WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

GALAPAGOS MARINE RESERVE (ECUADOR)
EXTENSION TO GALAPAGOS NATIONAL PARK

Background note: The Galapagos Marine Reserve (GMR) was nominated in 1994 as an extension of the Galapagos National Park (GNP) which was inscribed in the World Heritage List in 1978. The importance of extending this site to cover the marine environment was emphasised in the original evaluation of GNP as to enhance the protection of the whole islands as a number of species in GNP have string linkages with the marine environment for their survival. In 1994 IUCN evaluation considered that GMR did meet natural criteria (ii), (iii) and (iv) but its inscription was deferred conditional to the solution of a number of integrity problems.

1. DOCUMENTATION

i) **IUCN/WCMC Data Sheet:** (38 references)

ii) **Additional Literature Consulted:** Fundación Natura/WWF. 1997, 1998, 1999, 2000. Galapagos Report. (Annual Monitoring Reports); Fundación Natura/TNC. 2000. Galápagos – Dinámicas Migratorias y sus Efectos en el Uso de los Recursos Naturales, 226p; BirdLife International. 2000. **Endemic Bird Areas of the World**; Davis, J. (ed.) **MPA News**. (various feature articles on Galapagos); Anon. 1999 – 2000. Marine Reserve Problems. **Galapagos News**; Ben-Yami. 2001. Managing Artisanal Fisheries of Galapagos. WWF Consultant Report; Benstead-Smith R. 2001. Conservation of Biodiversity and Sustainable Use of Resources in the Galapagos Marine Reserve. Status, Investment Needs and Long-Term Financial Needs. CDF Internal Document. 10p; Anon. 1999. Plan de Manejo – Reserva Marina de Galápagos. Publicado en el Registro Official 173, 150p; Roberts. C.M. and J. Hawkins. 2000. **Fully Protected Marine Reserves – A Guide**. WWF; Jackson. M.H. 1985. **Galapagos**. U. Calgary Press; Sullivan Sealy, K. and G. Bustamante 1999. Setting Geographic Priorities for Marine Conservation in Latin America and the Caribbean. TNC. 125p; Anon. 1999. Projections of the Charles Darwin Foundation; Bradus, J. et al. 1984. Coastal and Marine Resource Management for the Galapagos. Woods Hole Technical Report; Bustamante R.H. 2000. Marine Conservation and Human Conflicts in the Galapagos Islands. **MPA News**. March; Jenkins, M. & T. Mulliken. 1999. Ecuador's Sea Cucumber Trade. **Traffic Bull**. 17(3), 17(1), 18(1); UICN-SUR et. al. 2000. Diseño final del Subprograma de Manejo de la Reserva Marina de Galápagos. IDB Project.

iii) **Consultations:** 14 external reviewers contacted, Minister of Environment, Congress Deputy for Galapagos Province, Mayor and Vice Mayor of Santa Cruz, Directors and Staff of Galapagos National Park, Director and staff of Charles Darwin Research Station, Director of Ministry of Tourism, Association of Galapagos Tour Operators, Secretary General of Charles Darwin Foundation, Ecuadorian Conservation NGO's (WWF, Fundación Natura, TNC, CEDENMA), Director UICN-SUR, Youth of the World Galapagos Representatives, Santa Cruz Fishing Cooperative.

iv) **Field Visits:** February, 1994 – J. Thorsell, D. Elder, B.Ortiz;
March, 2001 – J. Thorsell, C. Maretti

2. SUMMARY OF NATURAL VALUES

The Galapagos Marine Reserve (GMR) comprises the waters around the 120 islands of the Galapagos National Park (GNP). While the size of the park is 76,651km^2, covering all terrestrial parts of the islands, the boundary of the GMR extends 40 nautical miles offshore and covers an area of 133,000km^2. The GMR was formally established in March, 1998 when the Special Law for the Galapagos (SLG) was passed. Before this Law the

area had been a "Marine Resources Reserve" since 1986. Since 1996, responsibility for managing the GMR rests with the GNP. The entire GMR is proposed for extension of the existing World Heritage site (GNP).

