Protected Areas: Benefits to Islanders

BY PEDRO ROSABAL

The idea of putting aside areas to be maintained over time for the protection of nature or some of its components, such as wildlife, is in fact an old concept. In 1240, under the reign of Abou Zakaria, a member of the Hafside dynasty, a number of game reserves were created and protected in Lake Ichkeul, Tunis, which continued to be managed during the times of the Ottoman Empire in the Twentieth Century, and that today form part of Ichkeul National Park. The Greeks and Romans were, perhaps, the first to formally establish protected areas. In the Natural History, written by Caius Plinius Secundus, actions are described which were taken by the Roman Empire to control special areas with a view of preserving wildlife. Special

The establishment of marine protected areas are receiving increased attention in a number of regions such as in the Caribbean as a mechanism to address the conservation of marine biodiversity from threats such as pollution and over exploitation of fisheries.

mention should be made of the *hima* system, drawn up under Islam as a legal framework with continues to rule the management of protected areas for the benefits of communities (Rosabal 2003). However it is correct to say that the protected areas¹ movement in its modern form is associated to the establishment of the firsts National Parks in the United States of America, particularly Yosemite National Park, which origins go back to 1864, and Yellowstone National Park, established in 1872 and considered as the "father" of many National Parks worldwide (Phillips 2002).

The global network of protected areas has grown from over 1,000 protected areas in the 60's to an impressive number of 102,102 sites in 2003, covering 18.8 million km² (IUCN and UNEP-WCMC, 2003) an area larger than that of India and China combined. This total area represents 11.5% of the global land surface but only includes 0,5% of the world's oceans. This impressive

political commitment to conserve the Earth's remaining biological diversity but also the high social and cultural values that societies place on them.

¹ IUCN, The World Conservation Union, adopted the following definition "Area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means" (IUCN, 1994).



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Another important issue was also evident during the Vth IUCN's World Parks Congress, held in Durban, South Africa, 8-17 September 2003: the increasing recognition of the many benefits provided by protected areas to society. The theme of the Congress "Benefits beyond Boundaries" focused the debate on the contribution of protected areas to people through the provision and maintenance of environmental goods and ecological services. As noted in the Durban Accord "...we see protected areas as a vital means to achieve the synergy between conservation, the maintenance of life support systems and sustainable development. We see

protected areas as providers of benefits beyond boundaries —beyond their boundaries on a map, beyond the bound-

Scuba diving is a major recreational activity in many island's protected areas, being in some cases a key source of income for the economy. (Photo of Pedro Rosabal taken by José Martins in Fernando de Noronha Marine Park, Brazil). aries of nation-states, across societies, genders and generations" (IUCN 2003).

Protected areas play an important role in biodiversity conservation, as recognised in article 8 of the Convention on Biological Diversity (CBD), but also they contribute to the achievement of globally agreed goals, such as the targets agreed by the World Summit on Sustainable Development and the Millennium Development Goals, particularly goal 7 on ensuring environmental sustainability. Protected areas are also a key component of National Biodiversity Strategies and Action Plans (NBSAPs) that



The Exuma Cays Land and Sea Park, Bahamas, in replenishing fish stocks in waters around the park thus playing a crucial role to maintain sustainable fisheries. The Park also attracts a number of visitors, many of them willing to contribute to its conservation through donations.

have been prepared by almost all countries signatories of the CBD. Moreover the role of protected areas is particularly important when considered in the context of Islands as they have to respond to key challenges associated to islands ecosystems such as: (a) isolation; (b) high vulnerability to natural and human-induced disturbances; (c) dynamic environments; (d) high demand for limited available resources, mainly for land and water; (e) species diversity is generally low and species turnover may be high, making them vulnerable to accelerated extinctions; (f) normally they are rich in endemic spe-

cies which increase their conservation values, and (g) high ratio of shoreline to total land area, particularly in small islands (Salm and Clark, 1984).

