IUCN TECHNICAL REVIEW

1. IDENTIFICATION NUMBER AND NAME 185 ALDABRA ATOLL

2. LOCATION: Latitude 9° 25'S, longitude 46° 25'E. The Atoll lies north of the Mozambique Channel, 420 km north west of Madagascar and 640 km east of the East African mainland.

3. NOMINATED BY: Minister for Planning and Development, Government of Seychelles

4. DOCUMENTATION:

(i) Nomination form, including maps
(ii) Supplementary documentation (IUCN)

a) Videotape, "Aldabra: L'île aux tortues geantes", by Claude Pavard.

b) Project documentation, IUCN/WWF Project 1784: "Support for warden of Aldabra Atoll". ($110,000).

c) Management plan for Aldabra Atoll.

d) Consultations: Sidney Holt, International League for the Protection of Cetaceans, U.K.; A.W. Diamond, International Council for Bird Preservation, U.K.; Chris Huxley, Consultant to Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Switzerland.

5. BACKGROUND AND SUMMARY

The least disturbed large island in the Indian Ocean, Aldabra is of outstanding scientific interest. It is the only place in the world where a reptile is the dominant herbivore; some 150,000 giant tortoises (more than on the Galapagos) feed on the grasses and shrubbery, including plants which have evolved to take advantage of tortoise grazing patterns. The tortoises are the last survivors of a life form once found on many Indian Ocean islands; slow-moving and vulnerable, the giant land tortoises on all other Indian Ocean islands have been driven to extinction by human exploitation, leaving Aldabra as their only remaining habitat. The island's isolation has allowed the evolution of a distinct fauna, with two endemic birds (Aldabra Brush Warbler and Aldabra Drongo) and another 11 birds which have distinct subspecies (showing evolution in action); among the most interesting is the Aldabran White-throated Rail, the last representative of the western Indian Ocean flightless birds -- all others have gone the way of the Dodo.

6. INTEGRITY

The boundaries as described in the nomination are ecologically viable; it would be preferable if the seaward boundary were extended some 20 km into the sea in order to provide additional protection to the marine fauna, but this is impossible for practical reasons. Commercial exploitation is a threat, even in such a harsh and difficult area; the island is held by leasehold, which could be changed when it expires. Electing the area a World Heritage Site could help ensure that it is managed for conservation in perpetuity, and there is a Management Plan for the island which would ensure that the necessary steps are taken; the plan has been accepted and endorsed by the government of Seychelles. The only commercial exploitation envisaged in the Plan is carefully controlled tourism, limited only to those who are willing to endure the difficult conditions in return for a unique experience in a living laboratory.

Aldabra is most often compared with the Galapagos Islands (elected WHS 1978) Both are vital for the study of evolution, but geologically and biologically they are quite distinct: the Galapagos are volcanic islands surrounded by cold ocean currents far from the South American mainland source of colonizers, whereas Aldabra is a raised coral atoll in warm tropical waters relatively close to Madagascar and East Africa. Galapagos has many more endemic species, but Aldabra has more tortoises and is much less affected by human disturbance, making Aldabra unique in the world.

8. EVALUATION

Aldabra is an outstanding example of biological evolution, contains superlative natural phenomena, and contains the only habitat where a number of animals of outstanding universal value can survive. It therefore meets natural criteria (ii), (iii), and (iv) for inclusion on the World Heritage List.

9. RECOMMENDATION

Aldabra should be added to the World Heritage List. Technical assistance from the World Heritage Fund in the form of support to the Seychelles Islands Foundation to implement the Management Plan should be considered.

International Union for Conservation of Nature and Natural Resources

15 April 1982

SEYCHELLES

NAME **Aldabra** Atoll

MANAGEMENT CATEGORY I (Strict Nature Reserve)
X (World Heritage Site - Criteria: ii, iii, iv)

BIOGEOGRAPHICAL PROVINCE 3.24.13 (Comores Islands and **Aldabra**)

GEOGRAPHICAL LOCATION An atoll north of the Mozambique Channel, 420km north-west of Madagascar and 640km east of the East African mainland. 9°25'S, 46°25'E

DATE AND HISTORY OF ESTABLISHEMENT 17 February 1976 as a strict nature teserve under the Protection and Preservation of Wild Life Ordinance, 1970 (BIOT). Designated as a special reserve by Designation of Special Reserve (**Aldabra**) Order, 1981. Accepted as a World Heritage site in 1982.

