

ANNEX F: BIODIVERSITY VALUES

**TABLE 1:
PROTECTED AREA CATEGORIES IN THE CUBAN PROTECTED AREAS SYSTEM**

IUCN CATE- GORY	SNAP CATEGORY	PROTECTED AREAS (National importance)		PROTECTED AREAS (Local importance)		ACTIVITIES ALLOWED
		Estab.	Prop.	Estab.	Prop.	
I	Natural Reserve	0	3	0	5	Scientific research only; public access is restricted. No inhabitants allowed.
II	National Park (generally larger areas)	7	8	0	0	Recreational uses, education, species management and environmental rehabilitation; subsistence uses of wild resources are allowed as long as they are compatible with management objectives. Inhabitants prior to formal recognition are permitted, following this no new settlers. Core areas are defined for strict conservation.
	Ecological Reserve (smaller areas)	2	24	0	5	
III	Natural Outstanding Element (usually a geological formation)	1	5	0	29	Only those activities that do not harm the attribute to be protected. In general, research and managed tourism are permissible. Once formally declared no new inhabitants.
IV	Fauna Refuge (to manage a particular species)	4	4	7	38	Only those activities that do not harm the attribute to be protected (i.e. scientific research, education etc.). In general, research and recreational use, in addition to intensive management interventions to protect target species or ecological communities. Once formally declared no new inhabitants.
	Managed Flora Reserve (to manage particular plant communities)	4	6	3	69	
V	Protected Natural Landscape	0	2	1	15	Productive activities and traditional land uses that do not adversely affect aesthetic values. Inhabitants permitted outside core area.
VI	Managed Resource PA	0	10	3	8	Area managed to provide flow of ecological goods and services to meet community needs. Inhabitants permitted outside core area.
	TOTAL	18	62	14	169	

TABLE 2
FLORISTIC DISTRICTS, PLANT FORMATIONS, LOCAL ENDEMIC AND PROTECTED AREA
REPRESENTATION PER ECOREGIONS

Ecoregions & Biodiversity priority ¹	Area (Km ²)	Floristic districts	Diversity of endemic Plants		# Plant formations & local endemics	Protected areas	
						Proposed	Existing
CUBAN MOIST FOREST PRIORITY I	20 750	Los mogotes de Los Organos	245	72	16/980	12	11
		Sierra del Rosario	332	42			
		Colinas de La Habana – Limonar	197	31			
		Distrito Guamuhaya (Escambray)	286	86			
		Sierra de Nipe	549	105			
		Sierra de Cristal	464	50			
		Colinas del borde septentrional del Valle Central	29	1			
		Distrito central de montañas septentrionales Oriente	327	39			
		Distrito Serpentinias de Moa – Baracoa	976	373			
		Distrito Sierra de Imías	61	3			
		Distrito de Baracoa	105	19			
		Distrito montañoso Cordillera del Turquino	426	139			
		Promontorios de la Sierra Maestra	127	14			
		Distrito de la Gran Piedra	105	6			
	TOTAL OF DISTRICTS		14				
CUBAN DRY FOREST PRIORITY I	69 738	Península de Guanahacabibes	106	14	11/452		
		Los mogotes de Los Organos	245	72			
		Sabanas centromeridionales de Pinar del Río	204	12			
		Anafe	50	4			
		Meseta de Cajalbana	220	51			
		Colinas de La Habana – Limonar	197	31			
		Zapata	78	6			
		Distrito costero de Trinidad	122	22			
		Distrito de Motembo	67	10			
		Llanura centro occidental	230	20			
		Distrito Serpentinias de Santa Clara	92	10			
		Distrito serpentinias de Camagüey	133	10			
		Distrito serpentinias de Holguín	105	19			
		Llanuras y colinas de Cuba centro - oriental	215	25			
		Distrito de la costa norte Bahía de Nipe - Cebollas	82	3			
		Costas y cayos septentrionales de Cuba central	237	51			
		Colinas/borde septentrional del valle central Oriente	29	1			
		Valle central de Oriente	111	11			
		Distrito meridional de la isla de la Juventud	68	3			
Distrito costero Media Luna/Cabo Cruz/Baconao	261	44					
Colinas de Bahía Honda – Cabañas	80	12					

¹ From Dinerstein et. Al, 1995

Ecoregions & Biodiversity priority ¹	Area (Km ²)	Floristic districts	Diversity of endemic Plants		# Plant formations & local endemics	Protected areas		
						Proposed	Existing	
		Costa norte de Habana – Matanzas	164	18				
		Distrito Sierra de Imías	61	3				
		TOTAL OF DISTRICTS	23					
CUBAN PINE FOREST PRIORITY I	5 735	Sabanas de arenas blancas	130	24	7/886			
		Alturas de Pizarras	68	12				
		Los mogotes de Los Organos	245	72				
		Sabanas centro meridionales de Pinar del Río	204	12				
		Meseta de Cajálbana	220	51				
			Sierra del Rosario	332	42			
			Sierra de Nipe	549	105			
			Sierra de Cristal	464	50			
			Distrito central de las montañas septentrionales	327	39			
			Distrito Serpentinadas de Moa	976	373			
			Distrito de Baracoa	105	19			
			Arenas Blancas (Los Indios - Sigüanea)	130	24			
			Distrito Central de la isla de la Juventud	150	13			
			Sabanas de arenas blancas	229	50			
		TOTAL OF DISTRICTS	14					
CUBAN WET LAND PRIORITY I	11 752	Sabanas de arenas blancas	229	50	9/248	19	7	
		Sabanas centromeridionales de Pinar del Río	204	12				
		Zapata	78	6				
		Llanura centro occidental	230	20				
		Llanuras y colinas de Cuba centro - oriental	215	25				
		Costas y cayos de septentrionales de Cuba central	237	51				
		Arenas Blancas (Los Indios - Sigüanea)	130	24				
		Distrito meridional de la isla de la Juventud	68	3				
		Distrito Central de la isla de la Juventud	150	13				
		Distrito costero Media Luna - Cabo Cruz - Baconao	261	44				
		Cayeria Meridional	2	0				
		TOTAL OF DISTRICTS	11					
CUBAN XERIC SHRUB PRIORITY IV	2 360	Distrito xerofítico de la costa meridional Maisi	371	91	6/94	6	2	
		Distrito Sierra de Imías	61	3				
		TOTAL OF DISTRICTS	2					

TABLE 3

SPECIES DIVERSITY, ENDEMISM NUMBER OF THREATENED SPECIES FOR DIFFERENT TAXA IN THE SEVEN SELECTED PROTECTED AREAS

TAXA		SELECTED PILOT AREAS				
		Dry Forest	Pine Forest	Wetlands		Moist Forest
		Guanahaca-bibes NP	Viñales NP	Cienaga de Zapata NP	Pico Cristal ²	Alejandro Humboldt
MAMMALS	Total spp. registered.	18	9	16	11	15
	Endemic spp. (genus)	2	3	4 (2)	5 (3)	3 (3)
	# threatened species	2	1	1	1	2
BIRDS	Total spp. registered.	140	44	218	73	95
	Endemic spp. (genus)	9	7	18 (18) ³	13 (13) ⁴	16 (16)
	# threatened species	7	3	13	5	8
REPTILES	Total spp. registered.	35	23	37	28	41
	Endemic spp. (genus)	19 ⁵	7	21 (12)	10 (5)	35 (11)
	# threatened species	5	2	5	1	1
AMPHIBIANS	Total spp. registered.	16	14	11	14	25
	Endemic spp. (genus)	14	5	7 (2)	9 (2)	24 (2)
	# threatened species	1	1	0	0	2
HIGHER PLANTS	Total spp. registered.	800	801	1040	219	1372
	Endemic spp. (genus)	89 (1)	234 ⁶ (90)	130 ⁷ (40)	117 (50)	905 (400)
	# threatened species	15 ⁸	85	14	6	32
TOTAL FOR THESE TAXA PER PARK	Total # species	1009	891	1322	345	1548
	Total Endemics	133	256	180	154	983
	Total threatened	30	92	33	13	45

² One of the least studied areas of Cuba – figures are incomplete

³ 3 species endemic to the Zapata swamp

⁴ In addition to these endemic bird species, Pico de Cristal has a further 18 endemic sub-species

⁵ One species locally endemic

⁶ 59 of these species are endemic to the park

⁷ 6 plant species endemic to the park and buffer zone (Oviedo, 1995)

⁸ This figure currently under revision, may be amended to 39

TABLE 4: DESCRIPTIONS OF SELECTED PILOT PROTECTED AREAS

MAIN CHARACTERISTICS		SELECTED PILOT PROTECTED AREAS PER ECOREGION ⁹				
		Dry Forest	Pine Forest	Wetlands	Moist Forest	
		Guanahacabibes	Viñales	Ciénega de Zapata	Pico Cristal	Alexander von Humboldt
Vegetation formations	Dry Forest including some evergreen, semi-deciduous and mangrove forests, swamps and matorral	Pine Forest	Wetland: Swamp grasslands, mangrove forests.	Moist Forest, Evergreen forest, Montane rain and cloud forests, some pine forest.	Moist Forest Low, sub-montane & montane rain forests, low cloud forests, matorral, mangrove	
Uniqueness	Important migratory bird habitat. One of the three most important centres of plant diversity and endemism on the island	High invertebrate diversity; 90% molluscs endemic	15% of total Cuban forest cover Largest wetland complex in the Caribbean islands. Critical over wintering site for migratory waterfowl. Critical habitat for the only endemic crocodile of the Caribbean. Only area in which the 8 endemic bird genera of Cuba co-habitat. Habitat to one of the largest aquatic bird communities in Cuba..	Possibly among the most diverse flora in Caribbean (little studied region), great diversity of micro-climates. Habitat to endangered Cuban Solenodon.	One of the largest national parks in Cuba. 2% of global flora species found here, among the greatest levels of endemism in the world. Habitat to endangered Cuban Solenodon.	
Representative Flora Endemic species (indicator species in bold)	<i>Hibiscus grandiflorus</i> <i>Goerciella minima</i> <i>Cayaponia excisa</i> <i>Acalypha nana</i> <i>Belairia parviflora</i>	<i>Microcycas caclocoma</i> <i>Gaussia princeps</i> <i>Ardisia mogotensis</i> <i>Psidium vicentinum</i> <i>Pilea sumireroensis</i>	<i>Ilex nitida</i> <i>Belairia savannarum</i> <i>Acacia zapatensis</i> <i>Phoradendron lapatanum</i> <i>Calyptantes peninsularis</i>	<i>Coccothrinax rigida</i> <i>Buxus ekmani</i> <i>Crossopetalum cristalense</i> <i>Erythroxilum flavicans</i> <i>Ossaea micarensis</i>	<i>Dracaena cubensis</i> <i>Euphorbia helenae</i> <i>Pinguicula lignicola</i> <i>Ossaea pulchra</i> <i>Guatteria cubensis</i>	
Representative Fauna Endemic species (indicator species in bold)	<i>Anolis quadriocelifer</i> (local endemic anole) <i>Cyclura nubila</i> (Cuban iguana) <i>Capromys pilorides</i> (Cuban Hutia) <i>Columba leucocephala</i> (White Crowned Pigeon) <i>Mellisuga helenae</i> (Bee Hummingbird)	Snails genus <i>Viana</i> Snails genus <i>Liguus</i> <i>Myadestes elisabeth</i> (Cuban Solitaire)	<i>Crocodylus rhombifer</i> (Cuban Crocodile) <i>Ferminia cerverai</i> (Zapata Wren) <i>Cyanolymnas cerverai</i> (Zapata Rail) <i>Amazona leucocephala</i> (Cuban Parrot) <i>Parulidae sp</i> (Migratory warblers)	<i>Solenodon cubanus</i> <i>Eleutherodactylus iberia</i> <i>Chondrohierax wilsonii</i> <i>Polymita sp</i>	<i>Solenodon cubanus</i> <i>Eleutherodactylus iberia</i> <i>Chondrohierax wilsonii</i> <i>Polymita sp</i>	

