

The National System of Marine Protected Areas in Cuba




CNAR, 2004



e
ENVIRONMENTAL DEFENSE
finding the ways that work





¹ **National Center for Protected Areas**, CNAP, Calle 18 a No 4114 e / 41 y 47, Playa, C. Habana, Cuba.
Tel. 537 2027970, Fax. 537 2040798 Email: cnap@ama.cu

² **University of the West Indies Centre for Environment & Development**, 13 Gibraltar Camp Way, Mona Campus, Kingston 7, Jamaica, W.I.

³ **WWF Canada**, Cuba Field Office, Cooperation Cuba, Museo Natural, Plaza de Armas, Habana Vieja, C. Habana, Cuba.

⁴ **Environmental Defense**, 14630 SW 144 Terr, Miami, FL 33186.
www.environmentaldefense.org/cuba

Design/Editing: Aylem Hernández
Susana Aguilar

Photography: Rafael Mesa (National Aquarium)
Noel Lopez (Azulmar)
Photographic Archives of the National
Center for Protected Areas.

The National System of Marine Protected Areas in Cuba

Authors: **Reinaldo Estrada Estrada¹**
Aylem Hernández Avila¹
José Luis Gerhartz Muro^{1,2}
Augusto Martínez Zorrilla¹
Marvel Melero Leon¹
Michel Bliemsrieder Izquierdo³
Kenyon C. Lindeman⁴



e
ENVIRONMENTAL DEFENSE
finding the ways that work



1. Introduction

The coastal and marine protected areas of Cuba constitute a subsystem within the National System of Protected Areas. The Cuban Subsystem of Marine Protected Areas (SAMP, Subsistema de Áreas Marinas Protegidas) has developed in relatively different manners compared to terrestrial areas, especially in terms of implementation. These differences derive from less relative understanding of marine systems; a deeply-rooted, traditional emphasis on terrestrial areas in Cuba; and the high cost of marine protected area management which, at a minimum, requires vessels, communications equipment, and specialized personnel.

In Cuba, marine protected areas (MPAs) are those protected areas that have a marine or coastal component; this includes coastal wetlands, the submerged coastal zone (mean high water line to a depth of 200 m), and offshore keys. Emergent portions of the SAMP are important but not highly emphasized in the present summary.

2. Evolution of the Cuban Subsystem of Marine Protected Areas

The first proposals for a National System of Protected Areas (SNAP, Sistema Nacional de Áreas Protegidas) date from 1968 and 1973. These were developed by Kenton Miller, FAO consultant at that time (Miller, 1984), and by the Botanical Institute and the Flora and Fauna Commission of the Cuban Academy of Sciences (e.g., work by Onaney Muñiz, Enrique del Risco, and others). Both of the original proposals had almost a complete terrestrial focus, although mangroves, lagoons, and some other coastal ecosystems were included.

During the First National Protected Areas Workshop, held in 1989, a SNAP proposal was developed in a multi-organizational manner for the first time among experts from various national and provincial institutions. Initial discussions of marine areas occurred at this meeting, however, terrestrial and coastal components dominated the proposals. In the Second National Protected Areas Workshop, held in 1995, a total of 535 proposed areas were analyzed and marine components were explicitly recognized as a subdivision of the SNAP. Many of the areas in the current SAMP originally date from this period.

At this stage, considerable information was also provided on marine areas from work at the Institute of Oceanology (IDO), including a proposal to close certain

areas to fishing to ensure sustainable management of Cuban shelf resources (IDO, 1995). This work discussed principals and benefits of fishery reserves and explicitly proposed 18 of them. Of these, 15 areas that achieve protection or conservation objectives for marine species or ecosystems have been incorporated into the SAMP.

At the same time, the Ministry of the Fishing Industry through the Office of Fishing Regulations began the process of declaring "Zones under Special Regimes of Use and Protection". In practice, these zones constitute (and are commonly called) fishery reserves that act as protected areas and have served as points of departure for many Cuban MPAs now officially declared or in the process of being declared (e.g., Jardines de la Reina National Park, Punta Francés National Park, Ciénaga de Zapata National Park, Cayo Largo Ecological Reserve). The fishery reserve at Cayo Doce Leguas, established in 1996 within the Archipiélago Jardines de la Reina in southeast Cuba, is the largest in the Caribbean (Appeldoorn and Lindeman, 2003).