Indeed islands ecosystems deserve particular attention in relation to conservation priorities. Just few facts: (a) from the 234 Centres of Plant Diversity and Endemism 19 (8% of the total) are located in Small Islands States (WWF and IUCN, 1997); (b) some islands have remarkable high percentage

of endemism of vascular plants, such as the island of Saint Helena and the Hawaiian islands, each with 83.3% of endemism, quite remarkable considering that Australia has the highest percentage (95.4%) of endemism (WWF and IUCN, 1997); (c) from the top 50 countries with highest number of global threatened species of birds 7 (14%) are in Small Islands States, and some islands have high percentage of threatened species in relation to their total birds population, such as Pitcairn Islands (42%), French Polynesia (38%) and Cook Islands (26%) (Birdlife International, 2000); (d) from the total number (76) of Endemic Birds Areas of the World of critical priority for conservation, 22 (29%) are in islands (Stattersfield and Crosby 1998); (e) from the global 200 ecoregions more important for biodiversity conservation 22 (11%) are associated to islands (Olson and Dinerstein 1998), and; (e) coral reef ecosystems, one of the most productive ecosystems on Earth and the second after rainforests in species richness, are associated to islands, for example only the Insular Caribbean Region contains over 11% of the world's reefs (Spalding et al 2000).

Recognising the importance of protected areas national governments, NGOs and other stakeholders, have made great efforts in establishing them over the years. When looked at the evolution in the establishment of protected areas in Small Islands States over the past decade (see Table 1) it is extremely encouraging to see that the total number of protected areas have increased from 137 to the impressive number of 1037. The extension covered by those areas has increased 300% from that existing in 1993. This is an impressive achievement of Small Islands States and represents a strong commitment to conservation. It is also important to note the shifting in priorities in the establishment of different categories of protected areas. While in 1993 emphasis was given to the establishment of Nature Reserves, Wildlife Sanctuaries and National Parks (according to 1978's IUCN Categories for Protected Areas). Since then more attention has been giving in establishing Managed Resource Protected Areas (Category VI, IUCN 1994) which allows for the multiple use of natural resources within those areas.

When considering that establishing and managing protected areas demand important financial and human resources the key question is whether or not is it worthy, particularly considering other pressing socioeconomic and development priorities faced by national governments. Some examples may help to address this key question.



Environmental education and awareness campaigns are delivered to people visiting many of the protected areas and other natural environments in the Bahamas.



In the Pacific Island of Samoa consultation with village's council was essential to promote the establishment of small fish reserves to address the decline in catches of seafood from coastal areas.

Protected Areas and their Benefits to Islanders

Humanity is facing one of the most important challenges of all times: how to deal with the socio-economic, cultural and environmental Expanding population, growing resource consumption, climate change and globalization are among the forces altering the context within which society develops. All these changes require adequate long-term responses that, in addition to priorities associated with economic development, poverty alleviation, health and education, placed additional burden on national governments. While for some people investments in protected areas can be seen as a "luxury" these investments are in fact of paramount importance if we acknowledge that our social, economic and ecological long-term well-being depends upon the continued ability of protected areas to deliver ecosystem goods and services for the benefit of people. There are a number of cases that can substantiate that investing in island's protected areas would result in the delivery a variety of benefits, not only to islanders

but also to the global community.

factors associated with global change?



Saltworks areas (Las Salinas) of Ibiza are of international importance for migratory birds and also used for environmental research, education and awareness programmes.



The protected areas existing in Ibiza and Formentera are also of crucial importance to maintain significant areas of Mediterranean forest.

Contributing to sustainable fisheries:

Bahamas: The Exuma Cays Land and Sea Park (45,620 ha) was established in 1958 covering both the terrestrial and marine environments associated to these islands. The Park became a no-take fisheries reserve in 1986, the first of its kind in the Wider Caribbean region and one of the first's nontake marine reserves worldwide. Research has shown that the concentration of conch in the park is 31 times greater than outside the park, providing several million conchs per year to areas outside the park available to be harvested by fishermen. Additionally, tagged grouper from the Exuma Park have been caught off of both north and south Long Island (Bahamas), indicating the Park is replenishing grouper stocks in areas as far as 150 miles away. Tagged spiny lobsters from the Exuma Park are found replenishing the marine environment of Cat Island, which is 70 miles away. The success of fisheries resource replenishment in the Exuma Park led the government to announce a policy decision in 2000 to protect 20% of the Bahamian marine ecosystem, doubling the size of the national protected areas system (WCPA News 2002).