⁹ These Cuban ecoregions follow the classification under Dinerstein 1995 and have been classified as globally significant

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		Guanahacabibes	Viñales	Cienega de Zapata	Pico Cristal	Alexander von Humboldt
PHYSICAL	Park Area (km ²) ¹⁰	238.8 km ²	111.2 km ²	1,082 km ²	185.4 km ²	711.4 km ²
	Buffer zone limit & area	500m 117 km ²	500m 38.2 km ²	300m 91 km ²	500m	1km, 5m
	Topography	Flat	Mogotes (haystack hills to 600 m)	Flat	Mountainous, to 1,231 m	Mountainous, to 1,200m.
OPERATIONAL	Year created ¹¹	2001	2000	1980	1998	2001
	Responsible Institution	ECOVIDA	ECOVIDA	MINAGRI	ENPFF (MINAGRI)	CITMA agency
	Management plan	Under prep.	To 2001	To 2002	Under prep.	Ready in 2003
	TOTAL STAFF	30	11	57	116	74
	# technical ¹²	22	2	21	1	20
	# in administration	4	2	6	1	10
	# forest guards	4	7	30	16	28
	# workers ¹³	0	0	0	98	16
	Infrastructure:					
	Admin	0	0	1	0	4
	Control posts	2	0	3 & 2 fluvial	0	0
	Research	1	0	1	2	0
	Interpretative/educ.	0	0	3	0	0
	% state owned land	100	92.6	100	?	95
Inhabitants in park	40	322	0	28	3,360	
Inhabitants in Buffer	118	2,448	960	62	1,380	
# visitors in 2000	5,000 ? ¹⁴	1,600 (420) ¹⁵	3,500 ?	n.a.	655 ?	

¹⁰ Includes only terrestrial portion of the park

¹¹ May indicate year a PA was legally recognized OR year park administration was created. CZ was set up in 1996 (UNEP) and legally recognized as multi use PA in 1995; GU was set up as the previous Gran Parque Siera Maestra –encompassing much of Desembarco del Granman Nat'l Park and legally recognised 2001; UNEP 1996

¹² Includes scientific and environmental education staff

¹³ Full and part time, local residents. They carry out general labour, forest management, erosion prevention works, construction. A large proportion may be dedicated to raising crops and livestock to provide food for PA staff and workers.

¹⁴ Indicates no distinction between foreign and national visitors

¹⁵ For period Jan-April 2001

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		Guanahacabibes	Viñales	Ciénega de Zapata	Pico Cristal	Alexander von Humboldt
SOCIO- ECONOMICO	Municipalities and Provinces	1 (1)	1 (1)	2 (1)	4 (2)	4 (?)
	% park cultivated, grazed	?	< 7.3	?		2.4
	Sectoral plans in buffer of adjacent areas	Forestry, Hotel development, Control & monitoring	Hotel development and expansion plans, forestry	Ecotourism development plan.	Tourism plan for nearby coastal region, outside park.	Industrial plans (mining)
	Particularities	Major dive centre. Park is nucleus of Guan. Biosphere Reserve	5 star hotel opening up soon, imp. tourist area. Day trip from Havana.	Forms part of the Zapata Biosphere Reserve, easily accessible from Varadero, Havana.	Coffee and chocolate plantations within park.	Tourism growth in Baracoa possible source of future impacts. Chrome mining interests.

ANNEX G: THREATS TO BIODIVERSITY IN CUBA, ROOT CAUSES AND MANAGEMENT SOLUTIONS

Cuba is well recognised as harbouring biodiversity of outstanding global significance. Four of its five terrestrial ecoregions are ranked amongst the highest priorities for conservation at a regional scale due to their high species richness, endemism and vulnerability (Dinerstein et al, 1995). Anthropogenic disturbances, particularly in the nineteenth and early twentieth century have resulted in large-scale alteration of the natural landscape and an estimated 15% of the original flora and 41% of the vertebrate fauna have been extinguished, or rendered endangered, threatened or vulnerable (WWF 1997). The Cuban Government has made concerted efforts to protect remaining natural habitats. The first protected areas were declared in the 1930's. Renewed vigour was applied in post-revolutionary Cuba, demonstrated by intensive reforestation campaigns and the creation of additional protected areas leading to the creation in 1995 of the National Protected Areas Centre (CNAP) which currently supervises matters regarding protected areas planning and management.

The PA System presently comprises 80 sites of national importance, and 183 sites of local importance, within eight management categories, corresponding to the six categories in the IUCN classification system. It has provided substantial protection to a wide range of natural habitat stands, and the pressure on the biodiversity within these appears to have declined in the course of the past six years. Nevertheless, a number of threats to this biodiversity persist both within areas and from their surrounding buffer zones. These include continued habitat loss from traditional and commercial agriculture in buffer areas and in some cases within protected area boundaries, over-harvesting of some species through poaching and illegal extraction, water pollution, bio-invasion, visitor use and infrastructure development, fire and mining. Although the magnitude and determinants of these proximate threats vary greatly from area to area, in general their impact on biodiversity is currently low. The potential of negative impacts in the long term is, however, much higher and action is required to ensure that these threats are removed before such damage occurs. These proximate threats are described generically in the following matrix together with their root causes and actions required to alleviate them. The generic description reflects the overall set of threats to PAs, and was drawn from a more in-depth assessment of five selected national PAs. The matrix also includes the specific nature of threats in each selected pilot area and their actual and potential magnitudes.

In addition to the range of specific root causes for each proximate threat a common determinant – or critical root cause - has been identified that greatly exacerbates the potential future impact of these threats on biodiversity. This critical root cause is the current sub-optimal level of operations of the protected area system as a whole and of the individual sites within it. Though actions are planned to deal with the proximate threats at the site level, unless the results of these actions and the lessons learned at these sites can be assumed by the system in general, and replicated to other sites facing similar threats, the initial investment will not be optimised. In addition, the national system and its components must be active and influential participants in overall policy formulation processes within the Cuban government for their concerns to be properly aired, discussed and incorporated into national policy development processes. In view of the critical nature of this determinant, section A of the following table focuses on the organisational, management and operational barriers that hamper the effectiveness of the national effort to set up and operationalise a functioning protected areas system. Possible actions required to overcome these barriers are then described.

ROOT CAUSES OF BIODIVERSITY LOSS IN CUBA'S PROTECTED AREAS

A: CRITICAL ROOT CAUSE - SUB -OPTIMAL OPERATION OF PROTECTED AREAS SYSTEM.

Prior to 1997, the Cuban natural protected areas system consisted of an informal collection of often ill-defined parks, managed by local authorities and, in the case of larger parks, managed by the Ministry of Agriculture, under no overall conservation principles. In 1997, the Environment Law (Law 81) was passed, proposing the assembly of parks under an organised, nation wide network of protected areas called the National System of Protected Areas (SNAP). But it was not until the passing decree law 201 in 1999 that a structured framework of protected areas was presented. Under this framework, selection criteria and management objectives for each of the eight categories of protected areas were defined. To date, 75 of the original 232 protected area candidate sites have been ratified by the Cuban Executive Council of Ministers, most of these in recent years, and many in December 2001. Most of Cuba's remaining biodiversity can be located within this system. The National Centre for Protected Areas (CNAP) was created in 1995 to oversee the development and management of this rapidly expanding SNAP. One of its main responsibilities is to ensure that adequate planning and monitoring of individual protected areas takes place. To carry out its functions, the CNAP must work closely with individual sites. However, beyond a few exceptions, protected area managers at the site level, though dedicated and enthusiastic, lack adequate training, tools and staff to carry out effective planning and management activities. Several important protected areas (including Guanahacabibes and Viñales National Parks) have only recently had professional staff appointed, and in very small numbers. Typically, infrastructure is inadequate, or lacking completely, and communications from the protected area to provincial and national offices is difficult. No formal SNAP-wide planning process exists, leading to wide variations in style and quality of planning documents. Clearly, the CNAP and the SNAP are recent creations and though they have made great strides, they remain in the initial stages of the development of a truly national and effective system of protected areas management. Until the CNAP and SNAP constituents overcome these significant barriers, the growth and maturity of an organisational and operational framework for the conservation of globally significant biodiversity in Cuba will be delayed and the proximate threats listed in part B of this table would be allowed to grow in scope and importance.

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| <ol style="list-style-type: none"> 1. The recently created lead institution for the protected areas system (CNAP) does not have the full range of tools sufficient to establish regulations and management standards throughout the system for each management category or to approve management plans and to audit their implementation 2. Management operations at a site level are performed by several different agencies and the corresponding differences in backgrounds, institutional cultures and training is leading to different approaches to biodiversity management and poor co-ordination undermining efficiency 3. The recent nature of the protected areas system is concomitant with still incipient awareness of the general public & local communities regarding the existence of the system, its individual sites & the values that these are conserving including both ecological services & those related to biodiversity 4. Annual budgetary appropriations for protected areas are not always in line with biodiversity conservation priority needs as not all protected areas have up-dated and clear management plans or the capacity to prepare these appropriate management plans for different protection categories 5. Not all protected area or institutions in the system have sufficient data collection, management and interpretation capabilities to deliver biodiversity sensitive management 6. The links between monitoring and evaluation of management actions and | <ol style="list-style-type: none"> 1. Provide training and expert technical support for CNAP in the areas of legal council, PA management planning and evaluation. (act. 2.4, 2.6) 2. Establish national and provincial co-ordination councils involving those agencies responsible for PA management. Establish national standards for the development of PA planning and management processes. (act. 2.1, 2.2, 2.5, 2.7) 3. Carry out a national communication campaign on the existence and role of the SNAP. The campaign would have components directed at decision makers, the public in general and to residents in and surrounding PAs. (act. 4.1, 4.2, 4.4). 4. Establish clear national management planning guidelines and train PA managers in planning procedures, which would include a participatory planning component. (act. 1.1, 1.7, 1.8) 5. Provide essential equipment and infrastructure to ensure a critical level of baseline information gathering and on-going monitoring abilities. These will include simple field stations for research personnel, GIS capability and training for appropriate staff. (act. 1.3, 2.6). 6. Add a conservation biology research section to the national research prioritisation system, through which funding will be channelled to pertinent projects. Establish effective feedback mechanisms between control and monitoring efforts and planning and management work, based on increasing CNAP's and |
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the planning of future priorities are poor, resulting in low capacity to adapt actions as pressures change. Sparse applied research geared to site management exacerbates this further.

7. The system has 266 discrete sites that require high levels of administrative efficiency if available funding is to be effective. Recently created institutions and a wide range of mandates has hampered this efficiency
8. Only 43 sites (33 of national importance and 10 of local importance) have been operationalised to some degree and these have only rudimentary infrastructure and are poorly equipped.
9. Human resources are relatively substantial for the protected area system but these are not equally distributed across protected areas, fall under different institutions and are not entirely familiar with modern protected areas principles, tools and techniques, including specific skills to address proximate threats in each area such as invasive species.

site level information gathering and transmission capabilities through training, application of GIS technology. (act. 1.6, 1.7).