AREA 35,000ha (18,800ha land, 2,000ha mangrove, and 14,200ha sea)

LAND TENURE Government, administered by the Seychelles Island Foundation. The Royal Society acquired a 14-year lease in 1976 from the Government of the British Indian Ocean Territory. This was then taken over in 1980 by the Seychelles Islands Foundation, a charitable trust established under the Seychelles Islands Foundation Decree 1979.

ALTITUDE Most of the reserve is less than 3m above sea level.

PHYSICAL FEATURES **Aldabra** is a classic coral atoll, 34km long by maximum of 14.5km wide, which has been built up from the seabed. It consists of four main islands of coral limestone separated by narrow passes and enclosing a large shallow lagoon. Most of the land surface comprises on ancient coral reef (about 125,000 years old) now raised above sea-level, the rest being even older reef limestones. The lagoon, which covers some 15,000ha, contains many smaller islands and the entire atoll is surrounded by an outer reef. Geomorphological processes have produced a varied topography, generally rugged, which supports a variety of habitats with a relatively rich biota for an oceanic island, and a high degree of endemicity. Over much of the surface of the islands, weathering has led t dissection of the limestones into holes and pits, though at the eastern enc the surface is more continuous on upraised lagoonal sediments. Along the coast are undercut limestone cliffs, with a perched beach and sand dunes o the southern (windward) coast. Marine habitats range from coral reefs to mangrove mudflats with minimal human impact. Tidal range is more than 3m, which can lead to strong channel currents.

CLIMATE Semi-arid with a pronounced wet season from November to April. Average annual rainfall is 1200mm, though this is very variable.

VEGETATION The terrestrial flora is exceptionally rich for a small coral island, with 273 species of flowering plant and fern. Much of the land is covered with dense Pemphis acidula thicket and other shrubs. There are 19

endemic species including Peponium sublitorale (R), which is only known on the south island. A further 22 species are shared only with neighbouring islands. Many of these plants are considered to be threatened. Mangroves surround the lagoon, and inshore waters also support sea-grass meadows.

FAUNA This island group is one of the few areas of the world where reptiles dominate the terrestrial fauna, with the largest world population (152,000) of giant tortoise Geochelone gigantea (R), which appears to be self-sustaining. Green turtle Chelonia mydas (E) breed here, with approximately 1,000 females laying annually. There are 13 species of terrestrial birds including the last representative of the western Indian Ocean flightless birds - Aldabran rail Dryolimnas cuvieri aldabranus (about 5,000 individuals) with two endemic Aldabran forms. **Aldabra** warbler Nesillas aldabranus (E) has not been seen for several years and might be naturally extinct. Previously restricted to 10ha of coastal tall scrub, this was considered possibly the most endangered bird in the world, as only five birds have been seen since its discovery in 1968 (Collar and Stuart, 1985). Aldabran drongo Dicrurus aldabranus (1,500 birds inhabiting scrub, mangrove and Casuarina), and some endemic subspecies, including **Aldabra** white-throated rail, are also found. There is a population of about 8,000 birds of this flightless race, which does not seem seriously threatened by the feral cats. The islands are important breeding grounds for thousands of seabirds, including several thousand each of red-tailed tropic bird Phaethon rubricauda and white-tailed tropic bird P. lepturus, hundreds of masked booby Sula dactylatra, several thousand red-footed booby S. sula, some Abbott's booby S. leucogaster, and thousands each of greater frigatebird Fregata minor and lesser frigatebird F. ariel. There are also thousands of nesting terns (Feare, 1984). The only endemic mammal is a flying fox. So far about 1,000 species of insect have been recorded, many of them new and endemic forms.

CULTURAL HERITAGE None

LOCAL HUMAN POPULATION There is no permanent settlement. The resident population is composed of Foundation employees and visiting scientists.

VISITORS AND VISITOR FACILITIES No information

SCIENTIFIC RESEARCH AND FACILITIES An intensive research effort covering the whole atoll has been in operation since 1967. Particular mention should be made of the survey and monitoring of the tortoise and turtle populations initiated in 1982 (funded by WWF), and the study made on **Aldabra** warbler by Prys-Jones (1979). Additional studies are regularly carried out by scientists from the Smithsonian Institution. A fully-equipped research station was established by the Royal Society in 1971, maintained by the Seychelles Islands Foundation to whom it was donated in 1980. The Seychelles Government maintains a meteorological station. Accommodation and a network of field stations is available for a maximum of 15 scientists.

