IUCN Conservation Outlook Assessment 2014 **(archived)**
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# Galápagos Islands

## SITE INFORMATION

Country:
Ecuador
Inscribed in: 1978
Criteria:
(vii) (viii) (ix) (x)

Site description:
Situated in the Pacific Ocean some 1,000 km from the South American continent, these 19 islands and the surrounding marine reserve have been called a unique ‘living museum and showcase of evolution’. Located at the confluence of three ocean currents, the Galápagos are a ‘melting pot’ of marine species. Ongoing seismic and volcanic activity reflects the processes that formed the islands. These processes, together with the extreme isolation of the islands, led to the development of unusual animal life – such as the land iguana, the giant tortoise and the many types of finch – that inspired Charles Darwin’s theory of evolution by natural selection following his visit in 1835. © UNESCO

## SUMMARY

# 2014 Conservation Outlook

**Significant concern**

The conservation outlook for the site's geological values is good as these are in general robust and relatively unaffected by human intervention. However, the outlook for the site's natural phenomena, natural beauty, ecological processes, biodiversity, endemic and threatened species is of significant concern. Concerted efforts are in place, and are constantly being improved, to address the threats from invasive species, the human footprint, and fisheries. More efforts are needed, however, to minimize the impact of tourism on the islands. In the long term, the site is particularly vulnerable to climate change. While in some cases the impacts of climate change can be mitigated, management can do little to reduce or eliminate them.

## Current state and trend of VALUES

**High Concern**
**Trend: Deteriorating**

The only values unthreatened are the geological values. All other values (natural phenomena, ecological processes, biodiversity, and threatened species) are threatened by invasive species and human activities, though concerted attempts are being made to systematically reduce the impacts of these threats. Climate change is also a major threat, but one which cannot be addressed significantly at the local level. Taken together, the general trend is towards deterioration.

## Overall THREATS

**Very High Threat**

The overall level of threat must be considered very high at present, but should begin to lower somewhat as management programs related to biosecurity, eradication of invasives, ecosystem restoration, and the lessening of impacts of visitors begin to take effect. More efforts are needed, however, to minimize the

impact of tourism on the islands. Local population development patterns, however, also pose a threat. At the same time, it must be recognized that climate change will continue to be a major threat for the foreseeable future.

## Overall PROTECTION and MANAGEMENT

**Mostly Effective**

Overall programmes for the protection and management of the Galapagos National Park and Marine Reserve are relatively effective. Greatest concern relates to the structure of the GNPS, and its capacity. Important gaps in staff training and development have been identified within the GNPS that reduce considerably the efficiency of law enforcement.

# FULL ASSESSMENT

## Description of values

### Values

### World Heritage values

► **Unique underwater wildlife spectacle**
**Criterion:(vii)**

The Galapagos Marine Reserve 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. The diversity of underwater geomorphological forms is an added value to the site producing a unique display, which cannot be found anywhere else in the world (SoOUV, 2013).

► **Unique geological and geomorphological features**
**Criterion:(viii)**

The Galapagos Islands constitute a hot spot located over a triple bond of tectonic plates: Nazca, Cocos and Pacific, converting it on one of the greater and more active volcanic zones in the world as evidence by the western shield like volcanoes with calderas of extensive diameters as those of Alcedo and Sierra Negra with 8 and 10 km respectively. In comparison with the majority of oceanic archipelagos, Galapagos is very young. Apparently, the oldest among the actual islands originated in the last 3-5 millions years. Fernandina and Isabela, the largest and youngest islands have less than one million year, even Fernandina might have only 60 000 years. Some of the central islets may even have less than 10 000 years. The oldest islands have bared lava flows demonstrating very recent eruptions, sample of its permanent activity. Since the speleological point of view is one of the

volcanic regions more important in the world presenting for example 35 volcanic cavities registered only on Santa Cruz Island, among them a lava tunnel of 3 km long. The amount of scientific
articles written and in developing remarks its geological importance in general. (SoOUV, 2013)