7. Establish national and regional level co-ordination councils in which main SNAP stakeholders will participate, ensuring that mandates, policies and plans are co-ordinated, potential conflicts avoided. Cluster PAs, based on geographical, ecological and administrative criteria, to maximise use of limited resources. (act. 1.9)
8. Provide administrative and management infrastructure and equipment essential to carrying out normal PA administrative and management tasks. (at. 1.3, 2.6)
9. Evaluate distribution of proposed SNAP sites and staffing and propose a rationalisation of management through the creation of local clusters of PAs, identifying minimum critical staff component for each. (act. 1.10).

B. ACTUAL AND POTENTIAL PROXIMATE THREATS TO BIODIVERSITY WITHIN PROTECTED AREAS

PROXIMATE THREAT 1: VISITOR USE & INFRASTRUCTURE

Between 1997 and 1999, Cuba witnessed an average 16% annual growth rates in international tourist arrivals. In 1999, Cuba enjoyed an international tourism revenue of US\$1.7 billion, up 16% from 1998. Cuban policy calls for a continued high growth rate for the tourism sector. The government is actively involved in promoting resort development and alternative tourism products in co-operation with large multi-national hotel chains – Guanahacabibes National Park is particularly threatened by medium to long term tourism development plans. The 1999 law #201 on the creation of the National System of Protected Areas identifies the creation of opportunities for tourism and recreation as one of the objectives of national PAs (art. 14e). Present visitation to protected areas is low (ranging from 0 up to 2,000 national and foreign visitors in the PAs considered in this project). However, given these antecedents, the CNAP will need to adopt appropriate measures to ensure that expected increases in National visitors do not exert negative impacts on biodiversity. Tourism related threats can take various forms such as: a) habitat destruction by development of tourism related infrastructure and services near and within PAs (hotels, recreational uses such as golf courses, trails, camp sites, roads, employee housing, waste treatment); b) increased visitation and introduction of higher impact activities, which may contribute to soil erosion, disruption of critical wildlife behavioral patterns, or propagation of introduced species. Some PAs are likely to be much more threatened than others, depending on accessibility and proximity to major tourist centres.

Root causes

1. Weak sectoral co-ordination between CITMA and MINTUR and at site levels PA management have not always been involved in the development of tourism plans for surrounding areas.
2. Management plans do not exist in all PAs or do not explicitly address tourism use.
3. Carrying capacity assessments are not available in all PAs or do not sufficiently address specific nature of biodiversity vulnerabilities within PAs (restricted distribution, etc).
4. Tourism figures not kept resulting in little interaction between management activities and growing visitation rates.

Actions to Mitigate

1. Establish clear planning protocol involving tourism sector. (act. 2.3, 2.5, 5.5)
2. Complete management plans for PAs, to specifically address visitation issues. (act. 1.1)
3. Develop ecosystem maps for PAs and buffer zones, highlighting critical habitats and ecological corridors, focussing on endemic and threatened species and their possible seasonal habitat requirements. Undertake carrying capacity assessments based on information presented in the ecosystem maps. (act. 5.1)
4. Develop processes for keeping track of visitation patterns within parks, including a feedback mechanism to ensure information is taken into consideration when carrying out visitation planning. (act. 5.1)

<ol style="list-style-type: none"> 5. Poor tourism infrastructure and management resulting in unnecessarily high impacts. 6. Poor or non-existent links between PA administrations and travel agencies resulting in missed opportunities and unrealised expectations, which in turn result in sub-optimal investment in infrastructure and unmitigated impacts from visitation. 7. Aggressive marketing of incompatible tourism products within protected areas by third parties resulting in biodiversity incompatible uses. 		<ol style="list-style-type: none"> 5. Developing tourism infrastructure for some of the PAs with emphasis on best designs for trails, interpretation centres and others. (act. 5.1) 6. Establish communications protocols with tour operators; involve them in the tourism visitation planning process. (act. 2.2, 5.5) 7. Develop appropriate uses and package them to the tour operator sector. (act. 5.2, 5.3) 	
GUANAHACABIBES- DRY ECOREGION	VIÑALES- PINE ECOREGION	CIENEGA DE ZAPATA- WETLANDS	PICO CRISTAL & ALEXANDER VON HUMBOLDT - MOIST FOREST ECOREGION
<p>Park boundaries drawn around proposed tourism development sites (total 1,500 rooms) along coast – these remain undeveloped but once completed, would increase threat. Park contains one of Cuba’s top diving centres located inside the park (Maria la Gorda, 60 rooms) attracting international tourism. Park used for community “recreation”. Tourism development plan exists for the region, potential threat due to infrastructure development and associated activities. 1-4</p>	<p>The region is a major tourist attraction for landscape values – easy day trip from Havana. 552 rooms and 89 B&B’s nearby. Seven new hotels under consideration along with expansion of existing hotels. Landscape appreciation tourism. Some roads wind through the park to access caves, historic village. Little actual entry into park by tourists given difficult terrain. Concern over expansion of infrastructure within park boundaries. 2-4</p>	<p>Nature tourism development plan recently approved, potential increase in visitation, though does not call for significant infrastructure development within the park (e.g. trails, bird watching towers). Sport fishing development may call for a marina inside the park. Current visitation is ca. 3,500 p.a. 50% from Varadero (easy day trip) – potential for very high foreign visitation. 1-4</p>	<p>PC: Remote region, difficult to access. No tourism use. Some draft plans for trails and visitor access sites. 0-1 HB: Baracoa, growing tourist area, (plans for five resort hotels, and a new airport for int’l flights) lies within 30 km from the park boundary, may be a source of future demand. Current tourism use is negligible (655 visitors in 2000). No tourism infrastructure. 1-3</p>
<p>PROXIMATE THREAT 2: BIO-INVASION</p>			
<p>Generally little attention has been directed to this serious threat to biodiversity in Cuban PAs. Aggressive invasive species (IS) in Cuban protected areas include, but are not limited to vertebrates such as pigs, black rats, cats, mongooses, dogs, cattle, and plants such as marabu, leucaena, melaleuca. Introduced vertebrates tend to prey upon native vertebrates (e.g. pigs, mongooses are top predators of ground nesting animals such as snakes and some birds, cats are possible predators of the threatened solenodon) and compete with them for scarce resources such as food and nesting sites. Cattle are excellent seed dispersers, helping spread alien plants such as marabu. Aggressive introduced plants tend to out-compete native plants, crowding them out and in the process creating ecosystems of poor habitat value for native fauna. Little information exists on alien invertebrates and pathogens, but these may also represent significant threats to Cuban biodiversity. In total, seven species of exotic mammals, one mollusc, one reptile and at least 10 species of plants are considered serious threats to the ecological integrity of Cuba’s PAs.</p>			
<p>Root Causes of bio-invasion threat</p>		<p>Actions to Mitigate (all within the scope of activity 3.6 unless otherwise noted)</p>	
<ol style="list-style-type: none"> 1. Little is known on distribution, populations densities, means of propagation, nature and degree of impact of alien species in Cuba within and surrounding protected areas 2. There is little experience in systematically dealing with introduced species, especially those that threaten biodiversity values, and little is currently being done to deal with the threat. 3. Agriculture and livestock practices of PA inhabitants are a focus of introduction and propagation of alien species to protected areas 4. Existing national quarantine procedures do not address casual introduc- 		<ol style="list-style-type: none"> 1. With the support of national research bodies, gather basic autecological information on target species with the objective of developing appropriate control strategies. 2. Develop and carry out national alien species action plan that will address training and management needs, including expanded academic curriculum, and on-site training and field trips to other island nations faced with similar problems; begin carrying out control programs. 3. Support inhabitants of PA and buffer zone in modifying agricultural practices to eliminate invasive species threat in PA and in buffer zone and to restrict use of 	

<p>tions of plants and pathogens.</p> <p>5. Low general awareness of the effect of invasive species on biodiversity, resulting in a low priority status for the threat.</p>		<p>invasive pasture grasses and other invasive plants.</p> <p>4. Assess weaknesses of national quarantine system and implement improvements.</p> <p>5. Carry out educational campaigns directed at PA residents, Cubans in general and senior decision makers (act. 4.5) .</p>	
GUANAHACABIBES DRY ECOREGION	VIÑALES PINE ECOREGION	CIENEGA DE ZAPATA WETLANDS	PICO CRISTAL AND ALEXANDER VON HUMBOLDT MOIST FOREST ECOREGION
<p>Marabu, Casuarina and Guinea grass are noted alien plants. Pigs, black rats, field mice, cats, dogs and cattle are noted alien vertebrates. No work has been carried out in regards to I.S.</p> <p>3-4</p>	<p>Pomarosa covers 4.9% area, marabu to a smaller extent (associated with pastures). Black rats and field mice, mongoose. No work has been carried out in regards to I.S.</p> <p>2-3</p>	<p>Melaleuca covers 7,000 ha in the park, 13,000 ha in the buffer zone. Casuarina – 1,200 ha (formerly preferred plantation species). Some Marabu, and the aquatic <i>Myriophyllum pinnatum</i>. Wild cattle, pigs, dogs, cats, mongoose, black rats and fire ants. No work. 3-4</p>	<p>PC: Dogs, cats. Pigs, black rat. Particular concern over the survival of the endangered <i>Solenodon cubanus</i>. Current work underway on impacts of introduced species and control methods. 4-4</p> <p>HB: Dogs, black rats and field mice considered most threatening vertebrates, though cats and pigs also occur. Habitat of <i>Solenodon cubanus</i>, several of the colourful endemic Polimitas snail species. Some research underway. 4-5</p>

PROXIMATE THREAT 3: POACHING

A relatively minor current threat given generally low population levels in and near national PAs. Some species specific concerns and PAs with higher local populations may be more vulnerable. Hutia is the largest native mammal in Cuba, (adults of the largest species weighing up to 7kg) and are commonly hunted for food and commerce throughout their habitat. Some PAs (eg. Viñales) report that population densities are too low to support widespread interest in hunting, possibly reflecting a history intensive harvesting activities. Crocodiles and tortoises are also hunted for food in La Cienega de Zapata N.P. Nestlings of Cuban amazon parrots and Cuban conures are sought after for the pet trade – these birds are common household pets throughout the country. Subsistence fishing and the collection of plants for medicinal purposes are also reported. The future threat arising from these activities will be proportional to the changing accessibility of the PA (this may be a function of increased tourism infrastructure) and to the number of people living in and near the PA.

Root Causes of poaching

1. Inhabitants of PAs and buffer zones unaware of regulations regarding poaching.
2. PA boundaries unclear.
3. Inhabitants of PAs and buffer zones rely on wildlife trade and/or hunting for subsistence.
4. Difficulty in monitoring poaching activities with current level of resources (park wardens and forest wardens)
5. Consumer market for the pet trade unaware of the impacts of their purchase on native biodiversity.

Actions to Mitigate (all within the scope of activity 3.3, unless otherwise noted)

1. Carry out education campaigns for inhabitants of PAs and buffer zones (act. 4.1)
2. Establish and mark clear PA boundaries and ensure nearby communities are made familiar with them. (act. 1.2)
3. Ensure basic subsistence for inhabitants of PAs and buffer zones is feasible without the need to rely on PA wildlife. (act. 3.1)
4. Strengthen forest guard and park warden ability to arrest malfeasance through training, equipment and infrastructure. (1.3)
5. Carry out nation-wide educational campaign on the effects of the illegal pet trade. (act. 4.5) .