After the 1995 workshop, in consideration of the limited representation of marine areas in the SNAP, the recently created National Center for Protected Areas (CNAP) initiated a planning process for the SAMP that continued in the Third National Protected Areas Workshop (1998), where the marine theme was treated as a program of work. Most of the largely marine areas of the SAMP were included in this last phase as part of the SNAP.

Various national and international courses, including interim meetings for SNAP and SAMP updates, were held in 2000-2001 with support from the United Nations Development Program (UNDP) and the Global Environment Facility (GEF). These courses strengthened the foundation of the system and led to the publication of the 2003-2008 SNAP Plan (CNAP, 2002), where priorities within the SAMP included the delimitation and signage of areas, prevention of pollution, restoration of habitats, and the establishment of regulations for the use and conservation of marine ecosystems.

In May 2003, initial components of an extended gap analysis of the SAMP were completed. Led by IDO and CNAP, with support from WWF Canada and Environmental Defense, this process included a broad array of Cuban scientific institutions and protected area managers. This multi-year process largely validated the existing and proposed SAMP and demonstrated the impor-

tance of using ecoregional planning, cross-shelf habitat classification, geographic information systems, remote sensing, digital cartography, spawning aggregation siting, and decision support systems (Sala et al., 2002; Airamé et al. 2003; Leslie et al., 2003; Roberts et al. 2003) in the design and management of MPAs in Cuba (methods and results will be published separately).

3. Legal Framework

The legal framework used for the Cuban SAMP is similar to the terrestrial system; there are no legal differences between the two systems. The two principal tools include Environmental Law 81, Cuba's framework law for environmental management, and Decree Law 201 for the National System of Protected Areas. Law 81, adopted in 1997, defines the SNAP as an integrated marine-terrestrial system and establishes its objectives and basic principals. Decree Law 201, adopted in 1999, is the primary legal document for the SNAP. It contains formally defined protected area categories (equally valid for land or sea); administrative formulations; mechanisms for proposals and approvals, and guidance for participatory area planning (Appendix 1).

The first group of MPAs was formally declared through Agreement 4262 in 2001 by the Executive Committee of the Council of Ministers (CECM). This Agreement codified a total of 32 protected areas, of which 18 include marine surface waters. Another three MPAs have been declared through other legal instruments not specifically dedicated to protected areas (Appendix 2). A second group of 23 protected areas, where the marine component was one of the most important elements for selection, is currently in its final phase of approval by the CECM; 12 of these are considered to be very important marine areas.

Other legal instruments, many of which are currently in use (such as methodology guides), are in final processes of approval. Instruments related directly or indirectly to the SAMP include portions of the SNAP 2003-2008 Plan, methodologies for the preparation of Management Plans, Operational Plans, and environmental regulations for diving zones and other areas.

4. Management and Planning Principles for the Cuban SAMP

General principles can guide the planning, selection, design and management of terrestrial and marine protected areas (including the establishment of objectives, categories, planning stages, etc.) (Estrada and Perera, 1998; Kelleher, 1999; PNUMA-PAC, 2000). Important marine and terrestrial contrasts that have influenced the early stages of the selection and design of Cuban MPAs include:

- Less relative knowledge compared to terrestrial areas.
- Implementation requires a larger investment.
- The ocean is a public resource.
- Rather than isolation, access is widespread. "Inaccessible places" rarely exist, except in extensive coastal wetlands.
- Low levels of endemism often exist in marine areas (in comparison with terrestrial systems on large islands such as Cuba).
- Use of resources is common within MPAs, yet users often assume significant habitat impacts do not result from their activities.
- Fundamental design principals include conservation biology, metapopulation biology, and landscape ecology, but fishery biology is also extremely important.
- Connectivity and three-dimensional parameters such as depth, currents, and other abiotic factors are also important.

