

Frontier Nicaragua Environmental Research

Recommendations and additions to the
Management Plan of Isla Juan Venado Nature
Reserve



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Management Plan of Isla Juan Venado Nature
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Muurmans, M. & Fanning E. (ed.)

Frontier Nicaragua and Darwin Initiative

**MARENA-Leon
UNAN- León
Nicaragua**

**Society for Environmental Exploration
United Kingdom**

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Universidad Nacional Autonoma de Nicaragua (UNAN)-León

UNAN is the largest university in Leon, established as a centre for learning and research in the arts and the physical, natural, earth, marine, medical and human sciences. The University is surveying and mapping the flora and fauna of Nicaragua and is conducting research into the maintenance and improvement of the environment and the sustainable exploitation of Nicaragua's natural resources.

MARENA-Leon

MARENA is a governmental organisation responsible for Reserva Natural Isla Juan Venado and has been working in this reserve to establish and facilitate an effective management system for this area. MARENA-Leon is in charge of the management of all nature reserves within the department of Leon, Nicaragua

The Society for Environmental Exploration (SEE)

SEE is a non-profit company limited by guarantee, formed in 1989. The Society's objectives are to advance field research into environmental issues and implement practical projects contributing to the conservation of natural resources. Projects organised by SEE are joint initiatives developed in collaboration with national research agencies in co-operating countries.

Frontier Nicaragua Forest Research Programme (NRF FRP)

The Society for Environmental Exploration has been conducting research into environmental issues since January 2004 under the title of Frontier Nicaragua. Biological field surveys were conducted in the Volcán Cosigüina Nature Reserve in collaboration with UNAN León and Fundación LIDER.

FOR MORE INFORMATION:

Edmundo Torres Godoy (Vice Rector)
UNAN-León
León, Nicaragua
Tel: +505 311 50 83 ext. 1076
E-mail: etorres@unanleon.edu.ni

Society for Environmental Exploration
50-52 Rivington Street, London, UK
Tel: +44 20 76 13 30 61
Fax: +44 20 76 13 29 92
E-mail: research@frontier.ac.uk

MARENA-Leon
Leon, Nicaragua
E-mail: mareleon@ibw.com.ni

Frontier Nicaragua
E-mail: frontiernicaragua@yahoo.co.uk

Isla Juan Venado Nature Reserve in review

Nicaragua possesses a system of Protected Areas that shelters a wide range of ecosystems that include thousands of flora and fauna species. With more than 12,000 classified species of flora and 1,400 classified animal species, it is a real biological treasure. However, although Nicaragua has established 76 protected areas which cover more than 2.6 million ha (18% of the national territory), only fifteen of these are currently under active management. Moreover, there are numerous threats facing the protected area system, including the lack of on-site protection and management in most areas; growing colonisation; fires and overuse of mangrove forests; and uncontrolled logging and poaching.

The Isla Juan Venado Nature Reserve in the Northwest Pacific region is important for biodiversity conservation due to the presence mangrove forests and tropical dry forest, yet there is minimal scientific information as to the flora and fauna. The research conducted by Frontier Nicaragua in 2005 has thus helped provide baseline information on the biological values of the different habitats within the reserve as a basis for management planning and long-term monitoring.

The aim for this report, therefore, is to contribute with recommendations to the existing management plan for the reserve, and to help develop well-informed conservation practices and monitoring programmes to ensure that future generations living in, working in and visiting the area will see it for the beauty that it is today.

Valuable biodiversity information

Isla Juan Venado Nature Reserve has significant conservation value on local, national and international levels with several critically endangered species inhabiting the reserve. With regard to fauna surveys, the reserve is home to 208 species of birds, reptiles, amphibians and mammals, of which 14 species hold particular interest for their conservation and biological value. These include CITES listed and critically endangered Leatherback (*Dermochelys coriacea*) sea turtle as well as *Aratinga canicularis*. Therefore a specific conservation programme has been initiated for sea turtles within the area to increase protection of these species.