▶ **Unique example of how ecological, evolutive and biogeographic processes model islands flora and fauna**
**Criterion:(ix)**

The origin of Galapagos flora and fauna has aroused the interest of humanity since the publication of the Beagle trip on 1835 by Charles Darwin. The islands constitute and almost unique example of how ecological, evolutive and biogeographic processes model the flora and fauna on particular islands and an entire archipelago. Thus, Darwin’s finches, mockingbirds, land snails and giant tortoises represent some of the best examples of adaptive radiation on different ecological niches in a geologically recent place that has allowed the survival of intermediate species. Under this dynamic scenery, many other biotic components have evolved on isolation, converting themselves in organisms not
found anywhere else on Earth. This includes birds, insects, trees, rodents, iguanas and other endemic reptiles. Likewise, the Marine Reserve is a dynamic example of species interchange influenced by the climatic phenomena such as
El Niño, observed on the islands and providing important clues about how species evolve under changing conditions. (SoOUV, 2013)

▶ **High species diversity, including endemic and endangered species**
**Criterion:(x)**

The islands have relatively high species diversity for such young oceanic islands, and contain emblematic taxa such as giant tortoises and land iguanas, the most northerly species of penguin in the world, flightless cormorants as well as the historically important Darwin’s finches and Galapagos mockingbirds. Endemic flora such as the giant daisy trees Scalesia spp. and many other genera have also radiated on the islands, part of a native flora including about 500 vascular plant species of which about 180 are endemic. Examples of endemic and threatened species include 12 native

terrestrial mammal species (11 endemic, with 10 threatened or extinct) and 36 reptile species (all endemic and most considered threatened or extinct), including the only marine iguana in the world. Likewise the marine fauna has an unusually high level of diversity and endemism, with 2,909 marine species identified with 18.2% endemism. High profile marine species include sharks, whale sharks, rays and cetaceans. The interactions between the marine and terrestrial biotas (e.g. sea lions, marine and terrestrial iguanas, and seabirds) are also exceptional. Recent exploration of deep sea communities continues to produce new additions to science (SoOUV, 2013).

### Other important biodiversity values

#### ► Other designations

Área Marina Ecológica y Biológicamente importante (EBSA); Birdlife International Important Bird Area; Alliance for Zero Extinction site; CI Hotspot; WWF Global 200 region.

## Assessment information

### Threats

#### Current Threats

**Very High Threat**

The overall level of current threats has to be considered very high because of the extreme level of impact to native ecosystems created by invasive species in the short and medium term, and the extensive impacts of climate change in the long run.

#### ► Shipping Lanes

**High Threat**

**Inside site**
**Outside site**

International marine routes and marine traffic between the islands and the mainland.

### ► Invasive Non-Native/ Alien Species

**Very High Threat**
**Inside site**

Invasive species are the most immediate threat to terrestrial environments of the islands. Sophisticated biosecurity, invasive species eradication, and ecosystem restoration programs are in place and are constantly being improved. A newly created Invasive Species Fund will help sustain financial support for eradication programmes. Several major successes have been achieved over the years, especially in the eradication of feral goats, rodents, and fruit flies. Still, the number and extent of existing invasive species, and the ever-present threat of new introductions or re-introductions, means that invasive species remain a very high threat for the site’s values (36COM.Galapagos.SPreport; Mission Report, 2010). Current local human development patterns and the lack of thorough control and law enforcement make it easier for invasive species to spread.

### ► Temperature changes

**High Threat**
**Inside site**

Climate change has already had major impacts on the islands ecosystems. Rises in sea temperatures and ocean acidity have significantly affected coral reefs around the islands. Rising ocean surface temperatures reduce the upwelling of nutrients around the islands that are essential to the food chains that nourish sea mammals and birds. Increased precipitation and temperatures affect a host of native species and in some cases favour invasives. El Nino and La Nina weather patterns that cause extreme weather events have become more intense, impacting species as well as agriculture, fisheries, and tourism. Plans are under development to assist the island residents and park managers to adapt to climate change, but the impacts of climate change are the most difficult of all threats to deal with successfully.