The Galapagos marine environment is a "melting pot" of species that biogeographers have recognised as a distinct biotic province. The convergence of three distinct ocean currents has transported marine biota from tropical and subtropical regions of Central and South America and the Indo Pacific. The level of endemism is quite high, averaging 20-25% of marine species, mainly fish. Due to the cool waters of the Humboldt Current 4 to 6 months per year, the Galapagos is considered a marginal environment for coral reefs. Corals, however, are found in some localities where warmer waters prevail. There are some 447 species of fish representing 92 families. At least 51 species (17%) are endemic to the Galapagos. There are large numbers of dolphins (8 species), sea lions and fur seals (both endemic sub-species). Sharks (12 species) and rays (6 species) are common and the Galapagos are internationally important for two species of sea turtles: green turtle and hawksbill turtle. They are common in the surrounding waters, with the former nesting on sandy beaches. Several species of Baleen whales occur (fin, mink, humpback) as well as toothed whales (pilot, killer) and sperm whales are regularly encountered. The interaction between the terrestrial and marine environment is particularly important for the marine iguana and for 27 of the islands 57 bird species especially the flightless cormorant, the Galapagos penguin and large numbers of nesting seabirds.

Geologically the area is also a "hot spot" being at the meeting point of the Nazca, Pacific and Cocos tectonic plates. The islands have been formed by volcanoes rising out of a submarine platform at a depth of 1,300m. In outer waters, ocean depths fall to 4,000m except for the existence of several seamounts which rise to less than 100m below sea level. Climate is strongly influenced by the annual cycles, upwellings and convergence of the ocean currents and undercurrents which meet in the region. Average precipitation varies from 300 mm along the coast to over 1000mm at higher elevations. El Niño events cause wide annual variations in rainfall and temperature.

The GMR is a multiple use area where artisanal fishing only is allowed under the SLG. About 1200 people are employed by the fishing industry with sea cucumbers, lobsters and various fin fish being the predominant catches in recent years. The Management Plan for the GMR defines about 17% of the Galapagos coastline (2 miles out to sea) as "no-take" zones. The extension of the “no-take” zones has been defined through a long process of consultation between local communities representatives, fishermen, researchers from CDRS, GNP staff, and representatives of the tourism sector, thus representing an strong commitment from all key stakeholders involved in the management of this area. Nevertheless it should be noted that a recent meeting of Biodiversity of the Marine Environment in Galapagos discussed the possibility of “no-takes” zones eventually being extended to cover 35% of GMR.

3. COMPARISONS WITH OTHER AREAS

There are currently 6 marine reserves on the World Heritage List: Aldabra (Seychelles); Great Barrier Reef (Australia); Vizcaino Whale Lagoons (Mexico); Cocos Islands (Costa Rica), Belize Barrier Reef, and Tubbataha Reef (Philippines). There are several other World Heritage sites where adjacent marine features are protected (e.g. Fraser Island, Scandola, East Rennell, Komodo, Shark Bay, Lorentz) and several other islands where the marine part of the system has not been included (St. Kilda, Henderson). After the Great Barrier Reef, and the NW Hawaiian Islands, the Galapagos is the third largest marine reserve in the world. With its whales, sea lions and seabirds it has certain affinities with El Vizcaino Whale Sanctuary and Cocos Islands National Park. Likewise it compares in many ways with the Aldabra site with its sea turtles and tortoises. Galapagos shares many features with the Northwestern Hawaiian Marine Reserve and with the Key Largo and Channel Island marine sanctuaries in USA as well as the Kermadec Island Reserve in New Zealand. Biologically it is significantly more diverse than the other eastern Pacific islands of Clipperton, Cocos Islands, or Juan Fernandez.

A number of unique features distinguish the Galapagos from all the above:

- **High diversity** – a rich and varied flora and fauna compared to other marine insular environments in the Eastern Pacific.

- **High degree of endemism** in the marine biota – around 25 % of most groups occur nowhere else on earth.

