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## WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

### AREA DE CONSERVACION GUANACASTE (COSTA RICA)

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#### 1. DOCUMENTATION

- i) **IUCN/WCMC Datasheet:** not available as at 8 April 1999.
- ii) **Additional Literature Consulted:** Cordoba, R. *et.al.* 1998. **Inventario de los humedales de Costa Rica.** UICN-MINAE. San José, Costa Rica. 380 p; Janzen, D. 1983. **Costa Rican Natural History.** University of Chicago Press. Chicago. 816 p; Janzen, D. 1986. **Guanacaste National Park: tropical ecological and cultural restoration.** Editorial UNED. Costa Rica. 103 p; Janzen, D. 1995. Neotropical restoration biology. **Vida Silvestre Neotropical.** Vol. 4(1). pp. 3-9; Janzen, D. 1998a. Gardenification of wildland nature and the human footprint. **Science.** Vol. 279. pp. 1312-1313; Janzen, D. 1998b. **Conservation analysis of the Santa Elena property, Península Santa Elena, northwestern Costa Rica.** Philadelphia, USA. 129 p; Jiménez, G. 1998. **Proyecto manejo y tratamiento natural de cascaras de naranja. Area de Conservación Guanacaste.** Guanacaste, Costa Rica. 25 p; Molina, Maria de los Angeles. 1995. **Inducción del proceso de restauración del Bosque Seco Tropical en el Area de Conservación Guanacaste.** ACG, MINAE. Guanacaste, Costa Rica. 16 p; Morales, D. *et al.* 1997. **Informe técnico: Proyecto de Restauración del Bosque en el Corredor Biológico Rincón-Cacao.** ACG, MINAE. Liberia, Costa Rica. 25 p; Thorsell, J. *et al.* 1997. **A global overview of wetland and marine protected areas on the World Heritage List.** IUCN. 63 p; Thorsell, J. 1997. **A global overview of forested protected areas on the World Heritage List.** IUCN. 58 p.
- ii) **Consultations:** High level Costa Rica government officials; almost 40 persons in and near GCA; other local resource user group/local community representatives; and visiting scientists.
- iv) **Field Visit:** February 1999. Craig MacFarland and Juan Carlos Godoy.

#### 2. SUMMARY OF NATURAL VALUES

The nominated site (GCA) comprises 88,000 terrestrial hectares (ha) and approximately 43,000ha of marine area. The entire area extends from 19km (12 miles) out in the Pacific Ocean to the coast of north-western Costa Rica and then inland through lowland Pacific dry tropical forests, up into the mountains to over 2,000 meters elevation (montane humid and cloud forests), then down on the Atlantic/Caribbean side into the upper portions of lowland rain forests . The GCA is located between 10<sup>o</sup> and 11<sup>o</sup> North latitude and 85<sup>o</sup> and 86<sup>o</sup> West longitude in Costa Rica's most northern and western province (see Map 1).

The GCA is a complex of almost entirely contiguous protected areas forming a single larger protected area, as follows (see Map 2):

- ◆ Santa Rosa National Park (terrestrial) 4,558ha
- ◆ Rincon de la Vieja National Park 14,084ha

- ◆ Guanacaste National Park 37,365ha
- ◆ Junquillal Wildlife Refuge 439ha
- ◆ Horizontes Forestry Experiment Station 7,317ha
- ◆ Marine Area (part of Santa Rosa National Park) approximately 43,000ha

Approximately 60% of all species present in Costa Rica are found in the GCA, or from a global point of view approximately 2.4% of all the biological diversity (species level) of the planet. In addition, the GCA's fauna and flora are characterised by a major intercontinental convergence of species with their origins in the Nearctic and Neotropical Realms. Many species in the GCA range as far north as the region of Mazatlan and Tampico in Mexico and others as far south as Brazil and Bolivia. Current estimates are that the GCA contains approximately 230,000 species (not including bacteria and viruses).