In the terrestrial area of Isla Juan Venado 195 species of fauna had been identified and confirmed prior to the FN FRP biodiversity study, including 135 species of birds, 24 mammals and 36 herptofauna. To date 14 of these have been included on the IUCN Red List (IUCN, 2001), listed as critically endangered, endangered, vulnerable or lower risk with some species having insufficient data to classify them. One of the most important species of fauna in Isla Juan Venado is the Leatherback marine turtle (*Dermochelys coriacea*) which is in danger of extinction (IUCN 2000). This species uses the an island within the estuary as one of its nesting areas. The leatherback turtle shares the region with a number of other charismatic species which includes white tail deer (*Odocoileus virginianus*), black iguana (*Ctenosaura similis*), Green iguana (*Iguana iguana*) and Olive Ridley turtle (*Lepidochelys olivacea*). The region also hosts a number of native and migratory birds.

The marine coastal zone of the area contains a number of species including 52 species of fish, 47 species of crustaceans and mollusc. Species included the scarce *Anadara grandis* and rare *Cypraea annettae aequinoctalis*.

- **Mammals**

With regards to mammal species, there still exists a lack of information of this taxa within the reserve. A total of 10 species (within 9 families) were either captured or directly observed within Isla Juan Venado nature reserve. The inventory list will consist of 30 mammal species in total after the addition of new species within the order of Chiroptera and Carnivora.

Although, FNFRP was able to record 6 mammal species previously not recorded in the Management Plan or observed by the local community, more research is needed into different areas within the reserve to provide more comparative data.

- **Birds**

In total 156 species of birds (within 16 orders and 46 families) have been recorded at Isla Juan Venado nature reserve. 16 species (within 14 families and 1 order) and three families were new records for the reserve.

In total 55 species of birds (within 27 families) have been recorded. Migratory birds as well as resident birds have been observed. Some bird families, such as Paridae and Vireonidae seem to reside mainly in the mangrove area, whilst others, such as White-throated magpie jay (*Calocitta formosa*), Mangrove cuckoo (*Coccyzus minar*), White-lored gnatcatcher (*Polioptila albiloris*) and (*Euphonia altinis*) travelled between both mangroves and dry forest. Most other families restricted to dry forest habitat such as Icteridae, Caprimulgidae, Falconidae, Trogonidae and Tyrannidae.

Black headed trogon (*Trogon melanocephalus*) was abundant near the TS1 at Las Penitas. Migratory birds, such as *Egretta caerulea* and *Numerius phaeopus* were observed at both trap site and study site.

The inventory list for bird species within the Current Management plan is the most extensive compared to the other taxa. Within the limited survey period FN FRP showed that many species of birds had not yet been added to the inventory list, with 16 species added to the existing list from the management plan. There still exists a lack of research regarding bird species within the area.

- **Herpetofauna**

In total, 14 species of reptiles and eight species of amphibians, within 14 and four families, respectively, have been recorded for Isla Juan Venado. Five reptilian species (within 3 families) can be added to the existing inventory in the Management plan of Isla Juan Venado.

Within the current management plan no inventory has been included on Amphibians within the Isla Juan Venado Nature Reserve. Within the limited time, FN FRP was able to add 1 species (within 1 family) to the management plan. None of the species recorded is listed on the CITES appendices. Two amphibian species were identified as a *Bufo marinus* and *Bufo leutkenii*. Crabs inside bucket pitfall traps might have contributed to the low catching success of the traps.

There still exists a lack of knowledge on herpetofauna species within the Isla Juan Venado Nature Reserve and more research is needed in order to expand inventory lists. Amphibian species can be used as indicator species for the health of the reserve. Reports from locals have added a number of amphibian species to the inventory which indicates that local knowledge should be used in order to compile inventory lists.

- **Butterflies**

Fermented banana bait proved successful for butterfly families such as Nymphalidae, but Pieridae families ignored the bait and needed to be caught by sweep net. The area also supports Papilionidae, but none were caught in the net.

No previous data has been collected on butterfly species in the area, therefore all butterfly species can be added to the inventory list of the reserve.

100% of butterflies caught in canopy traps were identified as belonging to the Nymphalidae family. This may be a reflection of a particularly high abundance of Nymphalidae in the area or a result of the capture methods including bait type. 75% of butterflies caught by sweep netting were representatives of Pieridae.

Caught and observed individuals will be added to the inventory list of the Management plan, once identified. As no inventory list exists on Lepidoptera within the area, this list can be used as a base for further research.