GUANAHACABIBES DRY ECOREGION	VIÑALES PINE ECOREGION	CIENEGA DE ZAPATA WETLANDS	PICO CRISTAL AND ALEXANDER VON HUMBOLDT MOIST FOREST ECOREGION
High illegal harvests of the giant land crab. Hunting of hutias and the white-throated and ruddy quail doves. Poaching of black coral, parakeet and ebony for illegal markets. Predation of sea turtles and their nests. 2-4	Hutia hunted for local consumption. High hunter effort per catch reflects over hunted status of hutia. Some timber extraction occurring. 2-2	Hutia, turtle and Cuban crocodile populations affected by poaching. Manatee also hunted. Orchids, parrots collected for wildlife trade. 3-4	PC: Declining but on-going pressure on hutias. Weak control. Parrots and parakeets also taken for wildlife trade. 2-2 HB: Fish and mammals are poached for skins, food and medicinal uses. Large number of people living in and near park pose a threat. 3-4
<p>PROXIMATE THREAT 4: MINING</p> <p>A few PAs are seriously threatened by existing mining activities and by future mining potential. An open pit chrome mine is currently operating in the buffer zone of Alexander von Humboldt N.P., with a second underground mine operating within the PA. Possible impacts include: a) habitat destruction/modification from the mine and associated infrastructure; b) environmental contamination due to water pollution; c) disruption of wildlife behavioural patterns due to noise and dust (vehicles, ore processing, blasting); d) possible impacts on the water table. An open pit nickel mine operating on the edge of Pico Cristal has similar potential impacts, and prospecting within the PA has revealed mineral deposits over an additional 1,500 ha. Mine expansion within the PA would represent a significant threat to biodiversity. Small scale, experimental peat extraction near La Cienega de Zapata N.P. if successful, may lead to larger scale extraction, dropping water tables over a widespread area, modifying soil-water regimes and possible resulting in loss of species and increased fire hazards.</p> <p>Root Causes</p> <ol style="list-style-type: none"> 1. Many parks not yet legally established. 2. Ambiguous status of existing and future mining operations near and within National Parks. 3. Weak sectoral co-ordination between CITMA and mining interests. 4. Poor application of environmental mitigation measures. <p>Actions to Mitigate (all within the scope of activity 3.5, unless otherwise noted)</p> <ol style="list-style-type: none"> 1. Complete the processes required to legally create PAs, with clear boundaries. (act. 1.2) 2. Establish a clear planning and co-ordination protocol taking into account plans for PA and mines and based on existing laws and regulations. (act. 2.3, 2.5). 3. Include MINBAS in national co-ordination efforts (act. 2.5) 4. Develop special EIA requirements for mining in biodiversity sensitive areas and ensure effective application; develop and apply strict mitigation measures to existing and future mining operations. 			
GUANAHACABIBES DRY ECOREGION	VIÑALES PINE ECOREGION	CIENEGA DE ZAPATA WETLANDS	PICO CRISTAL AND ALEXANDER VON HUMBOLDT MOIST FOREST ECOREGION
No mining, little aggregate extraction. Quarrying for construction of future tourist resorts could create site specific impacts. 0-2	Large limestone quarry, near buffer zone, low activity but extraction on-going. Effect is predominantly on the landscape and not on biodiversity. Increased economic activity may promote expansion. 1-2	Experimental peat extraction in buffer zone, 200 ha. Drainage works often linked to peat extraction may affect water table over broader area. No plans for expansion. 1-1	PC: Open pit nickel mine on park boundary, separated by a river. 1,500 ha within park identified for possible mine expansion. 2-5 HB: 22.7 ha open pit chrome mine in buffer zone. Restoration work in progress on mined out land. Underground chrome mine inside park boundaries – impacts limited, as processing is ex-situ. Potential river pollution from extraction activities. 3-4

PROXIMATE THREAT 5: WATER POLLUTION

Some specific waterways are polluted by organic wastes, others by inorganic wastes, both affecting freshwater biodiversity. Water is used in coffee bean and sugar cane processing whereby bean husks and cane residues are washed into rivers. Their decomposition results in a heavy biological oxygen demand as organic matter is decomposed by bacteria and protozoa, reducing available oxygen for freshwater animals and leading to possible eutrophication in slow moving waterways. Municipal/domestic wastewater have similar impacts. Mineral extraction from mined ore also calls for large volumes of water. Waste water, if poorly treated, may contain toxic chemicals and heavy metals which poison freshwater ecosystems. For both organic and inorganic wastes, particles in suspension reduce visibility, affecting behaviour patterns of freshwater animals. Pico Cristal and Alexander von Humboldt freshwater biodiversity is threatened by water pollution from mining activities, whereas Turquino, Viñales, D. del Granma, organic waste water is the main threat.

Root Causes

1. Commercial plantations (coffee, sugar cane, citrus) and mining, with associated processing facilities, located within PAs, in buffer zones and upstream.
2. Municipal and domestic waste water treatment non-existent or inadequate.
3. Municipal governments (Viñales) unaware of link between clean water and economic development from tourism to the region, resulting in low priority for action.

Actions to Mitigate

1. Phase out, reduce size or relocate commercial agriculture and mining activities within PA borders where possible. If feasible, apply alternative processing facilities which would reduce the need for water. (act. 3.1, 3.5)
2. Promote action from municipal authorities by ensuring they are aware of direct the impact on biodiversity and secondary impacts on tourism, and by soliciting their participation in park management plans. (act. 1.1, 1.5, 2.2)
3. Carry out information campaign illustrating the link between economic development from tourism & biodiversity conservation to stakeholders (act. 4.1)

GUANAHACABIBES DRY ECOREGION	VIÑALES PINE ECOREGION	CIENEGA DE ZAPATA WETLANDS	PICO CRISTAL AND ALEXANDER VON HUMBOLDT MOIST FOREST ECOREGION
No surface waterways, no mention of water contamination. 0-0	Significant community waste water entering rivers, flowing into caves. As tourism expands, threat to aquatic life will increase. 3-4	Chemical residues from large citrus plantations near park boundary may enter ground water and appear in fresh-water springs within park. Some hydrocarbon leaching in buffer zone exacerbated by drainage works. 2-4	PC: Coffee processing residues (husks). Mining residues may also enter waterways. 2-4 HB: Community waste waters and mining residues may enter waterways. 2-4

PROXIMATE THREAT 6: TRADITIONAL AGRICULTURE / FORESTRY

Traditional agricultural practices such as slash and burn (forest areas are cleared using fire and cropped for a few years until soils are exhausted, then the cycle is repeated) have been reported within PAs and their buffer zones. Additional reports describe the common practice of raising free range pigs and cattle (these are allowed to forage freely near and in PA areas). Similarly, domestic animals such as dogs and cats are usually free to wander in and out of PA lands. PA administrative offices have traditionally maintained fairly large plots of land within PAs for agricultural activities, raising horticultural crops for subsistence purposes, livestock and cash crops such as coffee. In all of these cases, the potential impacts on PA biodiversity is large. Domestic animals would have similar impacts as those reported for alien species; preying upon, competing with and displacing native species, as well as being possible vectors for diseases (ex. Avian pox from chickens) and may also be the source of further introductions through the occasional domestic animals that become wild, establishing feral populations. Slash and burn agriculture, if practised at low intensities, has been shown not to be a threat to biodiversity but the associated burning has been cited as the source of forest fires in and near PAs. Depending on the nature and extent of its activities, forestry can also affect native biodiversity by replacing heterogeneous forest plant communities with even-aged monocultures managed for lumber values. These practices are known to reduce the habitat value for a native species. Such monocultures may also create greater risks of fire, depending on the species and silvicultural regimes applied.

Root Causes

1. Existence of agricultural and forestry practices in and near N.P.'s that conflict with biodiversity conservation.

Actions to Mitigate

1. Establish clear limits to agricultural and silvicultural activities within PA boundaries, restricting them in size, nature and location to ensure conservation of threatened

<p>2. Agricultural practices do not take into consideration risk to biodiversity.</p> <p>3. Conflicting institutional mandates and weak inter-institutional co-ordination.</p>	<p>habitat/species. (act. 3.1)</p> <p>2. Adopt conservation compatible forestry and agricultural practices in buffer zones and within PAs. Incorporate biodiversity conservation values in forest management plans. (act. 3.4)</p> <p>3. Clearly define responsibilities of stakeholders within PAs and their buffer zones; invite relevant institutions to participate in the planning process and in regional and national co-ordination committees (act. 2.2)</p>
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GUANAHACABIBES DRY ECOREGION	VIÑALES PINE ECOREGION	CIENEGA DE ZAPATA WETLANDS	PICO CRISTAL AND ALEXANDER VON HUMBOLDT MOIST FOREST ECOREGION
<p>Forestry is practiced in the Cabo San Antonio sector. Buffer zone used predominantly for forestry activities. Wild cattle and pigs in park, and free ranging domestic livestock. Both may significantly affect forest structure and reproductive success of ground nesting animals.</p> <p>2-4</p>	<p>Residents within the park maintain cattle, goats, pigs – concern on how these interact with park lands (escapees, park used as grazing area during dry periods; propagation of introduced species). Buffer zone includes coffee, tobacco and horticultural crops. Illegal logging for fuel wood and for swidden agriculture.</p> <p>3-4</p>	<p>Forestry is practised near park boundaries. Rice and bean production in buffer zone. Plantations of aggressive alien casuarina discontinued several years ago.</p> <p>1-2</p>	<p>PC: Buffer zone communities cultivate cash crops and maintain domestic animals. Concern over use of park resources, escapees and free range animals preying upon native species. Coffee and cocoa plantations inside park. Forest enterprise has expressed interest to access park forests.</p> <p>2-4</p> <p>HB: Commercial forestry carried out within park boundaries. Subsistence agriculture predominantly in buffer zone, though increasing slash and burn practices within park – high rainfall leads to erosion problems. 2-4</p>

PROXIMATE THREAT 7: FIRES

Forest fires (anthropogenic and natural) are a relatively minor threat to most national PAs given their generally wet climate or forest types that are not prone to fire propagation. However, drier zones, pine forests and buffer zones where more slash and burning takes place, are at greater risk. Limited ability to deal with fires is generally the norm.

Root Causes

1. Slash and burn agriculture results in small fires going out of control and burning larger forest areas in buffer zones and inside PA boundaries.
2. Poor inter-agency co-ordination in maximising use of available resources during forest fires.
3. Silvicultural practices result in fire prone plantations
4. Fire-fighting abilities are limited by poor infrastructure, insufficient training and lack of equipment

Actions to Mitigate (all within the scope of activity 3.2 unless otherwise noted)

1. Adopt new agricultural practices that do not call for fire. Train local farmers on methods to reduce the risk of fire during slash and burn operations. Limit slash and burn agriculture to low risk areas only.
2. Establish a co-ordinated inter-agency fire fighting protocol for fires inside PAs; establish (or strengthen) community fire fighting or detection brigades; develop a fire fighting contingency plan for all stakeholders at the site level.
3. Adapt silvicultural practices to take into consideration fire hazard.
4. Equip and train appropriate personnel and supply basic infrastructure.