St Lucia: In 1992 the Soufriere Regional Development Foundation (a community-based NGO) the Department of Fisheries and the Caribbean Natural Resources Institute (CANARI) initiated a participatory process to design a coastal zone system that could respond to increased –and often conflicting-demands on fisheries, tourism, and maritime

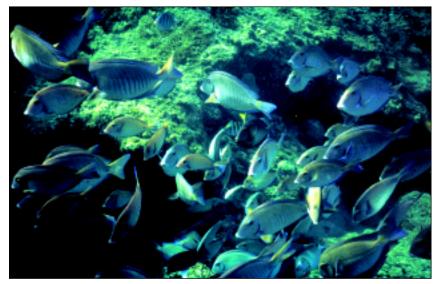
transportation. The zoning resulting from this initiative was the Soufriere Marine Management Area, formally established in 1995, which includes four marine reserves covering 35% of available fishing grounds. Research indicates that conservation these areas have increased by 46% for large fish traps and 90% for small fish traps in 5 years (Australian Department of the Environment and Heritage 2003).

Samoa: In the Pacific Island of Samoa, like in many countries in the tropics, catches of seafood from coastal areas, lagoons and inshore reefs have been decreasing over the past 10 years. Reasons for this decline include over-exploitation, the use of destructive fishing methods (including explosives, chemicals and traditional plant-

derived poisons) and environmental disturbances. In order to address this problem the Samoan Fisheries Division initiated in 1995 a community-based extension project in 65 villages which recognised the village fono (council) as the prime responsible for actions. A large number of villages (38) choose to establish small Village Fish Reserves in part of their traditional fishing areas and decided to actively support and enforce government laws banning the use of explosives and chemicals for fishing. Some villages also set minimum size limits for capturing fishes. While many of the village reserves are small (ranging from 5,000 to 175,000 m²), their number and the small distance among them, forms a network of fish refuges. After several years of existence of this network of small Fish Reserves the fisheries stocks have increased in 30 to 40% and there are signs of recovery in reefs previously affected by destructive fishing methods. As the Fish Reserves are being managed by communities which have direct interest in their success, prospects for longterm sustainability of this initiative are high (King and Faasili 1998).

Supporting recreation and tourism:

Virgin Islands: The Virgin Islands National Park experiences and average of 650,000 recreational visits per year with approximately 70 commercial businesses providing daily excursions, mainly to cruise ship passengers,



Atoll das Rocas it is also an important site for the conservation of the marine environment in the South Atlantic and it constitutes a source for replenishment of fish stocks in the waters surrounding it.

to key areas within the park. Tourism visits for the entire U.S. Virgin Islands increased from 470,300 in 1991 to 592,000 (close to 26%) in 2001. The financial revenue associated to the recreational use of the park is one of the most important sources of income for the population of the islands and also contributes financially to the conservation and management of the park (WCPA-Caribbean 2003).

On-going research of the state of conservation and dynamics of the Posidenia prairies in Ibiza and Formentera, Spain, has been fundamental to explain the importance of this ecosystem to ensure the long-term sustainability of traditional fisheries and to maintain coastal dynamics.



TABLE 1 - Comparison of Protected Area Coverage for Small Islands States for the last decade