- **Complex and unusual system of oceanic currents** – cool currents, upwelling areas, and water masses of different origins transporting bioelements from tropical and subtropical regions of the American continent as well as from the Indo-Pacific biotic province.

- **Unusual mixed biogeographic affinities** – strong phyto and zoogeographical affinities with the Tropical and Subtropical American continent, with many elements representing the Peruvian/Chilean and West Pacific Provinces.

- **Large habitat-type diversity and highly complex marine communities** relative to other insular marine areas in the Eastern Tropical Pacific. The variety of geomorphological characteristics offer a high density of marine habitats isolated from the continent. Comprises rocky, vertical cliff face, mangrove, sandy beach, lagoon, embayment, and hypersaline panne habitats.

- **Critical importance to a large number of terrestrial organisms** which are dependent on the marine environment for survival. Many animals such as the penguin, fur seal, sea lion, flightless cormorant, waved albatross, and marine iguana – not to mention the large array of bird species – are directly dependent on the marine environment for their existence. Of 57 resident bird species in Galapagos, 27 depend on the surrounding ocean.

- **A long tradition of scientific research** with the active presence of the Charles Darwin Research Station (CDRS) since 1960.

It is recognized that the Galapagos coral fauna is depauperate compared to western pacific reefs and that its diversity of fish (307 species) is much lower than the Hawaiian islands (471 species). However, taken as a whole, the Galapagos Marine Reserve is clearly one of the most unique, scientifically important and biologically outstanding marine areas on earth. This conclusion parallels the case made for the Galapagos islands (inscribed in 1978) and the establishment of the surrounding marine reserve make the archipelago one of the world's most important natural areas.

4. INTEGRITY

When the Galapagos Marine Resource Reserve was nominated in 1994 (see Background note) the IUCN Technical Evaluation concluded that the area did meet World Heritage natural criteria but that integrity issues were such that the immediate inscription on the World Heritage List was not considered. The 18th Session of the World Heritage Committee deferred a decision noting that it: "…was seriously concerned that the proposed Marine Reserve and the Galapagos Islands faced the following threats to their integrity:

- Over fishing and illegal fishing of a wide range of species;
- Human pressures from the local population (growing at an estimated rate of 8.5% per year, mainly due to immigration) and tourism on both terrestrial and marine resources;
- Inadequate management capacity and infrastructure;
- Adverse impacts of introduced animals and plants;"

Further, "these threats call for mitigative action vis-à-vis:

- Augmenting management capacity;
- Encouraging institutional cooperation;
- Stepping up law enforcement, and
- Conducting research on sustainability of resource use in the Marine Reserve."

The World Heritage then sent a high-level monitoring mission consisting of the Chair of the Committee and the Director of the World Heritage Centre which formed the basis of further discussions in 1996, 1997, and 1998. In response to this on-going attention from the World Heritage Committee as well as other conservation organisations, the Ecuadorian authorities have made a significant effort to improve management of the site, as

has been reported in various State of Conservation reports. Solid progress has been made on the following aspects:

4.1. Legal Framework

The foundation for management of the GMR is contained in the "Special Law for the Galapagos" passed in March, 1998. Under this law, the Galapagos National Park Service (GNPS) is the government institution responsible for managing the GMR under the supervision on an Inter-institutional Management Authority (IMA). The law defined the GMR as a multiple use area and as part of Ecuador's system of protected areas. The Special Law gives a measure of autonomy to the islands allowing 40% of the visitor fees collected to go directly to the Park plus another 5% for the marine reserves. The Ministry of Environment has been leading preparation of the long overdue specific regulations on fisheries, tourism, environmental control, and introduced species/agriculture. The fifth set of regulations controlling human migration is being prepared by National Institute for Galapagos (INGALA). Each of the above sets of regulations, especially the fisheries, will be important for providing the basis for management. Drafts of the regulations are in an advanced state and are expected to be approved before July, 2001.