GUANAHACABIBES DRY ECOREGION	VIÑALES PINE ECOREGION	CIENEGA DE ZAPATA WETLANDS	PICO CRISTAL AND ALEXANDER VON HUMBOLDT MOIST FOREST ECOREGION
<p>Agriculture related fires are reported in buffer zone. 1-2</p>	<p>Fires not uncommon, but are very small and have little impact. Fire control strategy is in place and effective. 1-2</p>	<p>Dry period in March-May results in high fire risk. 20,000 ha of grassy and mangrove forest at risk. Fire control strategy in place, one water truck. 4-4</p>	<p>PC: High rainfall most of the year reduces risk of fire. Buffer areas with lower rainfall (pine forests) are more at risk. Small fires by farmers often are the cause of uncontrolled burns. 2-2 HB: The park's dry zone consists mostly of pine forest (28,000 ha) with high susceptibility to fires. A fire fighting plan is in place, relying on existing resources from various entities. Runaway fires from slash and burn agriculture is the major source of threat. 3-3</p>

ANNEX H: PROJECT WORK PLAN

	Year 1				Year 2				Year 3			
ACTIVITIES FOR OUTPUT 1: Protected Area Operations and Management												
1.1. Formulate management plans for selected PAs ensuring stakeholder participation and conflict resolution mechanisms.					X	X	X	X				
1.2. Clearly define and formalise the limits and delimitation of borders for each of the pilot PA	X	X	X	X								
1.3. Design and provide basic control, administration and research infrastructure as well as equipment needed to carry out priority park operations..		X	X				X	X	X	X	X	X
1.4. Improve financial management and reporting procedures and VN and GU develop strategy for self sustained funding of operations.			X		X			X			X	
1.5. Establish and implement information dissemination & sharing mechanisms			X	X	X	X	X	X	X	X	X	X
1.6. Collect and organise, information essential for effective protected area management and planning and monitoring of biodiversity conservation	X	X	X	X	X				X	X	X	X
1.7. Improve the scientific and technical basis for park management and planning by synthesising available relevant biological strengthening of the incipient SIGAP .	X	X	X	X	X	X	X	X	X	X	X	X
1.8 Develop and publish system wide management and operational plan design and evaluation guidelines	X	X	X	X								
1.9. Evaluate the design of SNAP and propose clustering strategies, for facilitating PA' management from a bio-regional level perspective.									X	X	X	X
1.10 Rationalise overall staffing across the SNAP to ensure most effective use of available human resources.		X	X									
1.11. Undertake an evaluation of potential mechanisms and sources for self-sustained founding of SNAP										X	X	X
ACTIVITIES FOR OUTPUT 2: SNAP Co-ordination and regulation												
2.1 Strengthen PA staff's capacity for the interpretation and application of legal and regulatory tools	X	X	X				X				X	
2.2. Facilitate the co-ordination between the different SNAP constituents active in each pilot PA by negotiating and developing work agreements	X	X	X	X								
2.3. Hold workshops and meetings with local authorities to develop regulations and norms for each pilot PA required to address conflict resolutions		X				X				X		
2.4. Consolidate and promulgate new legal and regulatory instruments to ensure that the legal framework surrounding SNAP progresses	X	X	X	X	X	X	X	X	X	X	X	X
2.5. Create and make operational, national and pilot regional councils for facilitating the co-ordination of SNAP activities, .	X	X	X	X			X			X		
2.6. Strengthen the co-ordination of SNAP by up-grading CNAP staffing		X	X	X	X							

	Year 1				Year 2				Year 3			
tables and basic infrastructure and inventories ,												
2.7. Optimise structures for the SNAP through alternate structures that provide more effective system-wide management and co-ordination.					X				X			
2.8. Strengthen overall PA management capacity in SNAP by up-grading basic operational capacity of key institutions	X	X	X	X	X	X	X	X	X	X	X	X
2.9. Optimise and co-ordinate research proposals and allocation of funds to cover critical gaps in PA management and SNAP co-ordination	X				X				X			
ACTIVITIES FOR OUTPUT 3: Management Strategies for Threat Control												
3.1. Test and evaluate management strategies to control and mitigate the agriculture and livestock threat in PA	X	X	X	X	X	X	X	X	X	X	X	X
3.2. Test and evaluate management strategies to control and mitigate the forest fires threat in PA	X	X	X	X	X	X	X	X	X	X	X	X
3.3. Test and evaluate management strategies to control and mitigate the illegal hunting and plant collection and dealing in wildlife trade threat	X	X	X	X	X	X	X	X	X	X	X	X
3.4. Test and evaluate management strategies to control and mitigate the forest plantations threat	X	X	X	X	X	X	X	X	X	X	X	X
3.5. Test and evaluate management strategies to control and mitigate the mining threat	X	X	X	X	X	X	X	X	X	X	X	X
3.6. Test and evaluate management strategies to control and mitigate the invasive species threat	X	X	X	X	X	X	X	X	X	X	X	X
3.7. Hold training workshops for decision makers in development on biodiversity conservation goals of PAs and jointly define common strategies.			X	X								
3.8. Establish an exchange programme between residents and managers of different PAs to help consolidate and spread lessons learned.				X				X				X
3.9 Improve the participation of CNAP and SNAP institutional constituents in policy development for tourism, forestry and mining	X	X	X	X	X	X	X	X	X	X	X	X
3.10 Strengthen national expertise on alien species control and implement a campaign to raise awareness of institutional decision makers on IS threat			X	X	X	X	X	X	X	X	X	X
ACTIVITIES FOR OUTPUT 4: Education and Awareness Outreach Programmes												
4.1. Sensitise communities in and near PA's on the values derived from conservation and the threats from incompatible activities and alien species	X	X	X	X	X	X	X	X	X	X	X	X
4.2. Design and carry out park specific educational and public relations campaigns illustrating the characteristics of individual parks.	X	X	X	X	X	X	X	X	X	X	X	X
4.3. Transmit in appropriate formats, the results of scientific research to local stakeholders and visitors	X	X	X	X	X	X	X	X	X	X	X	X
4.4. Design and create a national corporate identity for the SNAP	X	X	X	X	X	X	X	X				X
4.5. Design and implement a national communications strategy to highlight threats to Cuban biodiversity	X	X	X	X	X	X	X	X	X	X	X	X

	Year 1				Year 2				Year 3			
4.6 Design and implement a broad based communications strategy directed specifically to national level decision-makers	X	X	X	X	X	X	X	X			X	
ACTIVITIES FOR OUTPUT 5: Visitation Strategies for Protected Areas												
5.1.Ensure that visitation to PAs is compatible with their conservation goals through strengthening the planning, management & monitoring of visitation in pilot PAs	X	X	X	X	X		X				X	
5.2.Develop visitation strategies & tourism programs that ensure the optimal use of tourism attributes in PAs, in co-operation with tourism sector.	X	X	X	X	X	X	X	X				
5.3.Design, promote and guide the tourism product by developing visitation goods and services and training guides to pass defined tourism product			X	X	X	X	X	X	X	X	X	X
5.4.Hold interchange workshops between local stakeholders &PAs administrators to discuss lessons learnt and experiences in tourism management				X				X				X
5.5. Improve the CNAP and SNAP constituents institutions participation in the development of national polices related to tourism	X	X	X	X	X	X	X	X	X	X	X	X
5.6. Strengthen SNAP environmental interpretation capacities system wide through study tours and through the provision of international expertise			X	X	X		X			X		X

ANNEX I: STAKEHOLDER PARTICIPATION PLAN

I. Stakeholder Identification, Possible Conflicts and Conflict Avoidance Measures.

a) National level stakeholders: Cuba's National Protected Areas System (SNAP) is characterised by the involvement of a particularly large number of governmental and para-governmental institutions in various aspects of individual protected area affairs (see table I below). As is the case in most countries, institutional mandates regarding PA management matters may overlap and at times conflict. Some have management responsibilities, whereas others may have regulatory, policing, research, economic or social development interests. The potential for conflicting mandates and incompatibility in programming is large and risks being an important impediment to achieving project goals as well as of objectives identified in the SNAP's five-year plan. To complicate matters, different institutions are involved in SNAP affairs depending on whether issues are national in scope, or pertain exclusively to a region, or even to one particular PA.

b) Local level stakeholders: Locally, municipal authorities and sector specific production co-operatives may have the authority to carry out resource-based economic activities within PAs or their buffer zones. Typically, they are involved in forestry and agricultural work. Similarly, large commercial agriculture enterprises near PAs may pose threats, along with government or foreign mining and tourism interests.

Residents within PAs and their buffer zones represent a critical stakeholder group (see table II below). Residents are typically gathered in loosely defined low-density settlements and carry out permitted (e.g. agriculture) and non-subsistence activities using PA resources permitted (e.g. hunting, wildlife trade, logging). Many earn money through employment by government agencies, either directly by the PA administration, or by local resource based enterprises such as forestry farms. Tourism is not a significant source of income for most PA residents throughout the pilot project sites, with the possible exception of Viñales National Park.

The success of this project will depend in large part on the ability of proponents to constructively engage this large and diverse group of stakeholders, ensuring that information sharing and consensual decision-making processes are established to avoid duplication and conflicts as a minimum objective, and to create synergies as an ideal objective. GEF financing is requested in helping establish functional co-ordination mechanisms (general office equipment). Once these are in place, their operation will be carried with national support.

Stakeholder identification, and possible conflicts between stakeholder groups and the Project are identified in table 1. For each case, suggested conflict avoidance measures are described. In many cases, these measures have been incorporated into the project as specific activities to be undertaken. In other cases, the measures should serve as reminders to the Project implementing agencies and other stakeholders of what issues may need attention during the course of the project.

II. Information Dissemination and Stakeholder Participation

a) National level stakeholders: Project formulation has relied heavily on the participation of several governmental, para-governmental and NGO bodies gathered for the GEF PDF-B supported national SNAP planning workshop in April 2001. A subset of these bodies¹⁶ worked in parallel to the workshop

¹⁶ ENPFF, CGB, SEF, CNAP, CIEC, ECOVIDA.

agenda, reporting regularly to the plenary groups, during which time feedback was received and clarification and refinement of Project objectives were made. Three subsequent Project planning and design workshops were held where the same stakeholder subset met and advanced the planning process. To ensure continued involvement of key stakeholders, project activity 2.6 calls for the creation of a network of co-ordination councils, both at the national level, where high level government agency representatives would participate, and at regional levels, where provincial and regional stakeholders would participate. GEF financing in the initial set-up of these councils is needed to acquire general office equipment.

The co-ordination councils will consist of a formal mechanism through which primary P.A. stakeholders will regularly meet to ensure effective co-ordination of multi-agency mandates, policies and regulations and to work out possible conflicts. These councils will be chaired by CNAP at the national level, and by an appropriate CNAP delegate at the regional levels, most likely the provincial representative of the CITMA (UMAs). The Terms of Reference for the co-ordination councils will be developed at the national level as a first priority.

b) Local stakeholders: Cuba's national parks are located in areas of relatively low human population density. However, communities exist often within park boundaries and in surrounding buffer zones. Law #201, passed in December 1999 stipulates that national parks, among several specific objectives, must "*meet the needs of local populations through sustainable use of resources, provided that that management objectives are not affected*" (art. 14-d). In addition, article 54 of the law requires that activities proposed within protected areas and their buffer zone must guarantee benefits to inhabitants. Cuban law recognises the existence and needs of residents within national parks, yet it is recognised that these same residents also represent specific threats to biodiversity. As noted, they may have significant impacts on park and buffer zone ecosystems through both permitted and illegal activities such as subsistence agriculture, raising livestock, small scale cash-cropping (coffee, cocoa), poaching for food, fuelwood or the pet trade. Agricultural practices may play a role in the propagation of introduced species or have similar impacts (marabu, free range pigs preying on native species) and slash and burn agriculture may unintentionally lead to uncontrolled forest fires. The project will need to balance objectives of controlling non-permitted activities carried out by residents, while simultaneously ensuring that their livelihoods are not compromised.