(McLennan, 2009)

### ► Tourism/ visitors/ recreation

**Very High Threat**
**Inside site**

Both tourism and immigration increase the rate and cumulative effects of anthropogenic change through the every growing footprint of man in a limited island environment. Programs are in place to monitor and reduce immigration, and to lower the impact of tourism. For now, the option of limiting the total number of tourist days has been rejected, but programs are in place to limit visits to specific sites in keeping with established carrying capacities (36COM.Galapagos.SPreport; Mission Report, 2010). More efforts are needed, however, to minimize the impact of tourism on the islands.

### ► Fishing / Harvesting Aquatic Resources

**High Threat**
**Inside site**

Sophisticated, hi-tech programs are in place, and are continually being improved, to study, monitor and enforce fishing regulations that are designed to foster sustainable fisheries levels that benefit local fishermen (36COM.Galapagos.SPreport; Mission Report, 2010). However, longline fishing is again being discussed and new waves of pressure from the fishing sector have been recorded. Continuous presence of industrial fishing fleet outside the site increases the likelihood of pouching activities.

## Potential Threats

**Very High Threat**

Overall potential threats must for the moment be considered very high because of the significant threat from the introduction or reintroduction of invasives. However, the level of threat should begin to drop as biosecurity programs have their intended effect.

### ► Other

**Low Threat**

**Inside site**

Sea level rise can be expected to impact the islands in coming years, threatening especially nesting beaches for penguins and sea turtles through coastal erosion and flooding (MacLennan, 2009).

### ► Invasive Non-Native/ Alien Species

**Very High Threat**
**Inside site**

All island systems face the threat of introduction and/or re-introduction of invasives that can have devastating effects on native flora and fauna. A major biosecurity programme for Galapagos is in place, and under constant improvement. It enforces strict regulations for cargo leaving the mainland for Galapagos, for ships carrying cargo to the islands, for ports receiving cargo in the islands, and for aircraft entering the islands. These measures, together with educational campaigns for island residents and visiting tourists, should serve to reduce considerably the influx of invasives in the long run, but until all measures are in place and perfected and until more control and law enforcement measures are working effectively, the threat remains very high. (36COM.Galapagos.SPreport; Mission Report, 2010)

## Protection and management

## Assessing Protection and Management

### ► Relationships with local people

**Some Concern**

Relationships of the Galapagos National Park Service (GNPS) and Charles Darwin Research Station (CDRS) with local people have at times been very difficult, especially with respect to fishermen and local politicians. This is to be expected in an island setting where 97.5% of the land area and 100% of coastal waters are under the jurisdiction of a National Park and Marine Reserve whose prime objective is conservation. Improvements in governance arrangements, participatory approaches to management, law enforcement, financing, the number of Ecuadorians holding key positions in NGOs, and education have tended to improve relationships in recent years

(36COM.Galapagos.SPreport; Mission Report, 2010).

### ► Legal framework and enforcement

**Some Concern**

The legal framework for management and enforcement have continued to improve over the years with the establishment of the Marine Reserve; the Special Law for Galapagos; the Special Regimen Plan for Galapagos; the introduction of the Administration, Planning and Territorial Zoning of the Special Regimen Plan; and multiple inter-institutional arrangements for cooperation. While the Special Law for Galápagos provides a legal framework, it relies heavily on follow-up regulations to spell out in detail exactly how the law is to be applied. Perhaps the most Important regulation is the “Reglamento
Especial de Turismo en Áreas Naturales Protegidas” or Special Tourist Regulation in Protected Natural
Areas (RETANP). (36COM.Galapagos.SPreport; Mission Report, 2010)

### ► Integration into regional and national planning systems

**Some Concern**

After many years of successes and failures, management of the Galapagos Islands as a distinctive region is becoming well integrated into national planning systems. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ► Management system

**Mostly Effective**

Many institutions have decision-making powers that affect conservation values on the Galapagos. The institutional framework and interactions between these institutions is highly complex. The institution that is mandated to manage the Park is still the Galapagos National Park Service, and the GNPS reports directly to the Minister of Environment.

