sound scientific advice became available, it was too late. Many scientists are very much aware of this situation, and that, at least, is a most encouraging sign.

I wish to acknowledge the help of John Heap and Nigel Bonner, both of whom have made valuable suggestions about this paper.

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