These same residents may also be considered as critical allies in conservation. They play an important role in ensuring the conservation of local biodiversity by acting as guardians against illegal activities, participating in forest fire-fighting brigades and by adopting sustainable means of production and sharing them with neighbours. Residents are also a source of much needed local labour for park management projects. For these reasons, in the established PAs, there exists strong historical links between PA management and local communities. The project will build on these links by increasing the diversity of management, planning and monitoring activities in which PA residents will have the opportunity to participate. In particular, forest fire prevention, alien species control and monitoring activities will rely on participation of residents, both as volunteers and remunerated personnel (to be included in activities 3.4 and 3.6). In addition, expanded environmental education programs will entice interested residents to be active in participatory management fora run by PA administrations (see activities 4.1, 4.2, 4.3).

The project will extend resident participation by actively engaging local elected representatives in PA decision-making and information exchange processes. Existing environment committees at the municipal level will be strengthened as part of activity 2.4. Where these are non-existent, their formation

will be actively encouraged. As part of activities 4.1, 4.2, members of the committees, all elected representatives of local communities, will be offered training and educational opportunities designed to help them improve their knowledge of the SNAP and conservation issues so as to be more effective communicators and decision-makers within their spheres of influence. However, the challenge in ensuring active participation of residents and other stakeholders will in large part lie in their relatively small populations, the dispersed nature of settlements and reduced communications and transportation infrastructure (see table ii below, illustrating the nature of human settlements in the pilot project areas).

c) Local development sector stakeholders: Beyond government and para-governmental bodies, and beyond local residents and their municipal institutions, another group of stakeholders wields a high level of power in and surrounding several PAs. Typically, these are the mining (mainly in HB/PC) and tourism sectors, often a combination of national and foreign investors. These sectors represent large interests and have the potential to radically influence the PA conservation objectives. Though these interests will be engaged as stakeholders at the national level, through participation of the ministries that regulate them in the national co-ordination councils, local level interests may be far removed from national governmental bodies, requiring an additional means of ensuring dialogue between them and PA managers. Activity 2.3 is designed to establish and maintain formal communications mechanisms for exchange of information and eventual co-ordination of plans and activities between PAs and local development interests.

TABLE 1: GOVERNMENTAL, PARA-GOVERNMENTAL STAKEHOLDERS, THEIR INTERESTS AND POSSIBLE CONFLICTS WITH THE PROJECT.

ACRONYM	Organisation / Government Department Dependency	Mandate, interests, concerns, authority, statutory powers	PA INTERESTS					Possible Conflicts	Conflict avoidance measures
			Management Operations	Economic	Research	Education	Monitoring and Control		
CNAP	National Protected Areas Centre / CITMA	Oversees the co-ordination, planning and overall functioning of the national protected areas system.	X				X	No conflicts predicted, charged with overall Project co-ordination.	n.a.
CGB	Forest Guard / MININT	Ensures that park rules and regulations are respected, able to arrest / fine infractors. Not exclusively dedicated to PA protection, maintains mandate outside of PAs. Previously under MINAG, have recently been transferred to MININT. Long history of forest protection.					X	CGB mandate extends beyond PA boundaries throughout Cuba. Pressure to use project resources to areas beyond project sites may be significant.	Ensure annual workplans are detailed and followed up with effective monitoring procedures. (act. 1.1) Provide formal mechanism for the CGB to participate in the overall management of the Project (act. 3.2, 3.6) Invite the CGB to participate in the creation of a Park Warden service. (act. 1.8) Sensitise CGB managers on the nature of the Project and the overall benefits to the CGB. (act. 6.7)
UMAs	Provincial Environment Units / CITMA	Provincial branches of the AMA which co-ordinate overall environmental work, including protected areas management.	X				X	UMA mandates extend beyond PA boundaries. Pressure to use project resources to areas beyond project sites may be significant. Possible inter-agency jealousies could result in operational difficulties.	Ensure annual workplans are detailed and followed up with effective monitoring procedures. (act. 1.1) Invite UMAs to participation in the Project Management Committee. (act. 3.2, 3.6) Ensure clear division of responsibilities within the Project are defined and communicated to stakeholders, and that Project monitoring results are made accessible. (act. 3.2)
ENPFF	National Corporation for the Protection of Flora and Fauna /	Agency that manages the greatest number of protected areas in Cuba. Traditional manager of Cuba's protected areas.	X	X	X			ENPFF mandates extend beyond PA boundaries. Pressure to use project resources to areas beyond project sites may be significant. Also has mandates such as agri-	Divide the ENPFF into distinct conservation and production agencies (in progress). Carry out mitigation activities where incompatibilities are inevitable – as per output 5. Redefine the responsibilities of the ENPFF

ACRONYM	Organisation / Government Department Dependency	Mandate, interests, concerns, authority, statutory powers	PA INTERESTS					Possible Conflicts	Conflict avoidance measures
			Management Operations	Economic	Research	Education	Monitoring and Control		
	MINAGRI							cultural production, other commercial interests that may conflict with their conservation role.	within PA boundaries and within the Project (act. 3.2) Invite the ENPFF to participation in the Project Management Committee.
SEF	State Forestry Service / MINAGRI	Establishes national forest policy and regulates forestry activities. Provides funding to PA administrations to carry out forest management activities.		X			X	Also responsible for forest management for productive purposes. Conservation vs. production conflicts in PA buffer zones more likely. Approve and finance conservation operations in type projects in PAs, sometimes providing a large share of PA operations budgets, creating possible unbalanced relationship between conservation and production	Clarify management plan priorities within PAs and their buffers zones. (act. 1.1) Establish “best practices” forest management practices to ensure that conservation objectives are incorporated (see Act. 5.4) Increase the participation of the SEF in Project management.
ECOVIDA	Env'tal services and research group / CITMA	Responsible for park administration at Viñales and Guanahacabibes National Parks, Piñar del Rio province.	X		X			Mandates conflict anticipated, as ECOVIDA is charged with coordination the project at the PA level.	n.a.
MINTUR	Ministry of Tourism	Responsible for national tourism policies, tourism infrastructure development activities.		X				MINTUR has a strong economic development mandate and may be unwilling to compromise its objectives for conservation. PAs are perceived as barriers to tourism development of the type traditionally promoted by MINTUR.	Ensure that PAs are formally created by the council of ministers so that they benefit from full protection of the law, reducing the risk of intrusion from incompatible sectors (act. 1.2) Develop low impact tourism products in co-operation with MINTUR; create a national strategy. (act. 7.2, 7.3) Carry out a close follow-up of tourism development process to ensure that regulations are respected. (act. 3.1, 3.7) Improve tourism development proposal review guidelines within CITMA. (act. 3.1, 3.6)

ACRONY M	Organisation / Government Department Dependency	Mandate, interests, concerns, authority, statutory powers	PA INTERESTS					Possible Conflicts	Conflict avoidance measures
			Management Operations	Economic	Research	Education	Monitoring and Control		
								Develop a joint action plan between SNAP and MINTUR. (act. 7.1, 7.2)	
GAVIOTA S.A.	Tour Operator / MINTUR	This and other operators create and sell ecotourism products within PAs.		X			Commercial interests override all others.	Develop a joint action plan between SNAP and GAVIOTA to ensure that interests of both are served. (act. 3.3, 7.2, 7.3)	
Local resource sector corporations	MINAGRI	These local corporations are mandated to carry out a variety of resource based economic development activities, including forestry, agriculture. They may also have the responsibility of managing a particular PA, as is the case for the Ciénega de Zapata, managed by the Municipal Agricultural Corporation of Ciénega de Zapata.	X	X			Commercial interests override all others. May not be predisposed to carrying out conservation planning and management when charged with doing so.	Develop a joint action plan between SNAP and corporations to ensure that interests of both are served. (act. 3.3) Invite corporations to participate in PA planning process (act. 1.1) Create lines of communications to ensure that short, medium and long term plans are known to stakeholders (act. 3.3)	
IES, Universities, BIOECO, CIEC, CIMAC, IGT	Various research institutions	Carry out primary scientific work with external funding or in co-operation with PA.			X		Focus on research topics not necessarily of value to management needs. Project funds may be applied to non-critical issues. Information gathered may not be shared.	Develop a conservation management research section in national research priorities system (in process, act. 2.4) Create mechanisms, in co-operation with research entities, to ensure the sharing and application of information gathered (act. 2.2, 2.5, 2.7)	
MINBAS	Ministry of Basic Industry	Oversees policy and program development for mining activities in Cuba.		X			MINBAS has a strong economic development mandate and may be unwilling to compromise its objectives for conservation. PAs are perceived as barriers to	Ensure that PAs are formally created by the council of ministers so that they benefit from full protection of the law, reducing the risk of intrusion from incompatible sectors (act. 1.2) Create lines of communications to ensure that	

ACRONYM	Organisation / Government Department Dependency	Mandate, interests, concerns, authority, statutory powers	PA INTERESTS					Possible Conflicts	Conflict avoidance measures
			Management Operations	Economic	Research	Education	Monitoring and Control		
							mining development of the type traditionally promoted by MINBAS.	short, medium and long term plans are known to stakeholders (act. 3.3)	
AMA	Environment Agency / AMA / CITMA	Oversees environmental work nationally, comprised of several research and management centres.	X		X		Its mandate covers areas much beyond the boundaries of PAs and there may be pressures to apply project resources to non project sites.	Ensure annual workplans are detailed and followed up with effective monitoring procedures. (act. 1.1, 3.7)	
Plan Turquino Manatí	National level S.D. program / MINAGRI	Created to promote sustainable development / livelihoods in remote mountainous regions and for the Zapata swamp.		X		X	No conflict is predicted.	n.a.	
CIGEA	Environmental Education, Management and Information Centre / CITMA	Environmental education centre responsible for national environmental education.				X	X	Possible inter-institutional jealousies resulting in non-optimal execution of the project.	Ensure annual workplans are detailed and followed up with effective monitoring procedures. (act. 1.1, 3.7) CIGEA will be involved in carrying out many activities in the project, especially under output 6 and will be invited to participate in Project planning activities. (act. 1.1, 3.6)
IPF	Physical Planning Institute / CITMA	National land use planning agency.	X					Prioritises economic development activities over conservation.	Ensure that PAs are formally created by the council of ministers so that they benefit from full protection of the law, reducing the risk of intrusion from incompatible sectors (act. 1.2)
CICA	Environmental Control agency / CITMA	Emits permits, carries out E.I.A activities.					X	Can act unilaterally without consulting PAs. May cause undue delays in emitting critical permits.	Strengthen communications, administration and co-ordination procedures to improve evaluation and approval processes (act. 3.1, 3.2,3.7)
PRONATU RALEZA	NGO	National NGO dedicated to conservation.	X					No conflict is predicted	n.a.

CITMA: Ministry of Science, Technology and the Environment, MININT: Ministry of the Interior, MINAGRI: Ministry of Agriculture, MINESC: Ministry of Superior Education, MINBAS: Ministry of Basic Industries (includes mining).