- **Human disturbance**

Due to the pressure of human populations on Nicaragua's forests, disturbance of natural vegetation is often severe, with a variety of secondary forest formations being found in addition to less disturbed primary forests. Even within protected areas, a patchwork of differing vegetation types is found, and the vegetation study carried out by Frontier Nicaragua in Nicaraguan reserves aims to assess the extent and distribution of different forest types, and the degree to which natural forests have been degraded by human activity.

Observations of human disturbance and resource use were made in each trap site and study site and throughout the reserve. This information complements the standard quantifiable methods employed, helping to form a fuller picture of the state of the reserve with regards to human impact.

The biodiversity assessment represents an important contribution to the knowledge of the Isla Juan Venado Area, as a number of new species were observed during the research undertaken. The results of this survey provide a resource to update the Management Plan for the Isla Juan Venado Reserve, with the addition of new species to the existing inventories (in particular the inventory of butterflies, which at present is not listed in the Management Plan).

Assessment of Protected areas through tracking tools

In order to assess and evaluate the current state of the management of nature reserves, WWF (World Wildlife Fund) and the World Bank have constructed a tracking tool in the form of an evaluation of these areas to assess whether nature reserves are achieving the objectives for which they were established originally. This site-level management effectiveness tracking tool has been used for three nature reserves in the Northwest Pacific Region of Nicaragua; Isla Juan Venado (2,930 ha), Estero Padre Ramos (9,157 ha) and Volcán Cosigüina (12,420). Evaluation forms were completed by different hierarchic levels within the organization, responsible for the co-management of the area, respectively SELVA (Somos Ecologistas por la lucha de Vida y el Ambiente), LIDER (Luchadores Integrados al Desarrollo de la Region) and MARENA (Ministry of Environment and Natural Resources).

Although the completion of the evaluation forms was integrated as an exercise within the "Conservation Management" course, conclusions could still be made from the opinions expressed by park rangers, managers and directors. A total of 4 staff members of the Isla Juan Venado Nature Reserve had completed the hypothetical tracking tool and following the score system (for each category and as a total), it could be determined which score could be appointed to the reserve best and why as well as which problems could be highlighted with possible solutions.

This section will highlight the findings from the exercise, which have been presented as a management tool to the co-managing NGO's of the previously mentioned nature reserves.

From the total of 95 points, an average of 53 points was scored for the reserve. This showed that certain aspects of the management of the reserve need to be improved in order to comply with a perfect "nature reserve" status. The following aspects need to be addressed:

- Resource inventory
- Research
- Current budget
- Security of budget
- Current budget
- Management of budget
- Education and awareness programme
- Commercial tourism
- Monitoring and evaluation

The objectives and design of the reserve and the protected boundary demarcation for effective management (such as patrol) scored highly with all staff members. Also, aspects regarding personnel management, relations with local communities and fees did not need improvement as all personnel ranked these highly.

Formulating problem areas

Nature reserve personnel working in Isla Juan Venado Nature Reserve agreed on the following recommendations for some of the aspects which needed to be addressed.

- There is no survey or research work taking place in the protected area
Recommendation: More funding to be able to conduct scientific research.
- There is no secure budget for the protected area, and management is wholly reliant on outside or year by year funding
Recommendation: More assignment from in-country budget.
- Budget management is poor and constrains effectiveness
Recommendation: More funding from local and national governmental bodies.
- There is a limited and ad hoc education and awareness programme, but no overall planning for this.
Recommendation: More capacity training for park personnel on the facilitation of environmental education.
- Local communities have some input into discussion relating to management but no direct involvement in the resulting decisions.
Recommendation: More involvement from a cross section of the community rather than only community leaders.
- There is contact between park managers and tourism operators but this is largely confined to administrative or regulatory matters.

Recommendation: More information dissemination about available tour operators and improve contact, more publication on the reserve to raise more awareness, more local guides.

- Some biodiversity, ecological and cultural values are being severely degraded.

Recommendation: More capacity training for community members,

- Protection systems (patrols, permits etc) are ineffective in controlling access or use of the reserve in accordance with designated objectives.

Recommendation: More control on access to and from the reserve, more staff.