

National Protected Area Systems Analysis

Gap Analysis

Introduction:

A Gap Analysis tries to identify gaps in an existing system. In a protected areas gap analysis, this would translate to the question; “which conservation features (species, ecosystems, features or other) are not met within the existing protected areas system.

The principal source of information in the analysis was the 1:250.000 Belize Ecosystems Map (Meerman & Sabido, 2001). This map included all terrestrial ecosystems including some inland water ecosystems.

The Meerman & Sabido (2001) map, was essentially an update of the 1995 Vegetation map of Belize by Iremonger and Brokaw (1995). Meanwhile, this Iremonger and Brokaw map borrowed heavily from the Natural Vegetation Map of Belize by Wright et al (1959).

For the marine part, there existed several draft versions of a marine habitat map (Mumby & Harborne, 1999). The scale of the latter map was much finer than that of the Belize Ecosystems Map which made it difficult to integrate it fully in an overall ecosystems map. Also, this marine habitat map existed only in a draft stage and uncertainties remained to which version was the most up to date.

To overcome the inconsistencies caused by the differences and reliability of both products, the various groups of habitats in the marine map were clustered as to represent their main classifications and this result was re-digitized into polygons with a minimum size of 1 acre.

The resulting product was updated and enriched using the following sources:

- Fieldwork data gathered by J. C. Meerman from 2001 through 2004. See <http://biological-diversity.info/projects.htm>
- Recent Landsat tm images: 1947_20040228; 1948_20040127 and 1949_2004_01_27
- Brokaw & Sabido, 1998. Vegetation of the Rio Bravo Conservation & Management Area.
- Murray et al, 1999. Soil-plant relationships and revised vegetation classification of Turneffe Atoll - Belize.,
- Penn et al, 2004. Vegetation of the Greater Maya Mountains, Belize.
- MET department: Climatological data
- Cornec, 2003. Geology map of Belize
- The Belize Territorial waters extend follows the Maritime Areas Act, (GOB, 2000).

The final product being an all encompassing Belize Ecosystems Map¹ <ecosys_bze_2004b> (Meerman, 2005)(figure 2) on a scale of 1:100,000 incorporating the main terrestrial and marine ecosystems (including deep sea habitats). In total 96 ecosystems were thus mapped:

¹ ArcView shapefile available on resource data CD

- 65 Terrestrial classes
- 14 Marine classes
- 7 Agriculture / silviculture / mariculture classes
- 6 Mangrove classes
- 3 Inland water classes
- 1 Urban class

A visualization of the process is presented in Figure 1.