CONSERVATION MANAGEMENT Protective regulations under the National Parks and Nature Conservancy Act (Cap 159) came into force on 9 September 1981

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(**Aldabra** Special Reserve Regulations 1981). Previously, only partial protection for specified animals was provided. The reserve extends to 1km below the high water mark. The history of conservation at **Aldabra** is fully described in Stoddart (1971). The present requirement is to maintain the policy of minimum human interference while continuing the research/monitoring programme. Particular attention must be directed towards the ecology of exotic species to provide a basis for future management. Successive national development plans stress provision for the economic development of the outer islands of the Seychelles. The Seychelles Islands Foundation/Royal Society document 'A management plan for Aldabra', has been accepted by the Government of Seychelles as a guideline for the future management of the atoll.

MANAGEMENT PROBLEMS The mangroves and populations of turtles, fish and tortoises have recovered from past exploitation. However, the difficulties of effectively patrolling the atoll, and easy access by sea, threatens the integrity of the reserve through unauthorised export of tortoises and turtles, disturbance of seabird colonies and other wildlife, and the hazard of fire. Rats, cats and goats have been introduced and established. Goats increased four-fold between 1977 and 1982. Two scientific eradication campaigns have been conducted in 1987 and 1988 with Unesco support, on Malabar and Grande Terre islands. The total number of goats killed during the two programmes represents approximately 75%-85% of the total population. The eradication is being actively followed up (M. Marieu, pers. comm., 1990). Prys-Jones (1979) recommended that no east-west paths should be cut on this island, to try and limit goat or tortoise encroachment. The proliferation of mealy bug Icerya seychellarum, accidentally introduced into **Aldabra**, has seriously damaged native vegetation, particularly endemic species. A programme of biological control of this species, through the introduction of a specific coccinellid predator Rodolia chermesina, was launched in 1988 with ORSTOM assistance and is still being implemented (M. Marieu, pers. comm., 1990). Attempts have been made to control the spread of exotic plants. The maintenance of conservation interest, and realisation of full scientific value of the site, is dependent upon the ability of the Foundation to support adequate wardening staff and a functioning research station. The Foundation is wholly dependent upon subscription and donation income, and shortage of funds, is therefore, a potential danger. Development is restricted to small-scale tourism, deep-sea fishing and limited exploitation of some natural resources.

STAFF Warden appointed by the Seychelles Island Foundation in 1982 and seconded from the Department of Environment with 8-10 resident Foundation employees (M. Marieu, pers. comm., 1990).

BUDGET 1981: US$534,000 raised in the 1979 appeal. 1982: £45,000 annual grant one-third of which was provided by the Seychelles Government. In 1990, the total annual budget of the Seychelles Islands Foundation was SR1.3 million (US$250,000). Regular contributions from the Royal Society, the Smithsonian Institution and the Seychelles Government and occasional donations provide about 20% of the Foundation's revenues (M. Marieu, pers. comm., 1990).

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LOCAL ADMINISTRATION Chairman, Seychelles Islands Foundation, c/o Department of Environment, PO Box 445, Victoria, Mahé

REFERENCES

Two main sources for bibliography are: Phil. Trans. R. Soc. Lond. B 260 (1971), and Phil. Trans. R. Soc. Lond. B 286. (1979). (The latter volume contains a map at approximately 1:100,000 with place-names.)

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Stoddart, D.R. (1971). 'Settlement, development and conservation of Aldabra', Phil. Trans. R. Soc. Lond. B 260: 611-628.

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Stoddart, D.R. and Ferrari, J.D. (1983). **Aldabra** Atoll. Nature and Resources 19(1): 20-28.

Stoddart, D.R. and Morris, M.G. (1980). A management plan for **Aldabra**. (Draft, 59 pp including many diagrams and maps).

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DATE 1984, updated April 1990

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PATRIMOINE MONDIAL: CANDIDATURE

EXAMEN TECHNIQUE PAR L'UICN

1. NUMERO D'IDENTIFICATION ET NOM: 185 ATOLL D'ALDABRA

2. SITUATION GEOGRAPHIQUE: Latitude 9° 25'S, longitude 46° 25'E; l'atoll est situé au nord du canal de Mozambique, à 420 km nord-ouest de Madagascar et à 640 km à l'est du continent africain.

3. CANDIDATURE PROPOSEE PAR: Le ministère pour la plan ification et le développement, gouvernement des Seychelles

4. DOCUMENTATION:

(i) Formulaire de candidature
(ii) Documentation supplémentaire (UICN)

a) Vidéocassette, "Aldabra: L'île aux tortues geantes", de Claude Pavard.

b) Documentation de projet, projet 1784 de l'UICN et du WWF: "Support for warden of Aldabra Atoll". ($110,000).

c) Plan d'aménagement pour l'atoll d'aldabra.

d) Consultations: Sidney Holt, Ligue internationale pour la protection des cétacées, R-U.; A.W. Diamond, Conseil international pour la sauvegarde des oiseaux, R-U.; Chris Huxley, Consultant pour la Convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction (CITES), Suisse.