Country					rage for Small Islands States for the last decade												
Country	No.	1993 Extensio	sion		Categories			No.of	Extension			2000	Ca				
	of Pas	(ha)	- 1	II	III	IV	٧	Pas	(ha)	la	lb	П	III	IV	٧	VI	None
Antigua & Barbuda	2	6.128		2				13	6.628			5		3	3		2
Bahamas	10	124.364	1	4		5		38	145.838	1		10		27			
Barbados	0	0						6	270	1		1	1	3			
Belize	14	323.121	3	4		7		84	1.242.118	3		23	3	28	2	19	6
Cape Verde	0	0						51	1.415								51
Comoros	0	0						1	40.400			1					
Cook Islands (New Zealand)	1	160				1		5						1		- 1	3
Cuba	53	892.757	9	9		15	20	69	3.317.550		2	28	1	20	6	12	
Cyprus	4	75.337		1		3		13	78.849		1			6	3		3
Dominica	1	6.872		1				7	20.395			3			1	3	
Fiji	5	18.922	5					36	29.589	12			1	2			21
Fed. States of Micronesia	0	0						2									2
Grenada	0	0						2	728							- 1	1
Guinea-Bissau	0	0						6									6
Guyana	1	58.559		1				3	486.000			2		1			
Haiti	3	9.700		2			- 1	9	7.354			2			6		1
Jamaica	1	1.520		1				168	994.728			1	1	2	2	137	25
Kiribati	3	26.630	2			1		11	58.841	4			6				1
Maldives	0	0						25									25
Malta	0	0						114	6.331	5	54	4	45	4	1	1	
Marshall Islands	0	0						0	0								
Mauritius	3	4.023				3		26	16.158	1		2		22			1
Nauru	0	0						0	0								
Niue (New Zealand)	0	0						1	5.400							1	
Palau	1	1.200			1			14	1.459			4	1	0	1	1	7
Papua New Guinea	5	82.016		3		2		64	1.083.845			3		2		24	35
Samoa (Western)	3	10.072		1		2		14	25.522			2		5	1	2	4
Singapore	1	2.796				1		7	4.029			3	1	2			1
Seychelles	3	37.893	1	2				21	45.228	4	1	7				8	1
Sao Tome and Principe	0	0						0	0								
Solomon Islands	0	0						3	9.860							- 1	2
St. Kitts and Nevis	1	2.610		1				2	2.625		2						
St. Lucia	1	1.494				1		49	9.861		1	1	1	29		17	
St. Vincent & the Grenadines	2	8.284				2		28	8.284					25			3
Suriname	13	735.970		2		11		15	1.981.220			2		10		3	
Tonga	0	0						10	3.727			1		5	1	- 1	2
Trinidad and Tobago	6	15.728	1			5		86	32.243	4		1	5	14		- 1	61
Tuvalu	0	0						1	3.300							- 1	
Vanuatu	0	0						33	18.265							1	32
Total:	137	2.315.664	22	34	1	59	21	1.037	9.688.060	35	61	106	66	211	27	235	296

Note: The preparation of the UN List of Protected Areas in 1993 only considered areas under Categories I to V of the 1978's IUCN Management

Categories System, but the 2003 UN List of Protected Areas consider all Categories I to VI of the 1994's IUCN Management Categories System. Areas under "None" refers to small protected areas which categorization do not correspond to any of thze IUCN Management Categories, most of them are community-owned areas. (Table prepared by Virginia Tschopp, Programme Assistant, IUCN Protected Areas Programme)

Sources: 1993 UN List of Protected Areas (UNEP, WCMC and IUCN, 1994) and 2003 UN List of Protected Areas (UNEP-WCMC and IUCN, 2003)



In Cuba a number of micro-reserves have been established to protect endemic species of flora, such as in Hatibonico, south-eastern coast of Cuba, well known for its richness in endemic species of cactuses.

Bonaire: The Bonaire Marine Park (2,700 ha) was created in 1979 covering all reef areas around the island. While the resident population of the island is less than 15,000 inhabitants, almost 17,000 to 20,000 scuba divers visited the park every year, thus representing the main economic activity of the island. Total gross revenue through dive-based tourism was estimated at \$US 23.2 million in 1991. The government also generated an additional \$340,000 through taxes levied on visiting divers. The cost associated with the establishment of the park (\$US 518,000) and the recurrent cost associated to its management (\$US 150,000) was more than covered by visitor fees. The park also generates employment to over 1,000 people. By 1994 the number of divers increased to 24,081 and the total annual visitation was of about 70,000 (Australian Department of the Environment and Heritage 2003).



Lobsters, an important commercial specie throughout the Caribbean, also benefits from the protection offered by the Exuma Cays Land and Sea Park to the marine environment.

Merrit Island National Wildlife Refugee: Located at Cape Cañaveral, Florida, USA, contains two areas, with a total extension of 4,000 ha, that have been closed to fishing since 1962. Before these areas were closed, there was intensive commercial and recreational fishing and fish stocks were heavily depleted. The value of this reserve for the adjacent recreational fishery has been assessed by the number of record-size ('trophy') fish caught by recreational fishers. The area enclosing 100 km to the north and south of the reserve was found to provide 62% of record-size black drum, 54% of red drum and 50% of spotted sea trout. Fish tagging studies show that these species move out of the reserve and into the surrounding waters benefiting the adjacent recreational fishery (Australian Department of the Environment and Heritage 2003).