In Cuba, the existence of well-conserved coral formations has been used as a principal guide to establish the more rigorous conservation areas (e.g., IUCN Categories I-IV). Sites critical to significant populations of important species have also been emphasized from both conservation and economic perspectives. Other important elements taken into account include uncommon features such as blue holes and banks off the shelf. In designing boundaries, different ecosystems were often included in order to integrate landscape ecology concepts, with an emphasis on large and well-defined protected areas. It should be noted that on numerous occasions, based on the above ecosystem principles, the origin of specific MPAs was in part based on the extension of existing or proposed terrestrial areas towards the sea.

4.1. Zoning

MPA zoning differs in numerous ways from the zoning of terrestrial protected areas. Zoning approaches in Cuba, established by K. Miller, recognize important differences for marine areas. The concept of public use is intrinsic to the entire area and to socioeconomic use (Miller's "socioeconomic zone"). This also extends to the ocean, including uses typical of Miller's non-consumptive "public use zones" and consumptive "zones of socioeconomic use". These zones are not clearly distinguished in many MPAs but are represented by a combination of zones that include basic types, gradients, and restrictions on the intensive use of resources. In particular, this includes uses such as fishing (recreational, commercial, traditional, catch and release, trawling, etc.), diving, snorkeling, water sports, and swimming areas.

Given the differing challenges in the case of marine areas, some types of zones can overlap and can include temporal zones with specific prohibitions and restrictions. In addition, as part of the concept of zoning, conservation zones, core zones, "no take" areas, or marine reserves are important areas where conservation restrictions on traditional extractive activities are strong, and only scientific and non-consumptive activities are permitted.

Zoning helps to partially resolve the old and continuing SLOSS debate (Single Large or Several Small protected areas) and other similar issues. In many cases, a combination of relatively large areas of differing categories can be established (e.g., IUCN categories II to VI). Another option is to establish zones that correspond to no fishing zones or conservation zones (for IUCN categories II to IV), or individual protected areas within IUCN categories V to VI.

4.2 Integrating Networks and Connectivity

The theoretical conceptualization of the SAMP also requires recognition of complex macro-scale issues. These include the interconnections between terrestrial and marine ecosystems (commonly viewed in terms of watersheds and wetlands) and issues specific to purely marine habitats. Consideration is being given to connectivity between marine populations and the potential to build a network of interconnected MPAs through knowledge of oceanographic processes, larval dispersal, and spawning aggregations (Claro and Lindeman, 2003). These and additional issues, such as resilience in the face of climate change, are being considered within sev-

eral components of SAMP design in order to produce the most robust system feasible.

5. Conservation Goals

In the national protected area plan (CNAP, 2002), the following goals are established for the Cuban SAMP:

- Represent at least 15% of the Cuban insular shelf.
- Represent at least 25% of the coral reef areas.
- Represent at least 25% of each subtype of wetland for each wetland region.

In the process of completing a gap analysis of the SAMP, several goals have been organized and refined into the following groups:

- Protect outstanding land- and sea-scapes, and representative samples of marine-coastal biodiversity.
- Contribute to the sustainable management of fisheries.
- Represent the most outstanding geographical features of the marine-coastal zone of Cuba, as well as historical and cultural values.