A number of NGOs, including the Charles Darwin Foundation that has worked on scientific and
management research on the islands since the inception of the Park, local chambers of tourism which promote and regulate tourism, as well as a number of fishing cooperatives also participate in

management decisions.

Four Management Plans for the Park were in place since 1974 (Mission report, 2010). The most recent Management Plan for Protected Areas of Galápagos was prepared in 2014 (Plan de Manejo de las Áreas Protegidas de Galápagos para el Buen Vivir, 2014).

### ► Management effectiveness

**Some Concern**

A study of management effectiveness for the Marine Reserve indicated a need to restructure management to align more closely with objectives; the need to rationalize management activities to reduce overlaps with other institutions; increase efficiency and participatory management; increased use of scientific data to back management decisions. Many of the same observations obtain with respect to management of the National Park as well (36COM.Galapagos.SPreport; Mission Report, 2010).

### ► Implementation of Committee decisions and recommendations

**Some Concern**

Progress has been made in implementing all of the 15 recommendations that have come out of the Committee in recent years. However, in most cases more progress will be required before the effectiveness of the corrective measures can be assured. (Mission Report, 2010)

### ► Boundaries

**Mostly Effective**

Boundaries are clear and no issues have been identified. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ► Sustainable finance

**Mostly Effective**

Galapagos has served as a model for sustainable finance with the early establishment of a market- based entrance fee system; and trust funds for Park and Reserve management, operation of the Charles Darwin Research Center, general conservation activities eradication of invasive species, and

for marine biodiversity. Current funding levels appear adequate for core management activities. Considerable international funding has been mobilized over the years for multiple activities both within the Park and Marine Reserve and in the non-park areas of the islands. Recently, government has established a “single window” for international financing, requiring that all project proposals first be screened to determine if they are in compliance with the System of Administration, Planning and Zoning of the Special Regime Law. (36COM.Galapagos.SPreport; Mission Report, 2010).

### ► Staff training and development

**Serious Concern**

Important gaps in staff training and development have been identified within the GNPS that reduce considerably the efficiency of law enforcement. Of particular concern is the poor operation, maintenance, and servicing of Park launches and other equipment that has lead to the situation whereby they are in service only 30% of the time. (Mission Report, 2010).

### ► Sustainable use

**Some Concern**

The only permitted uses of Park and Reserve resources are for artisanal fishing and tourism. In both cases, major efforts are underway to assure that these uses are sustainable. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ► Education and interpretation programs

**Mostly Effective**

Educational reforms are underway for the Galapagos school system to prepare students for work in conservation, tourism, and fisheries. These programs are in some instances supported by the tourism industry. Environmental education programs are already a component of current programs that are supported by the GNPS, the CDRS, and various environmental NGOs. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ► Tourism and interpretation

**Some Concern**

Tourism operators carry out their own interpretation programs for their clients. The GNPS and CDRS do the same for visitors to their facilities. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ► Monitoring

**Mostly Effective**

Monitoring of natural and introduced species; visitor use and impacts; and fishing activity are key components of management programs. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ► Research

**Mostly Effective**

Research is coordinated by the CDRS in cooperation with the GNPS, and has for many years provided scientific data to inform management decisions. (36COM.Galapagos.SPreport; Mission Report, 2010)

## Overall assessment of protection and management

**Mostly Effective**

Overall programmes for the protection and management of the Galapagos National Park and Marine Reserve are relatively effective. Greatest concern relates to the structure of the GNPS, and its capacity. Important gaps in staff training and development have been identified within the GNPS that reduce considerably the efficiency of law enforcement.