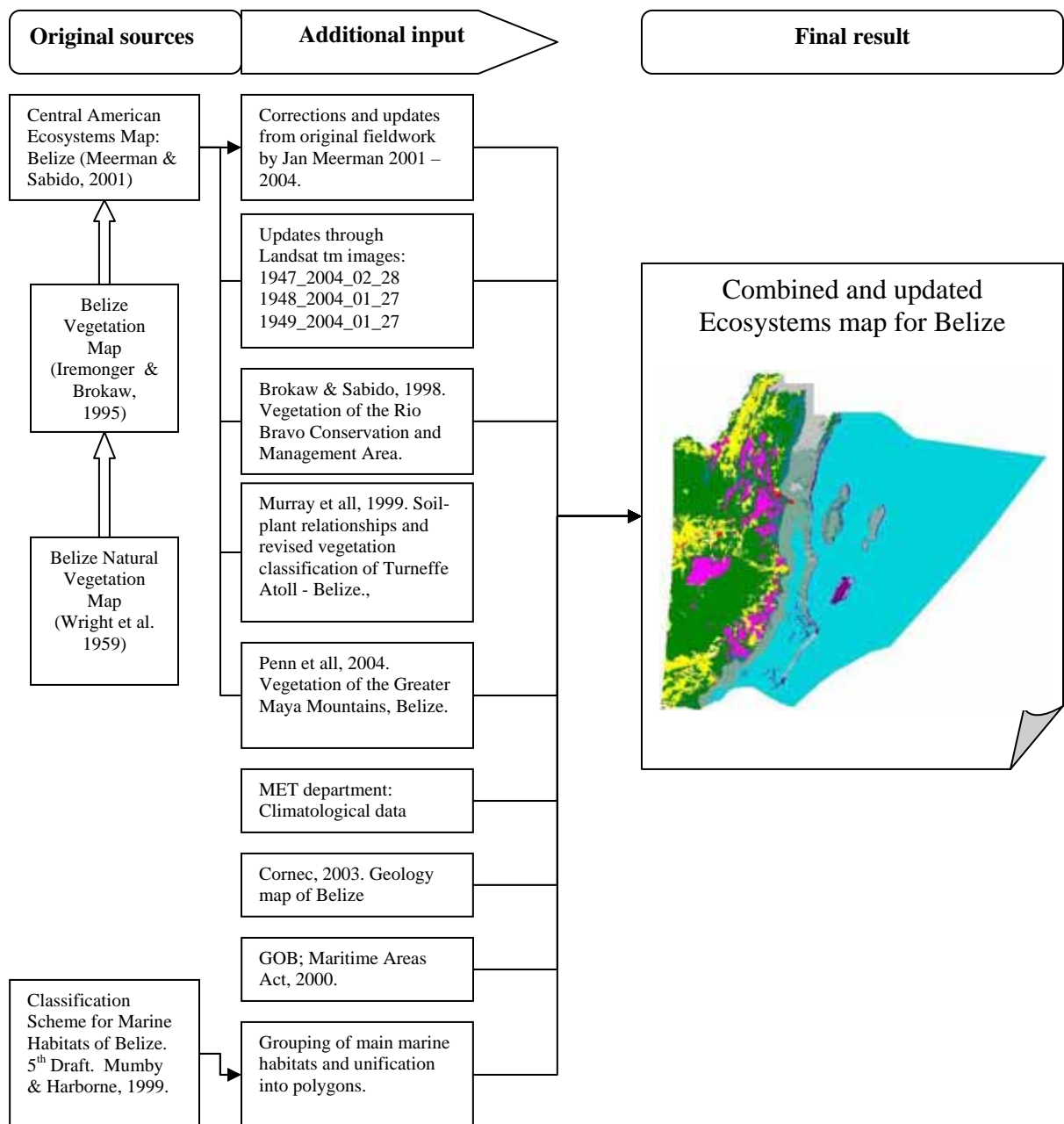


Figure 1. Flowchart showing process leading to updated 2004 Ecosystems Map of Belize