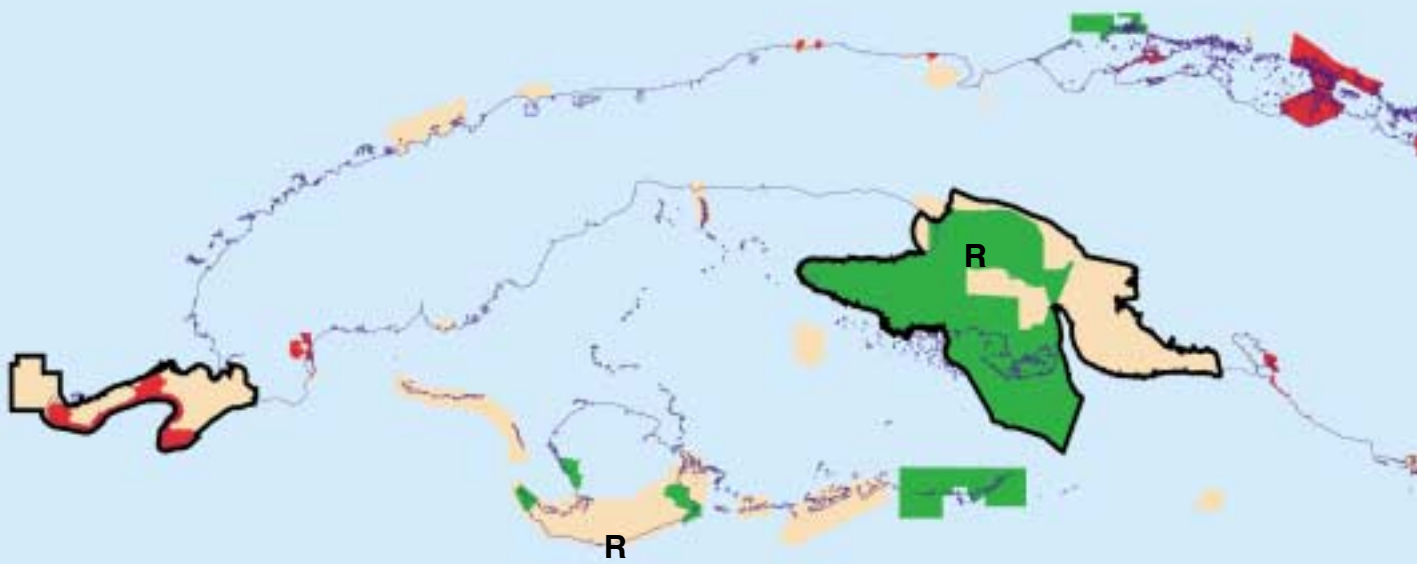
6. Current Status of the Cuban SAMP

Twenty-one coastal and marine protected areas have already been legally declared with thirteen more in the final approval process by the CECM. There are a total of 108 proposed marine protected areas in the 2003-2008 SNAP plan (CNAP, 2002). Of these areas, 85 contain marine surface waters, representing 21.9% of the Cuban insular shelf (Table 1). Forty-four of these, representing approximately 20.2% of the shelf, are considered to have national significance due to their marine biodiversity value. The remaining 32 are of local significance and represent 1.7% of the shelf. Of the 21 currently approved marine protected areas, 18 contain marine surface waters (10 with national and 8 with local significance, together representing 3.5% of the Cuban shelf) and 3 are emergent coastal areas. Of the 13 MPAs in the final approval process, 12 contain marine surface waters (11 with national and 1 with local significance, representing 7.1% of the insular shelf), with some areas also including waters off the shelf (68,610 ha) (Table 1).

Of the 34 total areas that are approved or are in the final approval process, 30 of these contain marine surface waters that represent 10.5% of the Cuban insular shelf. This figure represents 56.61% of the proposed extent of the SAMP (without considering one specific cat-