### ► Assessment of the effectiveness of protection and management in addressing threats outside the site

**Some Concern**

Threats originating outside of the site include transportation links, tourism, and commercial fisheries. In each case, relatively effective programmes have been put in place, or are being strengthened, to address these threats on a systematic basis; a better enforcement and governance system is, however, necessary. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ► Best practice examples

Sustainable finance, eradication of invasive species, ecosystem restoration, regulation and scheduling of cruise ships, tracking of vessels in the Marine Reserve, and tour guide certification.

## State and trend of values

### Assessing the current state and trend of values

#### World Heritage values

#### ► Unique underwater wildlife spectacle

**High Concern**
**Trend:Deteriorating**

Invasive species have the potential to replace native fauna, with their amazing docility, and to decimate native plant communities that are the basis for the singular beauty of their associated landscapes.
Rising sea temperatures and ocean acidification associated with climate change have already decimated the island’s coral reefs, one of the major components contributing to the natural beauty of near shore marine environments. Corals were also severely impacted by the 1982-1983 El Niño. Extreme weather events, made more frequent and severe by climate change, will impact the natural beauty by creating landslides and erosion from flooding, and scarring of the landscape by fires. Sea level rise will in the future will eliminate or displace the beautiful coral and volcanic sand beaches of the islands. (36COM.Galapagos.SPreport; Mission Report, 2010)

#### ► Unique geological and geomorphological features

**Good**
**Trend:Stable**

The geological features of the islands are not threatened.

#### ►

**Unique example of how ecological, evolutive and biogeographic processes model islands flora and fauna**

**High Concern**
**Trend:Deteriorating**

The ecological processes of the site are severely threatened by invasive species, climate change, and human activities. While much is being done to eradicate invasive species, restore ecosystems, and control and reduce the human footprint, including overfishing, there is little that can be done in the short to medium term to reverse the impacts of climate change. (36COM.Galapagos.SPreport; Mission Report, 2010)

▶ **High species diversity, including endemic and endangered species**

**High Concern**
**Trend:Deteriorating**

The same threats that impact ecological processes (invasive species, climate change, and human activities) also produce significant negative impacts on biodiversity and threatened species. Mitigation and restoration programs are countering most of these threats except climate change, for which little can be done in the short and midterm.

**Other important biodiversity values**

▶ **Other designations**

Área Marina Ecológica y Biológicamente importante (EBSA); Birdlife International Important Bird Area; Alliance for Zero Extinction site; CI Hotspot; WWF Global 200 region.

## Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values**

**High Concern**

**Trend: Deteriorating**

The only values unthreatened are the geological values. All other values (natural phenomena, ecological processes, biodiversity, and threatened species) are threatened by invasive species and human activities, though

concerted attempts are being made to systematically reduce the impacts of these threats. Climate change is also a major threat, but one which cannot be addressed significantly at the local level. Taken together, the general trend is towards deterioration.

▶ **Assessment of the current state and trend of other important biodiversity values**

**High Concern**

**Trend: Deteriorating**

Threats to the values associated with other international designations are the same as those indicated for aesthetic values, natural phenomena, ecological processes, biodiversity and threatened species. The trend is also towards deterioration.

## Additional information

### Key conservation issues

▶ **Invasive species**

**Local**

Invasive species are the most immediate threat to terrestrial environments of the islands. Sophisticated programs for biosecurity, eradication of invasives, and ecosystem restoration are in place and are constantly being improved. A newly created Invasive Species Fund will help sustain financial support for eradication programs. Several major successes have been achieved over the years, especially in the eradication of feral goats, rodents, and fruit flies. Still, the number and extent of existing invasive species, and the ever-present threat of new introductions or re-introductions, means that invasive species remain a very high threat for terrestrial ecosystems.
(36COM.Galapagos.SPreport; Mission Report, 2010)

▶ **Climate change**

**National**

Climate change has already had major impacts on the islands’ ecosystems.