Three elements are fundamental determinants of the great biological richness of the GCA:

- ◆ The most intact inshore Pacific marine ecosystem between the Panama Canal Zone and Mexico, with major nutrient-rich upwelling currents, causing high productivity in the surface layers;
- ◆ The only remaining significant area of Central American to northern Mexican (Mesoamerican) Pacific dry tropical forest, i.e. a complete dry forest ecosystem;
- ◆ A major altitudinal transect (relatively wide in almost all of its length) of 105km, including 8 Life Zones (*sensu* Holdridge), within which there is a continuous band from mangroves on the Pacific coast, Mesoamerican Pacific dry tropical forest, humid montane tropical forest, cloud forest, and finally on the Caribbean/Atlantic slope tropical rain forest. This transect includes complete river basins from their origin to the Pacific Ocean.

The marine area includes various near shore islands and islets (mostly uninhabited), open ocean marine zones, beaches, rocky coasts, and approximately 20km. of sea turtle nesting beaches. More specific surface habitats include coral reefs, rocky reefs, sandy bottoms, rock fields, deep water, algal beds and upwelling currents. The GCA possesses, among other marine features, a beach (Nancite) of 1.7km length, where thousands of Olive Ridley sea turtles nest simultaneously in major waves, called "arrivals", or "arribadas" in Spanish. This is one of the few protected arribada beach for this species in all of Mexico and Central America. Also, the GCA contains two nesting beaches of the highly threatened Leather Back sea turtle.

The GCA contains 37 wetland areas, among which are included major ones for Central America such as Puerto Soley, Cuajiniquil, Santa Elena, Potrero Grande, Nancite and Playa Naranjo mangrove complexes; Limbo Lagoon; Iguanito Estuary; and, Rincon de la Vieja Volcano Lagoon (freshwater in this last case). Its mangrove forests contain eight species of mangroves and are exceptionally intact.

The GCA's dry tropical forest, totalling approximately 60,000ha, is a complex mosaic of old growth patches and regenerating areas varying up to 400 years in age. It is characterised by an annual average total precipitation of 800 - 2,800 mm, and because of a well-defined dry season with a virtual total absence of rainfall from mid-December to mid-May. Because of this dry season, hot and with strong winds, climax conditions are a dry deciduous tropical forest, with at least 20 recognised vegetative associations. This dry forest consists of the only large stands (old growth plus regenerating) of pristine and semi-pristine old-growth lowland dry forest on the Pacific coast of Costa Rica. It is the only fully protected complete dry forest ecosystem in Mesoamerica.

The GCA contains important and apparently healthy populations of many of Central America's most typical vertebrates, with a grand total of 940 known vertebrate species. It is estimated to possess more than 50,000 species of fungi, 12,000 species of nematodes, 20,000 species of Coleoptera (beetles), and 13,000 species of Hymenoptera (ants, bees, wasps and relatives). The intact altitudinal transect contained within the GCA protects an entire elevational and east-west seasonal migratory route from the Pacific coast to 2000 meters above sea level, from dry forest to cloud forest and down to Atlantic rain forest, which is critical for the range and life histories of many species of animals.

The geological diversity is also of interest. It has 24,000ha of a serpentine barren (peridotite) on the Santa Elena Península, which has existed for more than 85 million years above sea level (Jurassic - Eocene). It has pyroclastic areas in Santa Rosa NP (Miocene) and Pleistocene volcanic complexes in the region of the Orosi and Cacao volcanoes (Guanacaste NP).

### **3. COMPARISON WITH OTHER AREAS**

In summary the GCA can best be compared with other similar areas at worldwide, Neotropical and Mesoamerican (Central America and southern Mexico) levels, as follows:

- ◆ The sample of dry tropical forest protected in the GCA is the third largest in the world, after Kakadu NP in north-eastern Australia and Thungyai-Huai Kha Khaeng Wildlife Sanctuaries in Thailand;
- ◆ The GCA contains a complete dry forest ecosystem. Tropical dry forest is the most severely threatened of all the major tropical habitat types, with less than 0.02% remaining of the tropical dry forest that once constituted more than half of the woody vegetation of the planet's tropical regions. The GCA is the only conserved dry forest in the Neotropics large and contiguous enough to sustain its full complement of species indefinitely; The GCA would be the only World Heritage Site in the Neotropical Realm which protects dry tropical forest;
- ◆ Its 60,000ha of dry tropical forest is the largest and by far the best protected of such forests in the Americas (the coastal and near inland dry and semi-dry tropical coastal and scrub thorn forests of northern Peru and southern Ecuador are fundamentally a different complex than typical dry tropical forests of Central America, plus they have been severely deforested, grazed and/or otherwise disturbed over almost all their extension);
- ◆ All the other protected areas including dry tropical forests of the Central American to northern Mexican type in the region are far smaller in size (circa 5,000ha and smaller), scattered widely and with no biological corridors connecting them, and subject to much greater edge effects;
- ◆ The GCA is the only protected area in all of Central America and southern Mexico which includes a continuous transect from Pacific marine areas, to dry tropical forest, and then with altitudinal variation, a variety of adjacent forests onwards almost to the Caribbean coast (humid forests, cloud forests and wet lowland tropical forests). This 105km long transect is the only one in the region that contains such a broad range of contiguous habitats, with sufficient elevational and climatic diversity to include the ranges of a wide variety of types of seasonally migrating species;
- ◆ This complete altitudinal transect will become even more critical as global warming impacts reach Central America. The heating and drying of the dry forest ecosystem, i.e. a human-generated "desertification" of the western part of the GCA, will mean that a cooler and wetter area (refugia) will be needed to which the dry forest complex of species can retreat in order to survive. The vast majority of protected areas in the tropics do not have such altitudinal gradients and almost certainly will lose many of their ecosystems and complexes of species under current climate change scenarios;

- ◆ There are currently two marine World Heritage Sites in the Neotropical Realm (the Belize Barrier-Reef Reserve System and Cocos Island National Park in Costa Rica). The GCA would add significantly to these areas. In addition, the sea turtle nesting beaches in the GCA are considered of global significance; and the marine zone of the GCA is the most pristine of all the continental coastal marine areas of the Central American and Mesoamerican Pacific region.

The GCA is internationally significant and it represents the only remaining possibility of protecting and conserving a large-sized and ecologically complete dry tropical forest ecosystem (and in contiguous association with its nearby coastal marine and humid montane, cloud and wet lowland Atlantic/Caribbean rain forests) left in the Americas.

#### 4. INTEGRITY

The GCA has the greatest amount of its area in government ownership within Costa Rica. It is noted that some portions of Guanacaste National Park are currently owned by the Costa Rican National Parks Foundation and this is currently being passed to the government. In other words, almost 100% of the terrestrial and all the marine area of the existing, decreed protected areas which make up the GCA are in government ownership.

The one major area (> 15,000ha) still in private hands, which should be added to the GCA sometime over the next 1-2 years, is the Santa Elena Property. This contains unique geological features and a highly conserved dwarf tropical dry forest, which will add significant conservation value to the GCA. The case is now being mediated through an international legal civil process and it appears that it will be resolved favourably.

The borders of the GCA are well-defined, protected and in virtually all areas relationships with bordering land owners are good, or at least civil and peaceful. Moreover the current strategy calls for the current 88,000ha of terrestrial habitat and 43,000ha of marine zone in the GCA to be gradually expanded to approximately 110,000ha of contiguous land and 50,000ha of marine areas. The major addition will be the Santa Elena Property, but negotiations for the Del Oro (1,500ha at present, to be greatly enlarged) and Rincon Rainforests (6,000ha) areas (see Fig. 1) are well advanced.

In general the GCA has widespread and solid local support from its neighbours and the public in general in Guanacaste Province. That in large part is due to the extensive efforts of the GCA to incorporate local leadership into the process of GCA management. A Local Committee was established 10 years ago with a 5-6 representatives of major local social and economic interests as members, along with the GCA's leadership. It mainly acts at advisory level, but does take part in major budget allocations decisions for the overall program. Under the new Biodiversity Law in Costa Rica and other legislation, the Conservation Areas will be required to promote and establish Regional Committees for essentially this same purpose. The GCA will be gradually converting its already well-functioning Local Committee into the Regional Committee. Support also comes from the fact that the GCA is reaching some 2,500 school children in all of the primary schools and several high schools surrounding its borders, with its basic biological/ecological literacy campaigns (Biological Education Program). Moreover, the GCA itself, the extensive biological inventory programs within the area and many visiting scientists which use its five biological research stations, have been providing new sources of employment for a nationally already marginalized region, which also is suffering the effects of a major economic downturn over the past 1.5 decades (due to general collapse of the cattle industry).