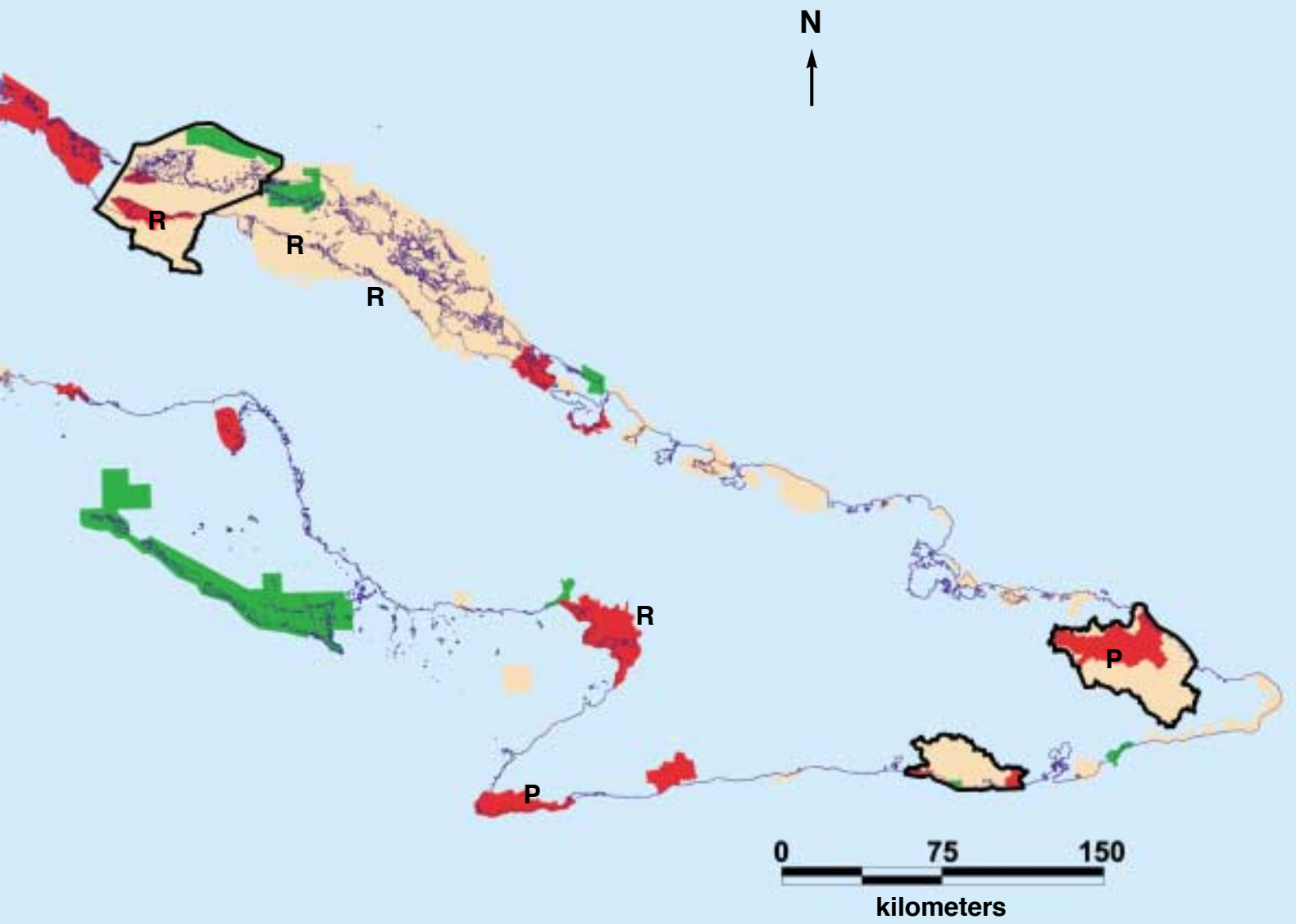
CUBAN NATIONAL SUBSYSTEM OF MARINE



LEGEND

- Proposed Marine Protected Areas
- Approved Marine Protected Areas
- Marine Areas in Process of Approval
- Biosphere Reserves
- P** World Heritage Sites
- R** RAMSAR Sites

PROTECTED AREAS





egory of protected areas – the APRMs, Appendix 1 and Table 1). Within this group, it is worth highlighting the biodiversity value, size, and importance of the Jardines de la Reina (Gardens of the Queen) National Park and the Ciénaga de Zapata (Zapata Wetlands) National Park, two of the most important MPAs in Cuba. Other very important marine and coastal national parks include Punta Francés, Guanahacabibes, and Caimanes. Important Faunal Refuges include Lanzanillo-Pajonal-Fragoso, Cayos Las Picúas-Cayos del Cristo, Río Máximo and Delta del Cauto.

None of these marine areas are yet comprehensively managed, although many are supported through international projects (WWF Canada, GEF, PNUD, Havana-Ecópolis, HIVOS, Environmental Defense, and others), which make it possible to conduct basic management tasks (construction of management plans, personnel for basic enforcement and control of public use). However, adequate means still do not exist for thorough marine enforcement, research, or monitoring.