Increases in sea temperatures and ocean acidity have killed of most coral reefs around the islands. Rising ocean surface temperatures reduce the upwelling of nutrients around the islands that are essential to the food chains that nourish sea mammals and birds. Increased precipitation and temperatures affect a host of native species and in some cases favor invasives. El Nino and La Nina weather patterns that cause extreme weather events have become more intense impacting species as well as agriculture, fisheries, and ecotourism. Plans are under development to assist the island residents and park managers to adapt to climate change, but the impacts of climate change are the most difficult of all threats to deal with successfully. (McLennan, 2009)

### ▶ The human footprint

**Local**

Both tourism and immigration increase the rate and cumulative effects of anthropogenic change through the every growing footprint of man in a limited island environment. Programs are in place to monitor and reduce immigration, and to lower the impact of tourism. For now, the option of limiting the total number of tourist days has been rejected, but programs are in place to limit visits to specific sites in keeping with established carrying capacities. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ▶ Illegal fishing

**Local**

Sophisticated, hi-tech programs are in place, and are continually being improved, to study, monitor and enforce fishing regulations that are designed to foster sustainable fisheries levels that benefit local fishermen. (36COM.Galapagos.SPreport; Mission Report, 2010)

### ▶ Sea level rise

**Global**

Sea level rise can be expected to impact the islands in coming years, threatening especially nesting beaches for penguins and sea turtles through coastal erosion and flooding (MacLennan, 2009).

### ▶ New introductions and re-introduction of invasives

**Local**

All island systems face the threat of introduction and/or re-introduction of invasives that can have devastating effects on native flora and fauna. A major biosecurity program for Galapagos is in place, and under constant improvement. It enforces strict regulations for cargo leaving the mainland for Galapagos, for ships carrying cargo to the islands, for ports receiving cargo in the islands, and for aircraft entering the islands. These measures, together with educational campaigns for island residents and visiting tourists, should serve to reduce considerably the influx of invasives in the long run, but until all measures are in place and perfected, the threat remains very high. (36COM.Galapagos.SPreport; Mission Report, 2010)

## Benefits

### Understanding Benefits

**▶ Is the protected area valued for its nature conservation?**

The site is one of the most important Protected Areas worldwide because of its scientific values, and its large number of endemic, and threatened species

**▶ Outdoor recreation and tourism**

The Galapagos Islands are one of the iconic tourism destinations of the world. The site is of great economic importance nationally, regionally, and globally. There is, however, an unequal distribution of tourism benefits.

**▶ Fishing areas and conservation of fish stocks**

The Marine Reserve is an important source of fish both locally and nationally and is a major source of income generation for the local community.

### Summary of benefits

This iconic site is highly valued globally for its conservation and tourism values, and locally for the livelihoods generated by tourism and fisheries.

## Projects

### Compilation of active conservation projects

| № | Organization / individuals | Project duration | Brief description of Active Projects |
|---|---|---|---|
| 1 | Charles Darwin Foundation | | Numerous projects for science and research, and technical assistance. |
| 2 | WWF | | Projects focusing on sustainable tourism, regulating migration, innovative fisheries management, governance and enforcement of the Marine Reserve, renewable energy, and waste management. |
| 3 | Galapagos Conservation Trust | | Funding of multiple projects in ecosystem restoration, climate change, and social issues. |
| 4 | Galapagos Conservancy | | Multiple projects to conserve endangered species, develop support of local communities, ecological restoration, and coastal monitoring. |
| 5 | Galapagos Conservation Fund | | Support for conservation projects carried out by the GNPS and CDRS |
| 6 | Galapagos Invasive Species Fund | | 4 projects for 2012 |
| 7 | Wild Aid | | Support to the GNPS for control and execution of marine surveillance |
| 8 | Galapagos Marine Biodiversity Fund | | Funding of projects related to marine conservation and education. |
| 9 | CI | | Project focus on sustainable agriculture, fisheries and green development. |

# REFERENCES


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|---|---|
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| 4 | Mission Report, 2010. |
| 5 | Plan de Manejo de las Áreas Protegidas de Galápagos para el Buen Vivir, 2014. |
| 6 | Retrospective Statement of Outstanding Universal Value, 2013. |