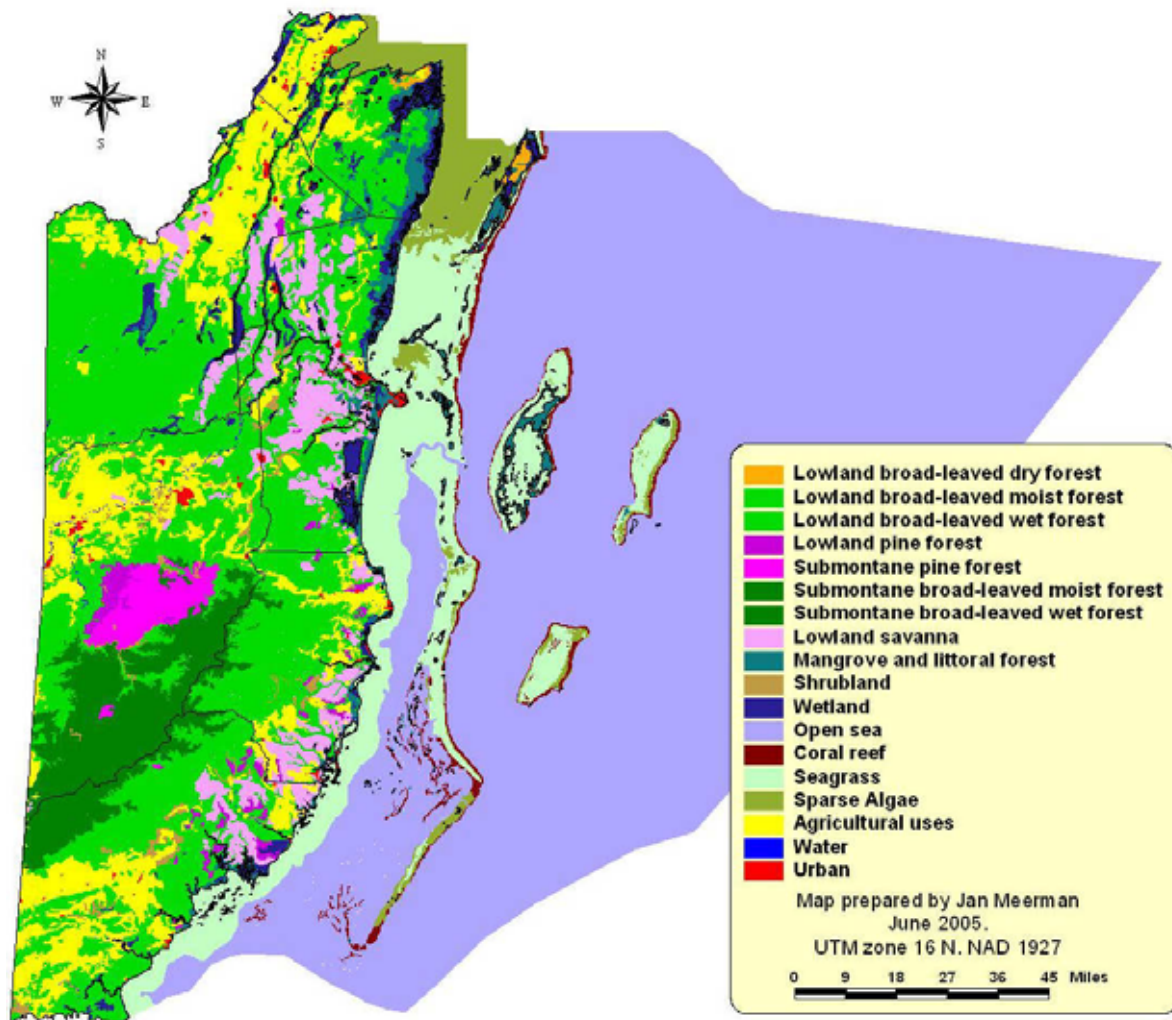


Figure 2. Ecosystems map of Belize - version 2004b (Meerman, 2005). For reasons of scale, the 96 ecosystems have been grouped into 16 broad ecosystem classes.

An ecosystem is the complex of living organisms, their physical environment, and all their interrelationships in a particular unit of space. Since vegetation patterns are at the base of the biological environment. Vegetation patterns have been chosen as “proxy” for ecosystems. And since actual distribution patterns and data for specific species are scarce and generally incomplete, ecosystems have been taken as a proxy for biodiversity patterns. For this reason, the current gap analysis will look at ecosystems only. Other biodiversity indicators will be discussed under the MARXAN analysis².

² See that document

Methodology

Using GIS with the protected areas layer³ <PA20050615> as an overlay on this ecosystem map, it was possible to calculate the coverage (in acres and in hectares) for each ecosystem within the respective protected areas.

The result is table 2 which can be found at the end of this document. This table incorporates 81 protected areas and calculates the surface of the ecosystems mapped for each protected area. Not all protected areas were analyzed in this way. The 1:100,000 scale of the 2004 ecosystem map does not lend itself for small scale analysis and for this reason the tiny bird sanctuaries and several of the smaller archaeological reserves could not be incorporated in this analysis. Note also that some slight discrepancies may exist due to the fact that several of the Spawning aggregations partly fall within other marine reserves.

Fundamental in this analysis was the underlying thought that a minimum area will be required for each habitat/ecosystem. The World Conservation Union (IUCN) recommends a minimum of 10% under protection for each habitat. Theoretically, this would enable the survival of 50 - 70% of the extant species. The Selva Maya, Zoque and Olmec Ecoregional Planning initiative⁴ used a minimum of 30% which would allow the survival of 65 - 85% of the species (see Figure 3).