5. DESCRIPTION ET RESUME

La plus isolée des grandes iles de l'Océan Indien, l'Atoll d'Aldabra est d'un intérêt scientifique remarquable. C'est le seul endroit au monde où un reptile est le plus important herbivore; quelques 150.000 tortues géantes (plus nombreuses que sur les îles Galapagos) trouvent leur nourriture dans les herbes, les buissons et les plantes, qui dans leur évolution, ont tiré partie de la façon de se nourrir de ces reptiles. La tortue géante est l'une des dernières survivantes d'une espèce qu'on rencontrait autrefois fréquemment dans un grand nombre d'îles de l'Océan Indien; lentes et vulnérables, les tortues terrestres géantes ont disparu dans ces endroits à cause de l'exploitation de l'homme, l'île d'Aldabra restant leur dernier habitat. L'isolation de l'atoll a permis l'évolution d'une faune particulière avec deux espèces d'oiseaux endémiques (la Fauvette d'Aldabra et le Drongo d'Aldabra) et 11 autres qui ont des sous-espèces particulières démontrant un processus d'évolution; l'une de ces espèces les plus intéressantes est le Râle à gorge blanche d'Aldabra qui est le dernier représentant des oiseaux impropres au vol de l'Océan Indien occidental, tous les autres ayant disparu comme le Dronte.

6. INTEGRITE

Les limites de la zone mentionnées dans la demande de nomination sont écologiquement viables. Il serait préférable détendre la zone maritime de 20 km pour assurer une plus grande protection de la faune marine, mais cela est techniquement impossible. L'exploitation commerciale représente un danger, malgré les conditions ingrates et difficiles de la zone. L'île est tenue à

bail et son statut peut changer quand celui-ci arrivera à expiration. La nomination de la zone comme site du patrimoine mondial contribuerait à assurer sa conservation à perpétuité; par ailleurs il existe un plan de gestion de l'île qui pourrait garantir l'application des mesures nécessaires; il a été approuvé et adopté par le Gouvernement des Seychelles. La seule exploitation commerciale envisagée est le tourisme, soigneusement contrôlé, et limité à ceux qui sont prêts à accepter des conditions d'habitation difficiles pour vivre une expérience unique dans ce véritable laboratoire naturel.

7. COMPARAISON AVEC D'AUTRES REGIONS

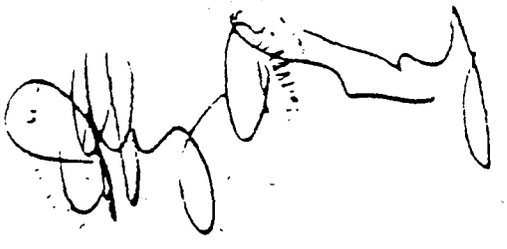
L'Île d'Aldabra est souvent comparée aux Iles Galapagos, élues Site du patrimoine mondial en 1978. Ces zones sont toutes deux d'une importance capitale pour l'étude de l'évolution, mais elles diffèrent considérablement des points de vue géologique et biologique. Les Galapagos sont des îles volcaniques qui baignent dans des eaux aux courants océaniques froids, et qui sont situées loin des éléments colonisateurs du continent sud-américain; l'Ile d'Aldabra, par contre, est un atoll formé par des récifs coralliens et situé dans des eaux tropicales, relativement près de Madagascar et de l'Afrique orientale. Les Galapagos possèdent davantage d'espèces endémiques que l'Ile d'Aldabra, mais cette dernière abrite un plus grand nombre de tortues et est beaucoup moins exposée aux activités néfastes de l'homme, ce qui fait d'elle une zone unique au monde.

8. EVALUATION

L'Ile d'Aldabra fournit un remarquable exemple d'évolution biologique, comprend des phénomènes naturels exceptionnels et possède le seul habitat du monde où plusieurs espèces d'animaux d'une valeur universelle peuvent survivre. Cette zone satisfait donc aux critères naturels (ii), (iii), et (iv) pour l'inscription à la liste du patrimoine mondial.

9. RECOMMANDATION

L'Ile d'Aldabra devrait être inscrite sur la liste du Patrimoine mondial. Il convient d'envisager une assistance technique du fonds du patrimoine mondial, sous forme de soutien à la Fondation des Isles des Seychelles pour l'application du plan de gestion.



Union internationale pour la conservation
de la nature et de ses ressources

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