4.2. Boundaries

Limits of the GMR now extend 40 nautical miles offshore (instead of the 15nm originally proposed) and encompass 133,000km^2. This is a much more demanding area to manage but it encompasses important marine features such as the offshore sea-mounts.

4.3. Local Involvement

Since 1996 the CDRS and GNPS have invested major efforts in resolving chronic conflicts between fishing, tourism and conservation interests by developing a participatory approach to management. A Core Group is composed of representatives of GMR stakeholders from the tourism, fisheries and conservation sectors. Regular meetings of this Core Group resulted in many agreements that were incorporated into both the Special Law and the GMR Management Plan. Without this participatory process at the local level, very limited progress would have been achieved in resolving conflicts. In spite of the progress achieved in reducing conflicts there is still a good deal of social tension, particularly with the fisheries community that has repeatedly ignored adherence to the fisheries quotas established for the GMR, despite the fact that the quotas were proposed through a participatory process.

4.4. Management Plan

Although a plan for previous marine resources reserve existed, it was in need of updating in light of the new legal basis and the expanded size of the GMR. The new Plan defines a zonation system including "no-take" zones amounting to 17% of the island's coastline. The Participatory Management Board has now been institutionalised and meets on a regular basis. The Plan also limits extractive use to "artisanal fishing" by local residents and was officially approved by Government in 1999.

While the management plan for the GMR rightly gives emphasis to fisheries issues, it also considers how to better regulate tourism activities. According to a number of reviewers, tourism could become a major problem in the future. There is no overall limit established for marine tours and the carrying capacity for diving sites in the Marine Reserve area is not yet defined. The Marine Conservation Strategy for GNP includes this issue as a priority activity (see Annex 1).

4.5. Management Capacity

Staff working on marine issues in both the GNP and CDRS have increased from only 3-4 in 1994 to some 75 in 2001 (including 25 who work on patrol boats) plus 15 volunteers. Equipment in the form of patrol boats is crucial and this too has been augmented.

4.6. Research

The CDRS in now much actively engaged in research on the GMR with a marine section consisting of 25 staff. Most of these people are employed in monitoring fishery catches. Research has expanded on inshore marine biodiversity and on the heavily-exploited species, notably sea cucumber and lobster. An international marine

biodiversity workshop was organised in 1999 by WWF and the CDF. This work has aided in the negotiations in annual fishing schedules and quotas. The CDRS has prepared a plan for its investment needs to further expand its marine program in the future.

4.7. Management Resources

Substantial funding has been identified to support this extra effort. This has been found through the share of gate fees, additional subventions from the Ecuador Government and grants and donations from the private sector, foundations and conservation groups. A project to obtain a loan from the IDB was prepared by IUCN's Regional Office for South America in the amount of $18 mil. plus $4 mil. from Government. This project will focus on implementation of the GMR management plan and approval is anticipated in April, 2001. Additional funds from the GEF ($18 mil.) and UNF ($4 mil.) have also been arranged but will focus on the terrestrial environment over the next 5 years.

4.8. Enforcement

Without the regulations in place, progress has been limited in controlling immigration, limiting fishery seasons and catches, and preventing illegal commercial fishing. Both the Navy and the marine unit of the GNP have intercepted a number of vessels and discouraged others but prosecutions have been few and illegal fishing continues. Even worse, the Navy has allowed the release of several seized vessels which has implicated them in the illegal fishing business and reduced the Government's credibility in enforcing the law. This was further weakened during the fisherman strike of November 2000 where intimidation of park staff and violent action led to the Government backing down on quota limits.

Annual monitoring reports on the illegal commercial fisheries in the GMR show that many thousands of sharks have been taken out of Galapagos waters and that long-lining for other finfish has had severe effects on many other species. Moreover, the loosely regulated controls on sea cucumber harvesting have led to a precipitous decline in the population which may never recover to sustainable levels. Despite all the other areas of progress, the lack of sufficient enforcement has led to a continued over-fishing which is a major threat to Galapagos marine environment.