In terms of its economic sustainability, the GCA is in far better condition than the majority of protected areas in the developing world. This is due to the strategy and activities of the GCA leadership and its advisors. Its core budget is mostly covered by interest produced from investment of a US\$ 12 million endowment (trust fund), supplemented by user fees for environmental and other services. It also obtains additional funds for specific projects from international and national sources.

This guaranteed income allows the GCA to project at least several years ahead when making plans and strategic decisions as well as effectively plan its annual program of activities. The GCA is actively pursuing alternative revenue generation strategies. It is suggested that the GCA leadership and relevant authorities prepare a revised financial strategy for the next 15-20 year period. If needed, outside specialist advice should be sought.

There appear to be three potential conflicts for future biodiversity and natural resources conservation in the GCA, which have been recognised by the GCA administration and strategies are being developed.

#### (1) Ecotourism

Ecotourism, if planned and managed properly, could become a main economic force in the GCA and its surrounding rural and semi-urban region. Ecotourism is already growing in the region, but most of it is resort beach oriented and the main economic investments and flows are to companies outside of Guanacaste (and partly foreign in many cases). The much smaller part of it is nature tourism to wild areas and for wildlife viewing, and with only very limited local benefits so far, although that is growing slowly. The GCA has begun to promote and facilitate such development and activities with local communities and interest groups through a series of initial contacts, technical meetings and workshops. However, most of its efforts have still been within its protected areas borders, representing a reactive rather than a proactive process. Instead of always trying to “catch up” to commercial development interests (as in the vast majority of Latin American protected areas) the GCA could explore proactively a process of participatory evaluation, design, planning and development of the type of nature-oriented tourism it really wants to offer within the GCA. This also would provide for helping local communities and resource user groups to participate in the entire process, setting realistic goals and gradually developing alternative and supplemental sources of work and income. Relevant experience from elsewhere should also be sought and applied as necessary.

#### (2) Marine Area Use

Harvests of traditional products (snapper mainly, sometimes crabs and other species) by local fisherman are showing decreases in sizes of individual animals and increases in effort required for the same catch. Moreover, outside fishing interests (mainly shrimpers for Punta Arenas, Costa Rica) are causing damage by use of small-mesh nets and resulting capture of a vast array of species which are simply dumped. Conflicts between outside fishing interests and local fishermen are growing. The GCA has established good relations with local fishermen and has started a program of applied research and participation with them. However, these are complex social-economic-ecological problems and trends, without easy prescribed formulas for solution; they are cutting edge. The recommendation is to share information with and study examples of other attempts to deal with similar trends and problems in other areas of the world, in order to get additional input for the development of a comprehensive strategy and process for management of the Marine Area. One suggestion is to explore staff and information exchanges with the Galapagos National Park/Marine Reserve, as well as seek advice from specialists and additional training for GCA marine area staff.

#### (3) Agro-landscape

Use of the land in areas around the GCA protected areas is gradually evolving, due to economic market forces mainly. Large scale extensive cattle ranching is being replaced by smaller scale cattle ranching, large to medium scale tree crops (e.g. citrus juice production) and other forms of agriculture. However, local communities and resource user groups, i.e. some of the main neighbours of the GCA, are still not receiving much technical aid to improve their land and resources use, because the Ministry of Agriculture and others responsible for such are virtually absent in Guanacaste province. The GCA has good relations with those neighbours and is employing some of them in various GCA programs. Likewise, the GCA is creating some new technology through its forestry

work in the Horizontes Forestry Experiment Station. The recommendation is that the GCA become more actively involved in promotion and facilitation of innovative approaches to new land and resource use alternatives in the agro-landscape, where such involvement will result in clear benefits for the values of the GCA, through ensuring compatible land and resource uses around the GCA area.