Maintaining biodiversity at different levels:

The Ngerukewid Islands Wildlife Preserve of Palau: Created in 1956 this wildlife preserve of 1,200 ha protects a representative sample of the limestone islands and lagoon ecosystems of the larger Rock Islands of Palau, which boast exceptional levels of marine biodiversity. Biodiversity surveys carried out in the Preserve show that contains 200 to 300 fish species, or 15-20% of the approximately 1,400 species reported for Palau's waters. It also protects 22% of all the species of hard coral reported in Palau. The pristine conditions of the islands due to almost half a century of protection, combined to the relative lack of introduced species such as rats, make this area a unique natural laboratory to study the terrestrial and marine biodiversity and ecological processes occurring in the Pacific, thus constituting an important baseline area for biodiversity research and for assessing the impacts of climate change to Pacific islands ecosystems (Idechong and Graham 1998).

Fernando de Noronha National Marine Park and Atoll das Rocas Biological Reserve: There are less than 10 oceanic islands in the South Atlantic and these two areas combined represents more than 50% of the South Atlantic Ocean's islands in terms of terrestrial surface, thus constituting an

important repository for the maintenance of biodiversity in the South Atlantic basin. The vegetation of Fernando de Noronha is classified as Insular Atlantic Forest, a sub-type of Atlantic Rainforest, considered the world's most threatened tropical forest (Conservation International 1995). F. de Noronha is also considered a Global Centre of Bird Endemism (Birdlife International 1998). Approximately 150,000 birds utilize Atoll das Rocas, including the largest South Atlantic colonies of sooty terns, brown noddies and masked boobies. Based on the diversity and number of individuals, Atoll das Rocas is considered the single most important site for tropical seabirds in the whole Atlantic (Stattersfield and Crosby 1998). There is a clear connection between these sites in relation to biological and ecological processes. They are clearly linked in a marine ecological corridor on which a number of species such as marine turtles, dolphins, and sharks survival depends. In the case of marine turtles research indicates that both sites are important feeding grounds for juvenile hawksbill and loggerhead sea turtles during their migration to the Eastern Atlantic Coast of Africa (Sanches and Bellini 1998). In recognition of the outstanding universal values of these Brazilian sites for global biodiversity conservation they were inscribed in 2001 in the List of UNESCO's World Heritage Convention (Rosabal 2001).

System of Micro-Reserves of Cuba: One of the key contributions from islands to the theory and practice of conservation is related to the importance of considering the appropriate "scale" to plan and manage protected areas. While it is true that larger areas can enhance the effectiveness of conserving species and ecosystems, this is extremely difficult to achieve in islands where land is a precious resource for social and economic development. Besides, many species living in islands ecosystems are endemics or restricted-range species. A number of islands states have adopted the "micro-reserve" approach by which small sites –ranging from 10 to little over 1,000 haare dedicated to conservation of these species. Such is the case of Cuba, an archipelago characterized by a complex geological structure, which have influence the high level

of endemism of its flora (49.6%). Since the beginning of the 60's close to 100 microreserves have been established in Cuba for protects its rich flora and some restrictedrange species of fauna. These small areas have contributed to the in-situ conservation of these species which is often combined, particularly for plant species, with ex-situ conservation programmes. Most of these reserves are managed by local governments, universities, and provincial botanical gardens and they have been used for environmental education and awareness programmes, thus providing cultural benefits for the communities living around them and particularly for children and the youth.

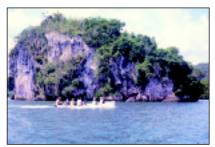
Promoting participation, partnerships and awareness:

Negril: In this area, located in the Western Coast of Jamaica, local concern about rapid and unplanned tourism development resulted in the establishment of local environmental NGOs, formed by key local communities representatives and other stakeholders, with worked together to establish a Marine Park. It soon became clear, however, that the park by itself could not maintain Negril's marine resources unless the land-based impacts upon them could be controlled. This led to local advocacy for a protected area comprising the entire Negril watershed and coastal zone, resulting in the Negril Environmental Protection Area in 1997 (equivalent Category VI, IUCN). While management of the area is implemented by a range of government agencies, activities such as research, monitoring, and environmental education, are under the responsibility of the Negril Environmental Education Trust, a consortium of local and national government agencies, local community associations and NGOs. The Trust have been very successful in raising awareness of local communities on key environmental issues facing Negril and in mobilizing actions by tour operators and other local partners, to support the management of the Marine Park (Geoghegan and Renard 2002).