In sum, although there has been substantial effort and progress in addressing integrity issues in the GMR as identified by the 1994 World Heritage Committee, the marine resources of Galapagos continue their downward negative trend. Monitoring and research show that harvests of high value species (black coral, sea cucumber and lobster) are proving to be non-sustainable. For example, the total capture of different species of white fish has declined in 37% between 1997 and 1999, for the same period the total capture of lobsters has declined in 17% (Informe Galapagos 1999-2000, Natura Foundation). Even the former bacalao fishery has declined. The illegal capture of sharks has resulted in high losses and the growing numbers of fishers immigrating to the islands (from 300 in 1994 to 1200 in 2001) is greatly adding to pressures on the marine environment.

On the positive side, two key actions are expected soon that will set a much firmer basis for addressing the issues. First is the passage of the regulations which will clearly specify what limits are on fisheries, immigration, etc., and will allow more effective application of the Special Law. Second is the IDB loan for implementing the GMR plan which devotes $4 mil. to strengthening the control and security system. There is also a growing public sentiment within Ecuador to address illegal fishing activities more firmly, which, with the added resources and resolve of the GNPS, could lead to a reduction in further damage. Commitment at the central political level, however, is a fundamental prerequisite. Any revisions to the Special Law that would weaken it would be very detrimental to the participatory group process that agreed to it as well as affect the conclusions of IUCN's evaluation.

A summary of what needs to be done to make the GMR a model of a marine protected area is given on (Annex 1) which outlines the marine conservation strategy of the CDF and GNPS.

5. ADDITIONAL COMMENTS

International media attention on the GMR was given when an oil spill resulted from the grounding of the tanker "Jessica" on 16 January 2001 on San Cristobal Island. Initial reports of damage were alarming but through a combination of manpower, technology, ocean currents and favourable weather conditions, the spill appears only to have caused minor short-term damage. Wildlife mortality was low when wind and current took the fuel out to

sea where it dispersed. Full effects on the marine resources of the area will not be known until longer term monitoring studies are completed but damage to date appear to be minimal.

The accident, that has proved to be caused by negligence, triggered the preparation of work on a contingency plan for future emergencies and has led to efforts to improve the regulatory framework to minimise future hazards. Handling of the spill cost the Ecuador Government several million dollars, part of which was covered by external assistance. The Jessica remains stranded, the Captain has been charged, and insurance compensation is being sought. Suggestions have been made by WWF and others that the Ecuadorian Government designate the GMR as a "particularly sensitive sea area" (PSSA) under the International Maritime Organisation (IMO). The benefits of such an initiative are being studied by INGALA and Ecuador Maritime authorities.

6. APPLICATION OF CRITERIA/STATEMENT OF SIGNIFICANCE

The importance of extending legal protection to the seas around the Galapagos Islands and managing the archipelago as one unit has been recognised for many years. Since 1994 when Ecuador initially nominated the marine reserve as an extension, efforts have been made to better define the limits, document the values and institute a management system.

Similar to the inscription of the terrestrial component on the basis of all four natural criteria, the GMR would meet the criteria as follows:

Criterion (i): Earth's history and geological features

The geology of the archipelago is clearly apparent above sea level but also extends to the sea floor where processes are equally continuing. The meeting of three major tectonic plates – Pacific/Nazca/Cocos – is the basis for the existence of the islands and is of significant geological interest. The site demonstrates the evolution of the younger volcanic areas in the west and the older areas in the east. On going geological and geomorphological processes (lava flows, underwater gas flows, small seismic movements, and erosion) also occur in the marine environment although not easily studied. The GMR includes key elements as well as on-going processes that conforms the geological puzzle that originated the Galapagos Islands, almost no other site in the world offered protection of such a complete continuum of geological and geomorphological features.

Criterion (ii): Ecological processes

The islands are situated at the confluence of 3 major eastern Pacific currents and this convergence has had major evolutionary consequences. The Galapagos marine environment is a "melting pot" of species that biogeographers have recognised as a distinct biotic province. The direct dependence on the sea for much of the island's wildlife (e.g. seabirds, marine iguanas, sea lions) is abundantly evident and provides an inseparable link between the terrestrial and marine worlds.