## 5. ADDITIONAL COMMENTS

In general, management of the GCA appears to be very effective. The limited staff is well-distributed throughout the area, patrolling interaction with neighbours through educational programs and management of facilities and programs for visitors are all extensive. Management is guided by an annual detailed Management Plan (referred to as an Operations Plan). This is a very necessary, well-organised and conducted process. However, there is a need for a longer-term plan, as well as a detailed zoning scheme and process for regular evaluation and revision as conditions change and/or knowledge increases.

The recommendation for approaching both the needs for improved planning and monitoring, which are totally interrelated, is the following: establish a process of regular, medium-term planning, implementation and monitoring, using a method such as Limits of Acceptable Change, or the Recreational Opportunity Spectrum (ROS).

Finally, there are two other issues:

- ◆ That the GCA could be considered to be so well financed, compared to the rest of the conservation areas in SINAC, that it needs no more financial support. This is, of course, not true at all. If other areas have financial problems those will be solved by improving their management capacity and funding support, not by reducing the GCA's management capacities and funding; and
- ◆ That there is a potential risk that designation as a Conservation Area may be translated as meaning that much of the effort must be focused on the agroscape around and between the Protected Areas which make up the GCA, rather than on management and protection of those areas themselves. It is essential to clarify that the primary functions of the conservation areas is conservation of biodiversity for perpetuity. The emphasis in the surrounding agroscares should be to stabilise and improve biodiversity/resources/land uses, in order to decrease pressure on the protected areas and promote peaceful coexistence, not development per se.

## 6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

The nomination in this case complies well with the four criteria established by the World Heritage International Committee because:

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

It contains significant ongoing geological processes and major stages of the earth's history represented by the formations of the Santa Elena Peninsula, the Santa Rosa Plateau (Tableland), and its Quaternary volcanoes, including the thermal features of Rincon de la Vieja volcano.

### **Criterion (ii): Ecological processes**

It demonstrates significant, major biological and ecological processes in both its terrestrial and marine-coastal environments, as exemplified by: a) evolution, succession and restoration of Pacific Tropical Dry Forest; b) altitudinal migration and other interactive biogeographic and ecological processes along its dry forest - montane humid forest - cloud forest - lowland Caribbean rain forest

transect; and, c) the major upwelling and development of coral colonies and reefs in regions long considered to not have either (marine area near the coast of the Murcielago sector of Santa Rosa NP);

**Criterion (iii): Superlative natural phenomena, scenic beauty**

It has significant areas of exceptional scenic beauty such as Cacao Volcano with its lush cloud forests, the rocky coasts of the Murcielago sector of Santa Rosa NP, and large areas of dry forest with their incredible displays of bright flowering trees at certain seasons of the year; and

**Criterion (iv): Biodiversity and threatened species**

It contains important natural habitats for in-situ conservation of biological diversity, including both the best dry forest habitats and communities in Central America to northern Mexico and key habitat for notable threatened or rare animal species such as the Saltwater Crocodile, False Vampire Bat, Olive Ridley Sea Turtle, Leatherback Sea Turtle, Jaguar, Jabiru Stork, Mangrove Vireo, Mangrove Hummingbird, and threatened or rare plant species such as Mahogany, Guyacan Real (*Lignum Vitae*), five species each of rare cacti and rare bromeliads.