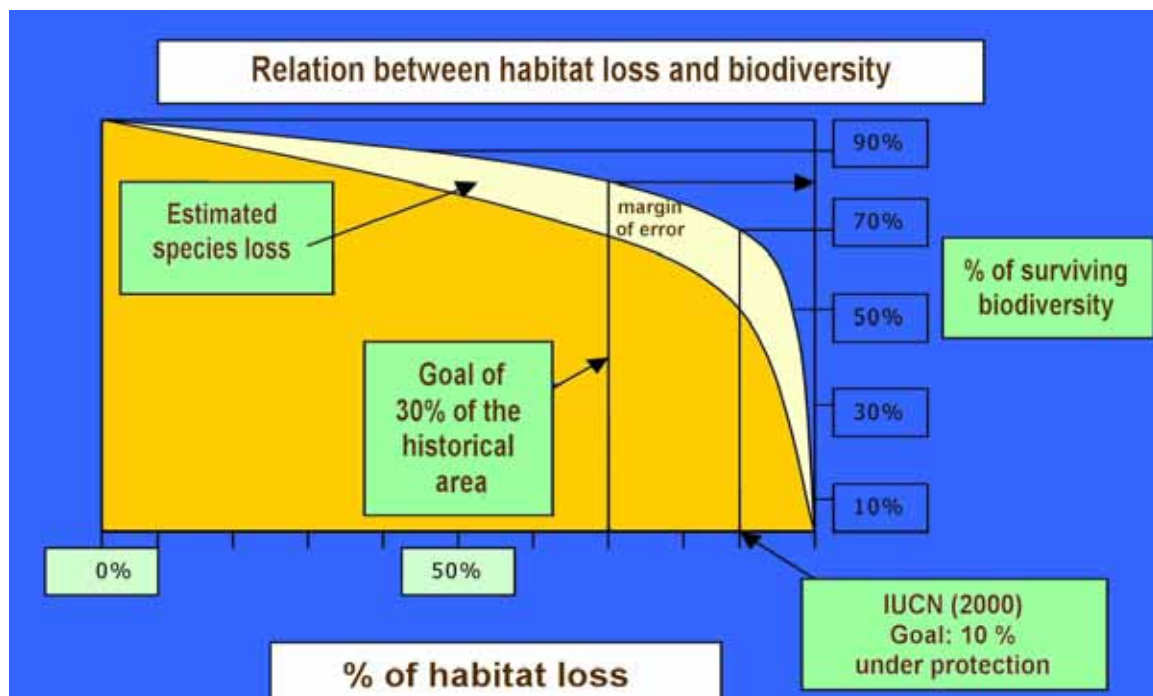


Figure 3. Relation between habitat loss and biodiversity. Adapted from The Selva Maya, Zoque and Olmec Ecoregional Planning initiative, 2004

³ ArcView shapefile available on resource CD

⁴ Reports available on resource CD

However, it was felt that the 10% - 30% targets were too arbitrary. There are certain ecosystems that would require more protection than just 10-30%. For example, a very rare ecosystem occurring only on 5 locations with a combined cover of 2000 acres is not served with 10 or even 30 % protection. For such ecosystems, the target should be much higher, but was set not to exceed 95%. Also, there are ecosystems that provide vital environmental services; these too need a higher target. Some ecosystems are not suitable for any type of development and by default are best preserved. Consequently should be identified as conservation targets. Other important functions could also lead to a higher target setting. Throughout a minimum target setting of 30% was maintained. In particular, the marine working group of the consortium set a standard 30% target for most marine conservation features.

With fixed conservation targets considered too arbitrary, a system needed to be developed that establishes which criteria should be used for setting this target. Such criteria need to be easy to identify using existing data. Criteria used to establish ecosystem – bioregion targets were:

- Slope: Areas with steep slopes are unsuitable for development and have high erosion risks. Consequently, by default, such areas received high conservation marks. Information was derived from a 90 m Digital Elevation Model (DEM) for Belize.
- Rarity: Ecosystems with coverage of < 5,000 acres were considered “rare”. Ecosystems with coverage of 5,000-25,000 acres “uncommon” and ecosystems with 25,000 – 100,000 acres “fairly uncommon” and 100,000 – 1,000,000 acres: “common”. The rarest ecosystems received the highest conservation ranks. Information is based on the 2004 ecosystems map (Meerman, 2005).
- Count: Representing the number of polygons for this ecosystem. Anything under a count of 10 polygons received a slightly higher conservation rank. Information is based on the 2004 ecosystems map (Meerman, 2005).
- Environmental Services: In some cases these are particularly pronounced. Example: Coastal fringe mangroves and Riverine mangroves (erosion control, nurseries). Environmental services with relation to watershed protected are essentially covered under “slope”. Information is based on the 2004 ecosystems map (Meerman, 2005).
- Timber: Some forest types are more important for timber production than others. This is reflected in extra points for timber production. Mahogany rich forests rank highest. Information is based on the 2004 ecosystems map (Meerman, 2005). No other good data exist for this timber analysis. Ideally, all the primary and secondary timber species should be included in this analysis. The current criterion should be seen as a first attempt to quantify production forests.
- Fisheries: Ecosystems particularly important for fisheries are covered here.
- Endemic species: Belize is not particularly rich in endemic species. However there seem to be 2 ecosystems that harbor the bulk of the endemic species (Steep Karts hills and Savanna’s)
- Last of the wild: The analysis by Ramos (2004) identified to large contiguous areas of more or less intact habitat that were particularly important for conservation and then specifically for species requiring large areas of intact habitat. The ecosystems covered by this analysis are covered here.