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

The GMR is an underwater wildlife spectacle with abundant life ranging from corals to sharks to penguins to marine mammals. No other site in the world can offer the experience of diving with such a diversity of marine life forms that are so familiar with human beings that they accompany divers. The diversity of underwater geomorphological forms are an added value to the site producing a unique diving experience not to be found anywhere else in Earth. The GMR has justifiably been rated as one of the top dive sites in the world.

Criterion (iv): Biodiversity and threatened species

With a great diversity of species of fish, sea turtles, invertebrates, marine mammals and sea birds, the GMR is the major stronghold for wildlife in the eastern Pacific. In additions, there is a high rate of endemism in marine life and many species are internationally threatened.

The islands and the surrounding marine environment of the Galapagos are thus inextricably linked and together from a unit that meets all four World Heritage criteria.

7. RECOMMENDATION

The Bureau recommended the inscription of the Galapagos Marine Reserve, as an extension to the Galapagos Islands World Heritage site, under natural criteria (i), (ii), (iii) and (iv). The Bureau recognised all the effort made over the past seven years by the Ecuadorian authorities to extend protection to the marine environment. The Bureau expressed the urgency for further strengthening of management, particularly on enforcement activities. The Bureau requested the State Party to complete all steps to finalise the adoption of the regulations deriving from the Special Law for Galapagos before the December session of the Committee.

In September 2001, the World Heritage Centre received a letter from the State Party noting that significant progress has been made in preparing the Regulations on tourism and fisheries under the Special Law on the Galapagos. According to this letter, it is expected that the Regulations will be passed by the Ecuadorian Government in November 2001. IUCN will provide an update on the state of the Regulations at the December Committee session.

Given the progress on the Regulations and the likelihood of them being passed in the short-term, IUCN recommends that the Committee **inscribe** the Galapagos Marine Reserve on the World Heritage List under natural criteria (i), (ii), (iii) under the name "Galapagos National Park and Marine Reserve".

The Committee may also wish to commend the State Party on progress made to date on the approval of the Regulations and request the State Party to invite an IUCN mission to review the implementation of Regulations in late 2002.

Annex 1: Marine Conservation Strategy of the Galapagos National Park and Charles Darwin Foundation

1. ***Develop the participatory management system***

- Establish a secure legal and institutional framework and take part in the established participatory forums
- Develop a Marine Reserve management plan and supplementary plans for specific resources, habitats, etc.
- Develop the capabilities of stakeholder groups
- Strengthen the functioning of the Participatory Management Group. Communicate technical information appropriately to the Group and the Interinstitutional Management Authority, among others
- Build understanding of and support the participatory management structure

2. Strengthen the capability of the management authorities

- Develop effective regulations and procedures and ensure that the law is applied
- Build GNPS capabilities in control, patrolling, and judicial procedures. Develop collaboration on law enforcement with the Navy, government bodies, and stakeholder organizations
- Develop the capabilities of the GNPS in marine management and of the CDF in marine research

3. ***Ensure that ecosystem structure and function are maintained***

- Establish, protect, and monitor zones for research and, in some cases, non-extractive economic use
- Control and monitor extractive use
- Control and monitor land-based impacts
- Monitor species representative of the ecosystem's diversity of biological communities and their functioning
- Monitor variables of the physical environment .Study the functioning of the ecosystem

4. ***Conserve key species, including exploited species, vulnerable species, and species important for science and tourism***

- Study the biology, ecology, abundance, and distribution of each key species .Protect each species against actual or potential threats
- Prepare contingency plans for the conservation of species at risk

5. Monitor and control the use of the Marine Reserve

- Develop and apply regulations for fisheries, tourism, and scientific and educational activities in the Marine Reserve
- Monitor fisheries and use the results in fisheries planning
- Monitor tourism in marine sites and use the results in tourism planning

Source: Charles Darwin Foundation. 2000 Projection. 1999 Annual Report