## **7. RECOMMENDATION**

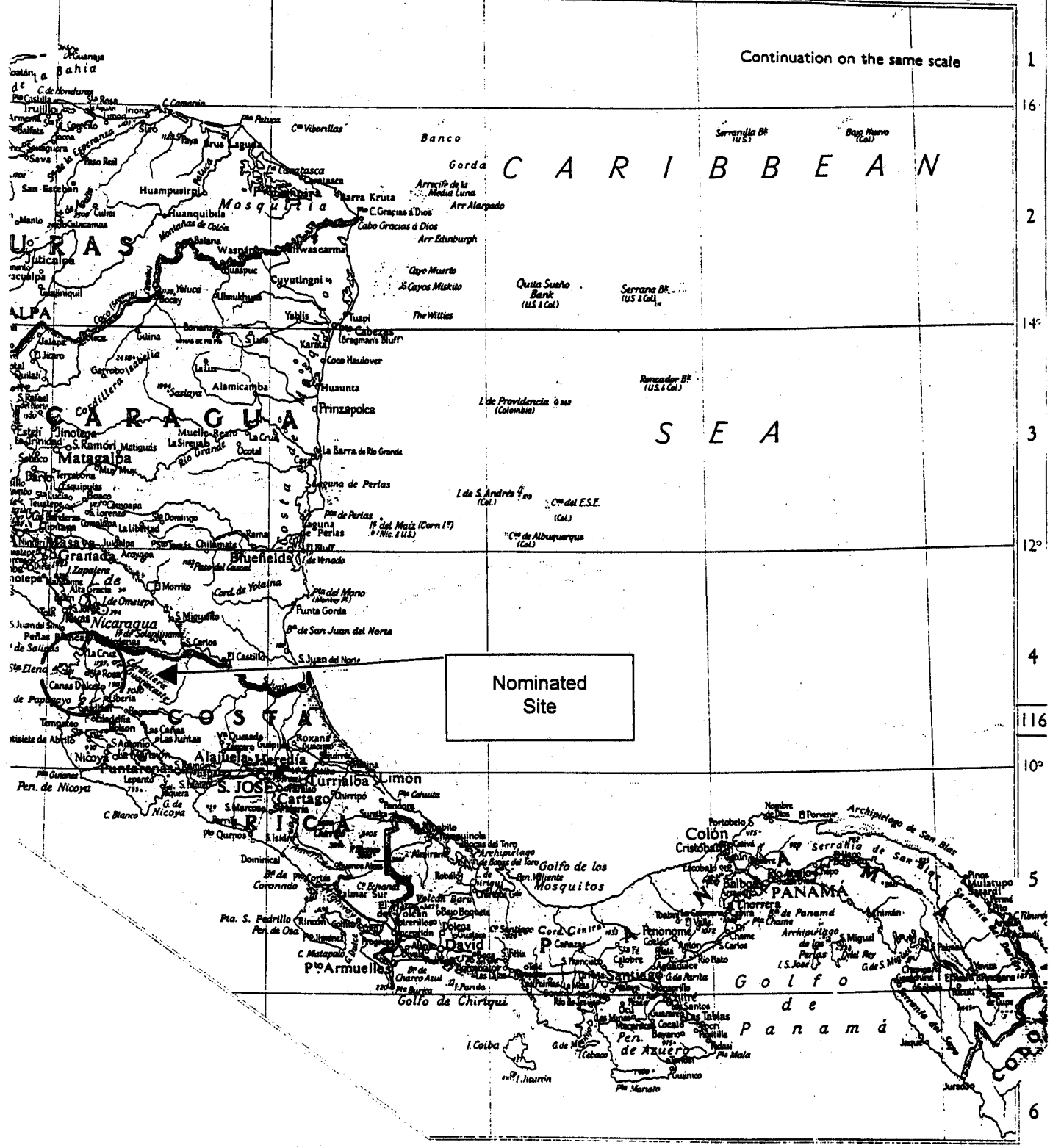
At its twenty-third ordinary session, the Bureau recommended that the Committee **inscribe** the Guanacaste Conservation Area on the World Heritage list under criteria (ii) and (iv).

The Committee may wish to commend the Costa Rican authorities for submitting such a well- and thoroughly-presented nomination and for the overall excellent strategy prepared and well-executed for expanding and consolidating the GCA and its management. At the same time, the Committee may wish to recommend that:

- ◆ GCA authorities place attention on: a) reviewing the long-term financial strategy for guaranteeing further consolidation and long-term management of the protected area; b) refining the planning, zoning and monitoring process for management of the GCA; c) improving marine biodiversity and resources protection and management; d) improving nature tourism development and management in and around the GCA for the benefit of the protected area and local communities/resource user groups; and e) promoting and facilitating improved agro-landscape management; and
- ◆ via legislation, policies, government financial appropriations, international efforts and any other possible means the Costa Rican Government authorities support the GCA's efforts to: a) expand its financial base and broaden its sources of international and national financial and technical support; b) guarantee the consolidation and recuperation of the GCA's contiguous complex of protected areas and biological corridors to ensure its ecological integrity and protection of its biodiversity; and c) promote and facilitate more harmonious land and resource uses in the interstitial areas lying between and around the GCA protected areas (terrestrial and marine).