The majority of the remaining proposed areas currently exist only on paper. Many of these, especially those six areas that are almost totally marine and are located relatively far from the coast, do not yet have clearly defined limits.

A special protected area classification, related to IUCN category VI, is the Special Regions of Sustainable Development (REDS) category. This type of protected area contains extensive areas of high economic and conservation interest. It includes the two largest archipelagos in Cuba (Sabana-Camaguey and Canarreos) and Ciénaga de Zapata (the largest wetland in the insular Caribbean) which was approved as a REDS on January 23, 1995 under Decree-Law 197.

To optimize organizational interactions, a process is underway to establish a SNAP Coordination Board. This is a collaborative organ that is directed by CNAP and includes the six most important decision-making institutions of the SNAP (CNAP, Fishery Regulations Office, State Forestry Service, National Enterprise for Flora and Fauna, Corps of Forest Wardens, and Directorate of the Environment). The approval and planning of protected areas occurs through a participative process, including federal and provincial agencies, local communities, and relevant socio-economic groups (e.g., fishermen) through formal and informal meetings, negotiations, planning workshops, conflict resolution, and education.

7. The Cuban SAMP in an International Context

Two of the World Natural Heritage Sites declared in Cuba by UNESCO have marine components that were not previously considered important for WHS declarations. These sites are the Desembarco del Granma National Park (declared in 1999) and the Alejandro de Humboldt National Park (declared in 2001).

In 2001, Cuba joined the Convention on Wetlands of International Importance, commonly referred to as the Ramsar Convention. The first Ramsar site to be declared in Cuba was the Ciénaga de Zapata due to its classification as the largest and best conserved wetland in the insular Caribbean. In 2002, five new areas were incorporated: Río Máximo Faunal Refuge, Delta de Cauto Faunal Refuge, Gran Humedal del Norte de Ciego de Avila, Ciénaga de Lanier y Sur de la Isla de Juventud, and Humedal Buenavista, all of which represent important components of the SAMP.

Of the six Biosphere Reserves declared in Cuba, five include marine or coastal areas. Three of these include marine-coastal ecosystems of very high importance: Ciénaga de Zapata, Buenavista, and Guanahacabibes. The other two marine-associated Biosphere Reserves are Cuchillas del Toa and Baconao.

8. Future Activities

A number of projects are underway to improve the Cuban SAMP, including:

- a) The multi-year marine gap analysis is near completion, including ecoregional planning, comprehensive datalayer assembly, and decision support modeling. To date, this process has validated the existing and proposed SAMP coverage and established a number of recommendations which will allow new areas to be identified and existing areas to be improved by refining boundaries, zoning, areas of coverage, and management priorities.
- b) A proposal is underway for the inclusion of Ciénaga de Zapata National Park and the Coral Reef System of the Cuban Caribbean (SACC) as World Natural Heritage Sites. The SACC will consist of 11 MPAs that are approved, in the process of approval, or proposed. At a UNESCO MPA forum in Vietnam in March 2002, experts supported the preliminary proposal for these areas to be declared a World Heritage Site. Cuba offi-

cially presented the proposal to UNESCO in early 2003 to include in the tentative list of World Natural Heritage Sites, a key step needed for official proposal and approval as a World Heritage Site.

- c) Work to apply a bioregional focus to the protected area system has been completed, including the possible declaration of new Biosphere Reserves and Ramsar sites.
- d) Plans are now being evaluated for new protected areas beyond the insular shelf to protect offshore waters within the Exclusive Economic Zone. Until now, such plans have only focused on protected areas within shallow submerged banks that are relatively close to the insular shelf.
- e) Within the SNAP plan, a search for international funding is a high priority to assist efforts to best plan and implement Cuban marine protected areas give the high costs of development and management.