Misali: This is one of the two main islands that make up Zanzibar, in the United Republic of Tanzania. The Misali Island Marine Conservation Area, which an exten-

sion of 2,200ha, was established in 1998. This Conservation Area protects some of the finest coral reefs in the Indian Ocean. At the time of its establishment the area's natural resources were threatened by overfishing and unplanned tourism development. Promoting with local communities the idea of establishing a protected area using "conventional" conservation arguments was not well understood and did not receipt the support required. However the strategy was soon changed to promote the protected area based on the customary Shariah (Islamic Law) as a means for nature conservation and sustainable development. This received immediate attention and support by the overwhelmingly Muslim population living in the island. Under the Shariah the protected areas was designated as a hima (an area strictly protected equivalent to IUCN Category I). As a result the Marine Conservation Area received the support of local communities that, since its creation, have been actively involved in its conservation and management. This approach not only provided direct benefits to the local communities through increased fishing catch and the development of ecotourism operations, but also contributed to expand the teaching of the Islamic approach to conservation in schools and mosques helping to create further environmental awareness on the values -ethical, ecological and economic- of protected areas (Chernela, Ahmad et al 2002).

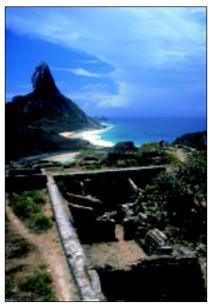
Ibiza and Formentera: There is a combination of terrestrial and marine protected areas in these islands, which form part of the Balearic Islands, Spain. The terrestrial component mainly includes the coastal lagoons and saltworks areas (Las Salinas) of Ibiza and Formentera which were included in the List of Wetlands of International Importance (Ramsar Convention) in 1993 in recognition of their importance for migratory birds. The marine component includes the open sea between these islands and it is characterized by the presence of dense and very well preserved prairies of oceanic Posidonia (seagrass) and coral reefs. While both islands and particularly Ibiza are well known as an important tourist destination in Spain, their natural values, for which they were included in the List of UNESCO's World Heritage Convention in 1999, are less understood. In order to address this challenge a number of environmental education and interpretation projects are under implementation supported by national and local governments and a coalition of institutions including the University of Madrid, the University of Valencia and the Ecological Group of the Balearic Islands. These projects also include



Ecotourism is receiving increased attention as an important source of income for local and national economies in island states, such as in the Dominican Republic, where it is one of the main activities occurring in Los Haitises National park.



Research on marine turtles undertaken by the TAMAR project in Fernando de Noronha has shown the importance of this area as feeding grounds for juvenile hawksbill and loggerhead sea turtles during their migration to the Eastern Atlantic Coast of Africa.



Fernando de Noronha National Marine Park in Brazil it is not only protecting areas of high biodiversity values but also important cultural and archeological sites.



Atoll das Rocas Biological Reserve in Brazil is considered the single most important site for tropical seabirds in the whole Atlantic.

on-going biological monitoring and research, which have been fundamental to demonstrate the benefits of protecting the prairies of oceanic Posidonia to maintain the exceptional conditions of transparency and unpolluted waters that attract many visitors and divers. The *Posidonia* prairies are also crucial to maintain the quality of the beaches while offering coastal protection from storms. Results from research are also systematically

communicated to local people, particularly to fishermen groups and diving operators, who recognize the importance of protecting these areas to ensure the long-term sustainability of traditional fisheries and tourism activities (Rosabal 1999).

Final remarks

By no means has this article intended to summarize all benefits derived from protected areas to people and society in general. As mentioned above this was the theme of the Vth World Parks Congress where a wealth of experiences were presented, ranging from the contribution of mountain protected areas to maintain hydrological regimes and water quality, to the role of protected areas in climate change mitigation strategies (key outputs from the Congress are already posted at http://www.iucn.org/themes/wcpa/wpc2003/; the full proceedings would be available at this site by end of December 2003). However, the examples presented in this article, help to acknowledge and understand the key role of protected areas in contributing to the well-being of islanders. Understanding this role is particularly important in the context of the Convention on Biological Diversity as the key international instrument to ensure continue provision of ecosystems services by ensuring the conservation and sustainable use of biological diversity. The author also wanted to highlight what is not so often obvious: that small things can make big differences. Thus, island's protected areas, while smalls, are making a huge contribution not only to islanders but to the global community as well.

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Protected Areas are also essential to maintain remnants of natural ecosystems almost in pristine conditions such as those preserved in Desembarco del Granma National Park and World Heritage site in Cuba.