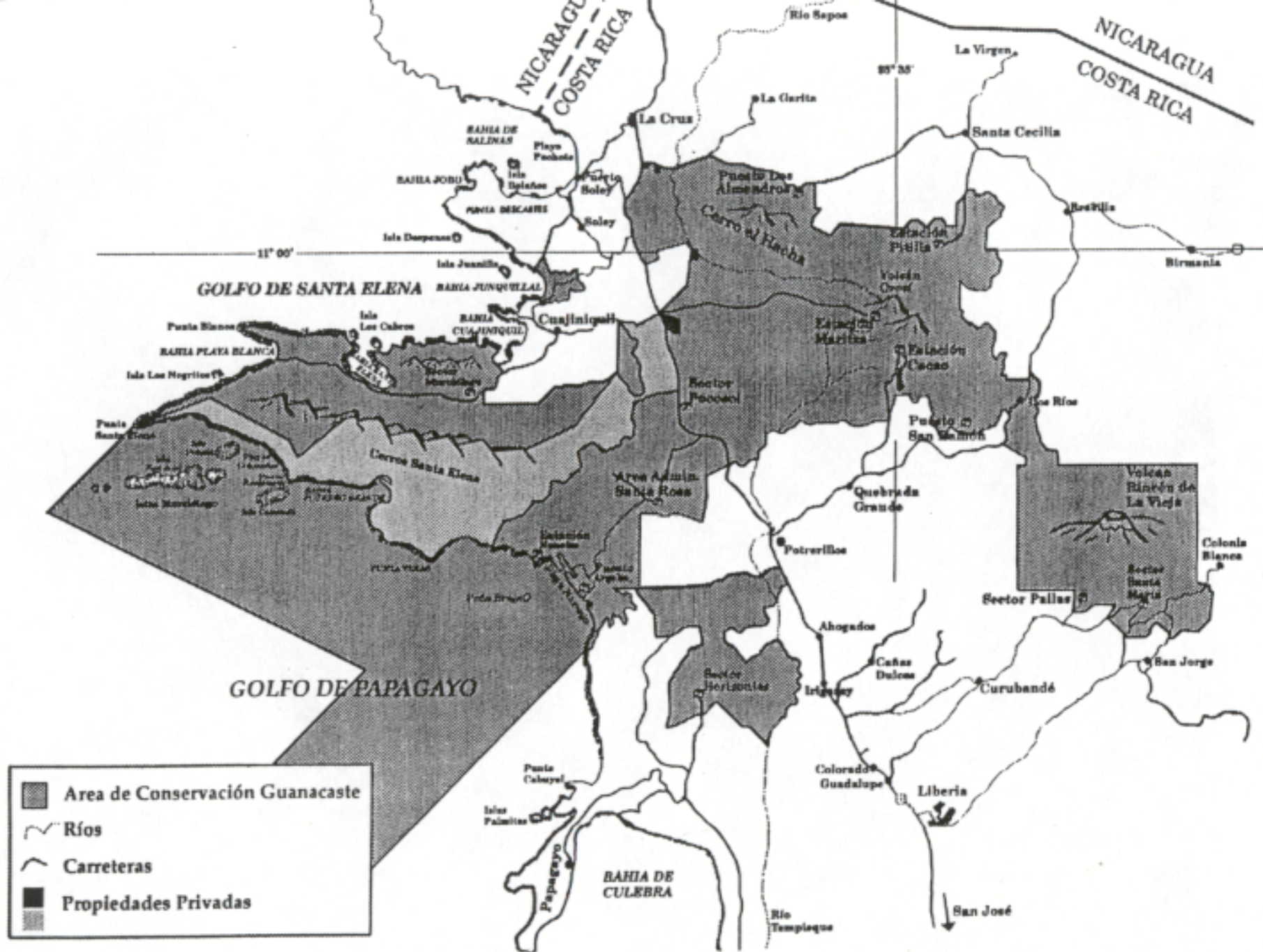
# CENTRAL AMERICA

86° M 84° N 82° O 80° P 78° Q



Map 1. Location of Nominated Site





Map 2. Nominated Site **Current boundaries of the Area de Conservación Guanacaste (ACG) (1998).**