Appendix 1. Management Categories

In Cuba, Article 5 of Decree Law No. 201/99 for the National System of Protected Areas establishes eight management categories, similar for both terrestrial and marine areas:

- 1) Natural Reserve (RN, Cat. I IUCN)
- 2) National Park (PN, Cat. II IUCN)
- 3) Ecological Reserve (RE, Cat. II IUCN)
- 4) Outstanding Natural Element (END, Cat. III IUCN)
- 5) Managed Floral Reserve (RFM, Cat. IV IUCN)
- 6) Faunal Refuge (RF, Cat. IV IUCN)
- 7) Protected Natural Landscape (PNP, Cat. V IUCN)
- 8) Protected Area for Managed Resources (APRM, Cat. VI IUCN)

In Article 3 of Decree Law 201, the following levels of classification were established:

- Protected Areas of National Significance (APSN): because of their importance in terms of conservation, uniqueness, complexity, representation, or other outstanding elements, these areas are considered of international, regional or national importance and constitute the fundamental nucleus of SNAP.
- Protected Areas of Local Significance (APSL): because of their size, frequency, or level of conservation, these areas are not classified as having national significance.

- Special Regions of Sustainable Development (REDS): large regions with sensitive ecosystems of economic and social importance; these areas require national attention and coordination in order to achieve conservation and sustainable development.

Appendix 2. Marine and coastal protected areas approved by Agreement 4262/2001, Executive Committee of the Council of Ministers.

National Parks (Province):

- Caguanes (Sancti Spiritus)
- Guanahacabibes (Pinar del Río)
- Desembarco del Granma (Granma)
- Alejandro de Humboldt (Guantánamo y Holguín)
- Turquino (Santiago y Granma)

Ecological Reserves:

- Hatibonico (Guantánamo)
- Siboney – Justicí (Santiago de Cuba)

Managed Floral Reserve:

- San Ubaldo – Sabanalamar (Pinar del Río)

Faunal Refuges:

- Lanzanillo – Pajonal – Fragoso (Villa Clara)
- Delta del Cauto (Granma y Las Tunas)
- Río Máximo (Camagüey)
- Cayos de Ana María (Ciego de Ávila)
- Las Picúas – Cayo del Cristo (Villa Clara)
- Guanaroca – Gavilanes (Cienfuegos)
- Las Loras (Villa Clara)
- Cinco Leguas (Matanzas)
- Tunas de Zaza (Sancti Spiritus)
- Cayo Ballenato y manglares de la Bahía de Nuevitas (Camagüey)

Three other MPAs have been declared by other legal instruments:

Ecological Reserve:

- Bacunayagua (Matanzas)

Faunal Refuge:

- Laguna del Cobre – Itabo (C. Habana)

Protected Natural Landscape

- Rincón de Guanabo (C. Habana)

Table 1. National Subsystem of Marine Protected Areas in Cuba¹.

	All Protected Areas		Protected Areas of National Significance Only		Protected Areas of Local Significance Only		Total Area	
	Number	Area on Insular Shelf	Number	Area on Insular Shelf	Number	Area on Insular Shelf	Area off the Insular Shelf	Total Insular Shelf + Off-shelf Area
Approved MPAs	18	198,934 ha 3.5 %	10	189,705 ha 3.3%	8	9,229 ha 0.16%	7,095 ha	206,6029 ha
MPAs in the Process of Approval	12	404,673 ha 7.1%	11	404,423 ha 7.1%	1	250 ha 0%	68,610 ha	473,283 ha
Subtotal: Approved MPAs and MPAs in the Process of Approval	30	603,607 ha 10.5%	21	594,128 ha 10.42%	9	9,479 ha 0.17%	75,705 ha	679,312 ha
Proposed MPAs (Without APRM) + Approved MPAs and MPAs in the Process of Approval	75	796,311 ha 14.0%	37	699,762 ha 12.3%	29	96,549 ha 1.7%	115,309 ha	911,620 ha
Proposed MPAs (With APRM) + Approved MPAs and MPAs in the Process of Approval	85	1 249,971 ha 21.9%	44	1 151,362 ha 20.2%	32	98,609 ha 1.7%	217,871 ha	1,467,842 ha

¹ Emergent coastal protected areas not containing marine waters are not included. Due to the integration of marine and coastal ecosystems within the Cuban SAMP, there are 108 MPAs in total (85 with marine surface waters + 23 with emergent coastal areas; the latter are not included in this table). All table entries are current as of March 2004. Areas were calculated by spherical method using Mapinfo 6.5 GIS, based on suitable digital cartography (protected areas) and GEOCUBA cartographic base (1:250,000 for Cuba). Areal extent: Cuba = 11,000,000 ha. Insular shelf = 5,700,000 ha (to the 200 m isobath).