TABLE 2: CHARACTERISTICS OF HUMAN SETTLEMENTS IN PILOT PROJECT PROTECTED AREAS

Main Characteristics of Communities in Parks and Buffer Zones	SELECTED NATIONAL PARKS				
	Dry Forest	Pine Forest	Wetland	Moist Forest	
	Guanahacabibes	Viñales	Cienaga de Zapata	Pico Cristal	Alejandro Humboldt
Population in park	Apx. 150	322	0	28	3,360
Population buffer zone	< 500	2,448	960	62	1,383
Formal economic activities in park	Subsistence fishing, forestry (Cabo San Antonio), subsistence agriculture inc. free ranging livestock, tourism	Small-scale commercial agriculture, tourism.	Park service contracts, subsistence agriculture, and tourism.	Coffee and cocoa plantations, park service contracts.	Mining, subsistence agriculture, forestry.
Formal economic activities buffer zone	Forestry, tourism.	Agriculture, coffee, tobacco plantations, tourism.	Agriculture, forestry, apiculture, fishing, tourism.	Coffee plantations, mining	Mining, agriculture, forestry.
# and nature of settlements in park	Small settlements of C. San Antonio, La Bajada	Los Acuáticos.	n.a.	La Zanja (7 houses).	4 settlements. 4 inhabited regions
# and nature of settlements buffer zone	None	Dispersed farmsteads.	3 communities; Palpite, S. Tomas and Vinculo.	Baconal (7 houses), El Palenque (12 houses)	2 settlements 11 inhabited regions
General human settlement characteristics within easy access to park (10 km)	No nearby towns. Maria la Gorda dive centre draws international tourism, other important tourism centres in planning stages.	Town of Viñales, pop. 4,000, important tourist service centre.	Other small settlements nearby, main E-W trans Cuba highway within 20km.	Dispersed small settlements.	City of Baracoa, pop. 50,000
Current non-formal/illegal dependencies on park resources	Harvesting of giant land crab, possible sea turtles, fuel wood. Domestic animals allow to range free, hunting of hutias, quail doves, other poaching. Feral pigs, cattle.	Poaching hutias, some timber / fuel wood extraction, free ranging livestock.	Poaching of turtles, crocodiles, jutias and other wildlife for subsistence and trade.	Subsistence poaching and pet trade.	Subsistence poaching, pet trade and collector's trade.

ANNEX J: SECTORAL POLICIES AND LEGISLATION AND THEIR EFFECT ON SNAP DEVELOPMENT

Table 1: Fundamental Legal Regulations Dealing with Natural Resource Management That Relate to the Project

Law	Provision
Law 76, Law on Mines	Created the mining authority - National Office of Mineral Resources (MINBAS) charged with the regulation and control of mining, the rational use of mineral resources, and controlling the implementation of plans to preserve the Environment and the measures to mitigate environmental impacts. The law compels mining concessionaires to carry out EIA and develop contingency plans as well as plans to prevent, mitigate, control, rehabilitate and compensate for impacts resulting from the mining industry.
Law 77, on Foreign Investment	Compels foreign investors to meet the environmental provisions established by the national legislation.
Law 81, of the Environment	Establishes the principles of the environmental policy and regulations for environmental management. It appoints CITMA as the body of the State Central Administration in charge of proposing the environmental policy and directing its implementation. Functions include: (i) approving, proposing, assessing and enforcing the fulfilment of the regulations established for environment protection; (ii) Conciliating discrepancies among bodies, organs and other entities as regards natural resource protection and use; (iii) Directing and controlling those activities relating to protected areas
Law 85, Forest Law	Defines the forest heritage and sets up the Institutional Framework, designating MINAGRI responsible -- through its State Forest Service (SEF) – for directing and implementing, forest policy. It establishes forest classification, delimiting the activities that will be applicable to each of them, specifying that, in the case of forests located in protected areas, these activities should comply with management plans.
Decree-Law 200, on the System of Forest Violations Regarding the Environment	Establishes the applicable violations regarding the environment. It defines the violations concerning the National System of Protected Areas and Biodiversity
Decree-Law 201, on the National System of Protected Areas	Sets up the system of protected area categories, defines the management plan, which is inserted within the territorial demarcation, as the steering tool of the area.
Decree-Law 212, on the Coastal Zone	Establishes provisions to delimit protection and sustainable use of the coastal zone and its protection zone; it subordinates the use of the coastal zone of protected areas that which is established in the Management Plan for the area.
Decree-Law 222/97, Rules for the Law on Mines	Establishes a compulsory conciliation process with CITMA to carry out mining activities and compels mining concessionaires to carry out EIA and contingency plans as well as plans to prevent, mitigate, control, rehabilitate and compensate for those impacts resulting from the mining activity. It sets up mandatory obligation to creating financial reserves of no less than 5% of the lump sum of the mining investment in order to mitigate, control, rehabilitate and compensate for those impacts resulting from the mining activity
Agreement No. 318 of the Executive Committee of the Council of Ministers (CECM)	Creates the Ministry of Agriculture and establishes, amongst others, its responsibilities for directing, implementing and controlling of State and Government's policy regarding (i) Use and conservation of soils and ownership and possession of forest, livestock and agricultural lands .(ii) Guarantee conservation, management, rational use and sustainable development of those resources from the forest heritage and of wild flora and fauna
Provision 330/99 of MINAG, Rules for the Forest Law	Establishes the proceedings to categorise forests or change their category, which must be done with CITMA's participation. The definition of the institutional level at which CITMA should participate in this process, still needs to be defined so as to guarantee adequate representation of SNAP's interests, either through a CITMA's guideline or a CNAP-State Forest Service co-operation agreement
Provision CITMA 77/99, Rules on the Process of Environmental Impact Assessment	Sets up those activities requiring EIA, e.g. soil use changes and those requiring an environmental license, e.g. forest, livestock and agricultural activities. These guidelines should be modified to include CNAP as an obligatory-consultation body regarding activities to be carried out in protected areas.

Table 2: Potential Conflicts between Sectoral Policies and SNAP Development and Possible Solutions

IMPORTANCE FOR THE NATIONAL ECONOMY AND GOAL	LEGAL RULES THAT STEER THE ACTIVITY	POTENTIAL CONFLICTS	SOLUTIONS TO POSSIBLE CONFLICTS
FORESTRY			
<p>This sector contributed 102.5 million pesos to the national economy in the year 2000. The economic crisis increased dependency on national forest goods, so the MINAGRI's goal is to secure wood self-supply for the country, reducing ecosystem disturbances to 0. Sector tendency is to increase</p>	<ul style="list-style-type: none"> ▪ Agreement No. 3183 of the CECM, creating MINAGRI ▪ Law 85, Forest Law ▪ Provision 330/99, Rules for the Forest Law ▪ Law 81, of the Environment ▪ Decree-Law 201, on the National System of Protected Areas ▪ Provision CITMA 77/99, Rules for the Process of Environmental Impact Assessment. 	<ol style="list-style-type: none"> 1. The principal potential conflict occurs at the time of request for official recognition. This is requested by CITMA to the Executive Committee of the Council of Ministries (CECM). Approval follows procedures laid out in Decree Law 201 which requires the conciliation of all entities that may have interest in the area. This consultation is normally undertaken at the territorial level with the participation of members of a range of agencies. These include several from MINAGRI. Agencies with conflicting conservation interest all coexist in this ministry e.g. those that regulate forest activity and its use and those that administer protected areas. Under these circumstances economic concerns may prevail over environmental concerns in the sectoral policy at the time of declaring PAs. As the territorial level entities taking part in the conciliation process may not have clear understandings of the strategic goals of the SNAP. For example SEF may categorise forests locally as production forests when they are highly valuable for conservation. Finally - as this activity is decentralised, generally a specialist from CITMA's Territorial Delegation takes part in the conciliation process & may lack strategic vision about the system. Due to these diverse causes, differences may occur over the management categories proposed by CITMA for areas administered by MINAGRI adversely effecting conciliation in approval process or resulting in activities incompatible with the PA management category. 2. Areas with natural forests proposed as protected areas for the SNAP may already be considered as production forests by forest firms and their forest management may be included within their future production plans. Declaring these zones protected areas with a given management category that restricts or prohibits forest management or synergetic activities within these areas would thus conflict with the economic interests or commitments of these firms and the bodies running them. 3. Declaring new protected areas might be perceived as a threat to the economic interests of the Ministry of Agriculture. 4. A poor forest categorisation may lead to classifying areas with high biotic values into incompatible categories within the production plans of forest firms. 	<ol style="list-style-type: none"> 1. Establishing co-operation mechanisms with CICA that guarantee CNAP's participation in the processes of environmental licensing for forest activities in protected areas or proposals as such. 2. Approval by the CECM of the areas composing the SNAP thus allowing fully application of Decree-Law 201 (the first group of 32 areas was already approved). 3. Undertaking systematic controls and environmental inspections, according to the procedures set up by CITMA, that will allow to verify <i>in situ</i> if the environmental regulations established for each area are met. 4. Establishing co-operation agreements between the State Forest Service and CITMA in order to co-ordinate compatibility and conciliation processes in PA approval.
MINING SECTOR			
<p>This sector contributed 478 million pesos to the national economy in 2000,</p>	<ul style="list-style-type: none"> ▪ Law 76, Law on Mines ▪ 222/97, Rules for the Law on Mines 	<ol style="list-style-type: none"> 1) The mining areas are declared through CECM agreement, following a compatibility-making process with all entities or bodies taking interests in the area, according to the procedure set by Law 76 "Law on Mines" and its complementary legislation; Law 76 anticipates CITMA's mandatory participation in the conciliation process, and 	<ol style="list-style-type: none"> 1) Approval by the CECM of areas composing the SNAP, will allow to fully apply Decree-Law 201.

IMPORTANCE FOR THE NATIONAL ECONOMY AND GOAL	LEGAL RULES THAT STEER THE ACTIVITY	POTENTIAL CONFLICTS	SOLUTIONS TO POSSIBLE CONFLICTS
<p>representing 13% of the DGP. This may increase as prices of those minerals that are currently very depressed, recover. It is an expanding sector & is closely linked to the country economic development. The mining activities that most disturb PAs are those linked to nickel extraction & construction materials, as occur in open mines, Cuba has over 40% of the world nickel reserves, coinciding with areas sheltering important natural values.</p>	<ul style="list-style-type: none"> ▪ Law 77, on Foreign Investment ▪ Law 81, of the Environment ▪ Decree-Law 201, on the National System of Protected Areas ▪ Provision CITMA 77/99, Rules for the Process of Environmental Impact Assessment 	<p>Law 81 makes environmental licensing of any mining activity compulsory; however, there is no rule establishing that CNAP, as SNAP's steering body, participates directly in the conciliation or environmental licensing process with the mining sectors. CITMA's steering entity for this activity is the Centre for Environmental Inspection and Control (CICA), CNAP participates as a consulting entity, its viewpoint being rendered through CICA, which may or may not take it into account. There is a potential risk of either not taking CNAP's viewpoint into consideration or omitting consultation with CNAP.</p> <p>2) As in the case of mining areas, protected areas are approved by CECM's Agreement; so, if areas being proposed are of interest to mining coincide it is hard to reach agreement during the conciliation process. Where mining interests coincide with proposed protected areas, approval by CECM of the latter is hindered, as the proposed protected areas may be regarded by the mining industry as a restraint to its activity with the subsequent economic disturbance, so the mining industry will either oppose the proposed protected areas or will condition the proposal. If this occurs CECM has the casting vote and the economic importance of the mining industry for the country may influence its analysis; this risk increases with the fact as proposed protected areas still do not have an appropriate legal framework, they go to CECM under same conditions as the proposal of the mining industry, with the disadvantage of their poor economic valuation.</p> <p>3) The existence of mining interests in areas that are currently managed as protected areas, make them more vulnerable and poses a threat to their existence or to the management category. Where protected areas lack appropriate legal recognition, economic interests rather than conservation prevail more easily, particularly as the PA economic values are insufficiently defined or well known.</p>	<p>2) Provision CITMA 77/99, Rules for the Process of EIA defines that activities such as mining require EIA and this should be rigorously applied.</p> <p>3) Decree 222, Rules for the Law on Mines, anticipates a compatibility making process previous to the approval of mining areas, where CITMA is one of the obligatory consultation bodies. Mechanisms for this conciliation process are in place and work harmonically; improving them requires only to modify Provision 77/99 of CITMA in order to include CNAP as an obligatory consultation body for those activities that take place in protected areas.</p>
TOURISM			
<p>This sector contributed 5,768.3 million pesos to the national economy in 2000, 20.8% of the DGP Product. It is the main source of income for the country, and promotes other industries such as the construction industry, the light industry, culture, etc.</p>	<p>Tourism has no specific rules to regulate its investment activities. It abides by general regulations that apply to all investment processes in the country such as the : Law 77 on Foreign Investment, the Law 81, of the Environment and the Decree-Law 201, of the National System of Protected Areas</p>	<p>1. Tourism is an increasingly growing sector that currently contributes with the highest incomes to the country economy. It is also the activity attracting most economic and construction investment. Sun and sand is the main tourism modality existing in the country and it attracts most of the investment to this economic sector. The main disturbances resulting from tourism that affect the SNAP are those stemming from causes related to land-use and territorial zoning schemes and tourism development plans that are incompatible with protected areas. The territorial zoning is the function of an entity within the Ministry in charge of drafting the economic policy of the country, and there is a risk that economic rather than environmental interests prevail when making plans and taking decisions concerning projects and schemes or territorial zoning plans that include tourism. Though Law 81 establishes that the Ministry of Economy and Planning, in co-ordination with CITMA, should take action to articulate territorial zoning</p>	<p>1) The Institute of Physical Planning should be mandated to provide the balance with territorial and environment zoning</p> <p>2) Tourism development plans, schemes and projects should be made subject to a process of EIA and Environmental Licensing (strides have been made in this respect, but the pro-</p>

IMPORTANCE FOR THE NATIONAL ECONOMY AND GOAL	LEGAL RULES THAT STEER THE ACTIVITY	POTENTIAL CONFLICTS	SOLUTIONS TO POSSIBLE CONFLICTS
Specialists consider it the driving forces of of the Cuban economy.	Provision CITMA 77/99, Rules for the Process of Environmental Impact Assessment	with environmental zoning, no rules regarding these co-ordination mechanisms have been made yet and once tourism development plans have been included in the National Economy Plan, it is very difficult to stop investment processes. There are no rules making ordering plans or schemes, as plans per se, be subject to environmental licensing.	ceeding is as yet not duly ruled) 3) Bring the legislation that steers planning in line with the new National Environmental System and the juridical tools that resulted from the reorganisation of the Bodies of the State Central Administration (OACE) 4) Include conciliation process between tourism and PA in the project.

ANNEX K Bibliographic References

- Cuban National Statistics Office. Cuba en Cifras, 1998. La Habana.
- Cuevas, J.R. , and F. García. 1982. Los recursos naturales y su conservación. Editorial Pueblo y Educación, La Habana, Cuba. 44 pp.
- Davis, S.D., V.H. Heywood, O. Herrera-MacBryde, J. Villa-Lobos, and A.C. Hamilton, editor, 1997. Centres of plant diversity. A guide and strategy for their conservation. Volume 3: The Americas. World Wildlife Fund and IUCN.
- Echenique, L.M. 1997. Zapata Swamp: Cuba's Largest, Wildest Wetland. International Journal of Wilderness, Vol. 4, #2. p.17-20.
- IUCN 2000. 2000 IUCN Red List of Threatened Species. IUCN - The World Conservation Union. Gland, Switzerland.
- Olson & Dinerstein. 1998. The Global 200: a representation approach to conserving the Earth's most biologically valuable ecoregions. Cons. Biol. 12:502.
- Oviedo, R. 1995. Los recursos fitogenéticos en el Humedal Ciénaga de Zapata (The phytogeographic resources of the Zapata Swamp Wetland). In A. A. Alfonso and M. Gutierrez, eds. *Humedales 94: Memorias del I Simposio Internacional Ciénaga de Zapata (Wetlands I 994: Proceedings of the /I Internofiono/Symposium of Cienegao Swamp)*. Havana: Editorial Academia.
- Pindell, J.L. 1994. Evolution of the Gulf of Mexico and the Caribbean. In S.K. Donovan and T.A. Jackson [eds.], Caribbean geology: An introduction, 265/284. University of the West Indies Publishers Association, Kingston.
- UNEP 1996. CEP Technical Report No. 36 1996: Status of Protected Area Systems in the Wider Caribbean Region. Cuba. [http:// www.cep.unep.org/pubs/techreports/tr36en/countries/cuba.html](http://www.cep.unep.org/pubs/techreports/tr36en/countries/cuba.html)
- Santana E. 1991. Nature Conservation and Sustainable Development in Cuba. Conservation Biology. Volume 5, No. 1, March 1991
- Santana, E. 1994. Conservation Initiatives in Cuba. Society for Conservation Biology. Volume 8.
- Simberloff, D. 1996. Impacts of Introduced Species in the United States. Consequences: Volume 2, Number 2. 1996.
- Vales, M.A., A. Álvarez, L. Montes y A. Avila (Comps.) 1998: Estudio Nacional de la Diversidad Biológica de la República de Cuba. PNUMA-IES-CeNBio. 480 pp.
- Woods, C.A. 1989. Biogeography of the West Indies: Past, present and future. Sandhill Crane Press, Gainesville, Florida.
- World Tourism Organization. http://www.worldtourism.org/market_research/data/pdf/AM.pdf

WWF 1997. WWF Country Plan for Cuba: Conserving Biological Diversity and Sustainable Use 1997-2002, WWF Canada, Toronto.

ANNEX L: PROJECT CATEGORIZATION ANNEX
(For portfolio assessment purposes only, not to be submitted to Council):

a. Focal Area Categories					
Biodiversity		Climate Change		International Waters	Ozone Depletion
Conservation		Energy conservation (prod./distribution)		Transboundary Analysis	Monitoring:
in situ X	ex situ	ESCO's	Efficient Designs	Strat. Action Plan Development	ODS phase out (Production)
Sustainable Use		Solar:		Freshwater Basin	ODS Phase Out (Consumption)
Benefit-sharing		Biomass:		Marine Ecosystem	Other:
Agrobiodiversity		Wind:		Wetland Habitat	
Trust fund		Hydro:		Ship-based	
Ecotourism X		Geothermal:		Toxic Contaminants	
Inventory		Fuel cells:		GPA Demonstration	
Policy & Legislation X		Methane recovery:		Fisheries Protection	
Buffer Zone Dev.		Other:		Global Support:	
b. Categories of General Interest					
Investment		Cap.Building/TA		Targeted Research	Land Degrad.
Technology Transf.		Small Islands X		Info/Awareness X	Private Sector
c. Community & NGO Participation					
<i>Involvement type</i>	project design (tech. advise)	implementation (execution)	info/awareness activities	nat./reg./local consultation	
<i>Names of Communities and NGOs Involved</i>	Biovida, WWF	WWF Biovida Local Communities of 4 pilot projects	Local communities of 4 pilot protected areas	<ul style="list-style-type: none"> • 1 national and 1 regional coordination committee • 1 national workshop and 3 smaller project design workshops 	

ANNEX M: SNAP SYSTEM PLAN

(Attached in separate document because of file size)

Annex N: Co-financing Commitment Letters

SECRETARIAT DU FONDS FRANÇAIS POUR L'ENVIRONNEMENT MONDIAL



Paris, le 15/02/02

Fax n°

EMETTEUR : Rémi GOUIN 
SIGNATAIREs : Jean-Yves GROSCLAUDE
NUMERO DE TELEPHONE / FAX : 01.53.44.37.79/01.53.44.32.48

DESTINATAIRE : Représentant résident du PNUD à Cuba
FAX : (00) 537 / 24.15.16
NOMBRE DE PAGES (S) : 1 + 0

*Si ce document a été incorrectement transmis, prière de nous contacter
If you have any transmission problems, please contact us : 01 53 44 42 42*

Objet : Projet de renforcement du système national des Aires Protégées à Cuba

Monsieur le Représentant résident du PNUD,

J'ai l'honneur de vous confirmer qu'une fiche d'identification du projet en objet a été soumise au Comité de Pilotage du FFEM en juillet 2001 et acceptée au stade de l'identification.

Le rapport de présentation du projet préparé en étroite collaboration avec les experts chargés de l'évaluation de l'appui du GEF au projet, doit être présenté au Comité de Pilotage du FFEM le 28 Mars 2002, en vue d'un engagement financier définitif.

Le montant de financement demandé, au stade actuel de l'instruction, est 1,46 million d'euros.

Je vous prie d'agréer, Monsieur le Représentant résident du PNUD, mes meilleures salutations.

Agence Française de Développement : 5 rue Roland Barthes - 75598 Paris cedex 12 - Email : ffem@afd.fr

GOVERNMENT OF CUBA LETTER
MINISTERIO DE CIENCIA, TECNOLOGIA Y MEDIO AMBIENTE
Dirección de Colaboración Internacional



CITMA

Ciudad de La Habana, 8 de marzo de 2002

Sr. Luis Gómez-Echeverri
Representante Permanente
PNUD Habana
Fax: 204 14 16

Asunto: Proyecto GEF/PNUD "Fortalecimiento del Sistema Nacional de Áreas Protegidas"

Estimado Sr. Gómez-Echeverri:

En relación con el proyecto de referencia, es un placer confirmarle, que el Gobierno de Cuba asumirá el co-financiamiento en el monto que se señala en el Brief del documento de proyecto, que asciende a 9 280 000 USD (equivalente a partir del aporte en moneda nacional).

Por otra parte, reiteramos nuestro compromiso en cubrir los costos recurrentes de los componentes del Sistema Nacional de Áreas Protegidas que hayan sido mejorados con la acción del proyecto.

Al tanto de su atención, le saluda atentamente,

Jorge L. Fernández Chamero
Director
Punto Focal Operacional GEF



cc. Pedro Morales, Director DOEI, MINVEC
Fax: 204 31 83

Capitolllo Nacional, La Habana 10200, CUBA, Tel: (537)867 0606, Fax (537)33 8054
E-mail, Internet: dcicitma@cenlai.inf.cu



WWF COMMITMENT LETTER

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Cuba Field Office

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Fax: (416) 489-3511
panda@wwfcanada.org
www.wwf.ca

Havana, March 5, 2002

Mr.
Luis Gómez-Echeverri
Resident Representative
for the United Nations
Havana, Cuba

Dear Mr. Gómez-Echeverri,

we are hereby pleased to inform that, within the framework of WWF-Canada's cooperation program in Cuba, our organization will contribute US\$ 391.000,00 to the GEF project CUB/01/G41 (PIMS2186), "Strengthening the National System of Protected Areas", as part of the required co-financing.

The aforementioned contribution will be supported almost entirely through a grant allocated to an ongoing project with CNAP, "Conservation and Sustainable Development in the Cuchillas del Toa Biosphere Reserve and the Alejandro von Humboldt National Park". This grant amounts to US\$ 389.028,00 (99,5% of our co-financing). In anticipation to the GEF project, WWF-Canada and CNAP agreed to this co-financing mechanism in the terms of reference for this project, approved by the Government of Cuba.

The remaining 0,5% will be allocated through a new initiative for the conservation and sustainable development in Southwestern Cuba, currently in its development phase and expected to begin in early 2003.

With kind regards,



Michael Bliemsrieder
Cuba Field Director
WWF-Canada

cc: Toni Perera, CNAP
Julia Langer, WWF-Canada

World Wildlife Fund Canada is a national affiliate of the
World Wide Fund for Nature, headquartered in Gland,
Switzerland

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