Literature Cited

- Asamblea Nacional del Poder Popular. (11 de Julio de 1997). *Ley No. 81 del Medio Ambiente*. Gaceta Oficial de la República de Cuba. Edición extraordinaria. Número 7. AÉo XCV.
- Airamé, S. et al (2003). *Applying ecological criteria to marine reserve design: a case study from California Channel Islands*. Ecological Applications. 13(1):475-510.
- Appeldoorn, R.S. and K.C. Lindeman. (2003). A Caribbean-wide survey of marine reserves: spatial coverage and attributes of effectiveness. *Gulf and Caribbean Research* 14(2):139-154.
- Bustamante, G. (2001). Potential World Natural Heritage Sites: filling critical gaps and promoting multi-site approaches to new nominations of tropical coastal, marine and small island ecosystems. UNESCO World Heritage Center, Paris.
- Centro Nacional de Áreas Protegidas. (2000). *Marco Legal. Sistema Nacional de Áreas Protegidas. Cuba. CNAP. AMA. CITMA*. 46 Pp.
- Centro Nacional de Áreas Protegidas (CNAP). (2002). *Sistema Nacional de Áreas Protegidas, Cuba. Plan 2003-2008. CNAP. 202 pp*.
- Claro, R. and K.C. Lindeman. (2003). Spawning aggregation sites of snapper and grouper species (Lutjanidae and Serranidae) on the insular shelf of Cuba. *Gulf and Caribbean Research* 14(2):91-106.
- Comité Ejecutivo del Consejo de Ministros. (1 de febrero del 2001). *Acuerdo 4262. Declaración de Áreas Protegidas*.
- Consejo de Ministros. (24 de diciembre de 1999). *Decreto Ley No. 201 del Sistema Nacional de Áreas Protegidas. Gaceta Oficial de la República de Cuba. Número 84. Año XCVII. Pp. 1355 – 1363*.
- Estrada, R.E. and Perera, A. (1998). *Determining significance of protected areas in Cuba. Intern. Journ. Wilderness*, 4(2):13-16.
- Instituto de Oceanología (IDO). (1995). *Propuesta de áreas vedadas de pesca, para el manejo sostenible de los recursos de la plataforma cubana. Ministerio de Ciencia, Tecnología y Medio Ambiente, Habana, Cuba*.
- Kelleher, G. (1999). *Guidelines for marine protected areas. IUCN, Gland, Switzerland, and Cambridge, UK. 107 pp*.
- Leslie, H. et al. (2003). *Using siting algorithms in the design of marine reserve networks. Ecological Applications* 13(1):185-198.
- Miller, K. (1984). *Planificación de parques nacionales para el ecodesarrollo en latinoamérica. Fundación para la Ecología y la Protección del Medio Ambiente (FEPMA). 500 pp*.
- PNUMA -PAC. (2000). *Manual de capacitación en el manejo de areas marinas protegidas. Bayahibe. República Dominicana.. 63 Pp*.
- Roberts, C.M. et al. (2003). *Application of ecological criteria in selecting marine reserves and developing reserve networks. Ecological Applications*. 13(1):215-228.
- Roberts, C.M. et al. (2003). *Ecological criteria for evaluating candidate sites for marine reserves. Ecological Applications*. 13(1):199-214.
- Sala, E. et al. (2002). *A general model for designing networks of marine reserves. Science Vol 298. 6 December:1991-1993*.



Printed on 100% recycled paper using soy-based ink.

National Center for Protected Areas

Calle 18A N° 4114 e/ 41 y 47. Playa. Ciudad de La Habana, Cuba

Tel: 2027970

Fax: (537) 204 0789

e-mail: cnap@ama.cu