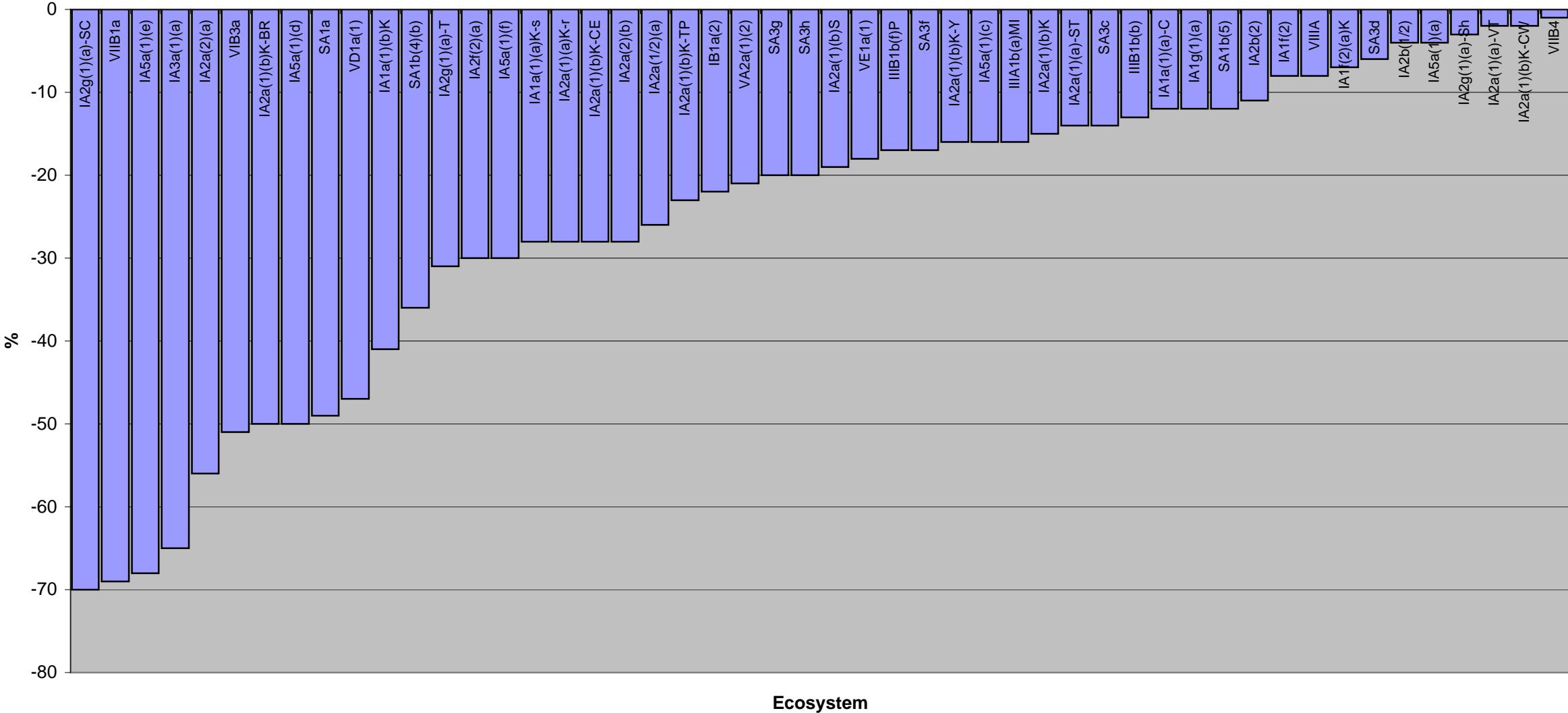
- Low agricultural value: Areas with very low agricultural value are less suitable for agricultural development. Consequently, by default, such areas received higher conservation marks. Information based on King et al. 1992
- Wetlands: Wetlands are considered important locations for biodiversity and water control. Consequently, wetlands received extra conservation marks. Information is based on the 2004 ecosystems map (Meerman, 2005).

Based on the above criteria, the various terrestrial and marine ecosystems were awarded conservation targets varying from 30% to 95%. Some ecosystems would actually reach conservation targets of more than 100% based on their combined criteria. However, for purposes of the analysis, it was decided that a conservation target of 100% would essentially “lock” the target and this would not conform the decision to use a “seeded” method rather than a “locked” method. For this reason, the maximum target percentage was set as 95%. For an explanation of these terminologies see the MARXAN Analysis paper⁵.

Table 3 at the end of the document lists all ecosystem conservation features with their targets including the rationale for these different targets.

⁵ Included as a document on the resource CD

Graphic 1: Conservation feature targets not met within existing protected area system



Graphic 2: Set conservation feature targets exceeded within existing Protected Area system

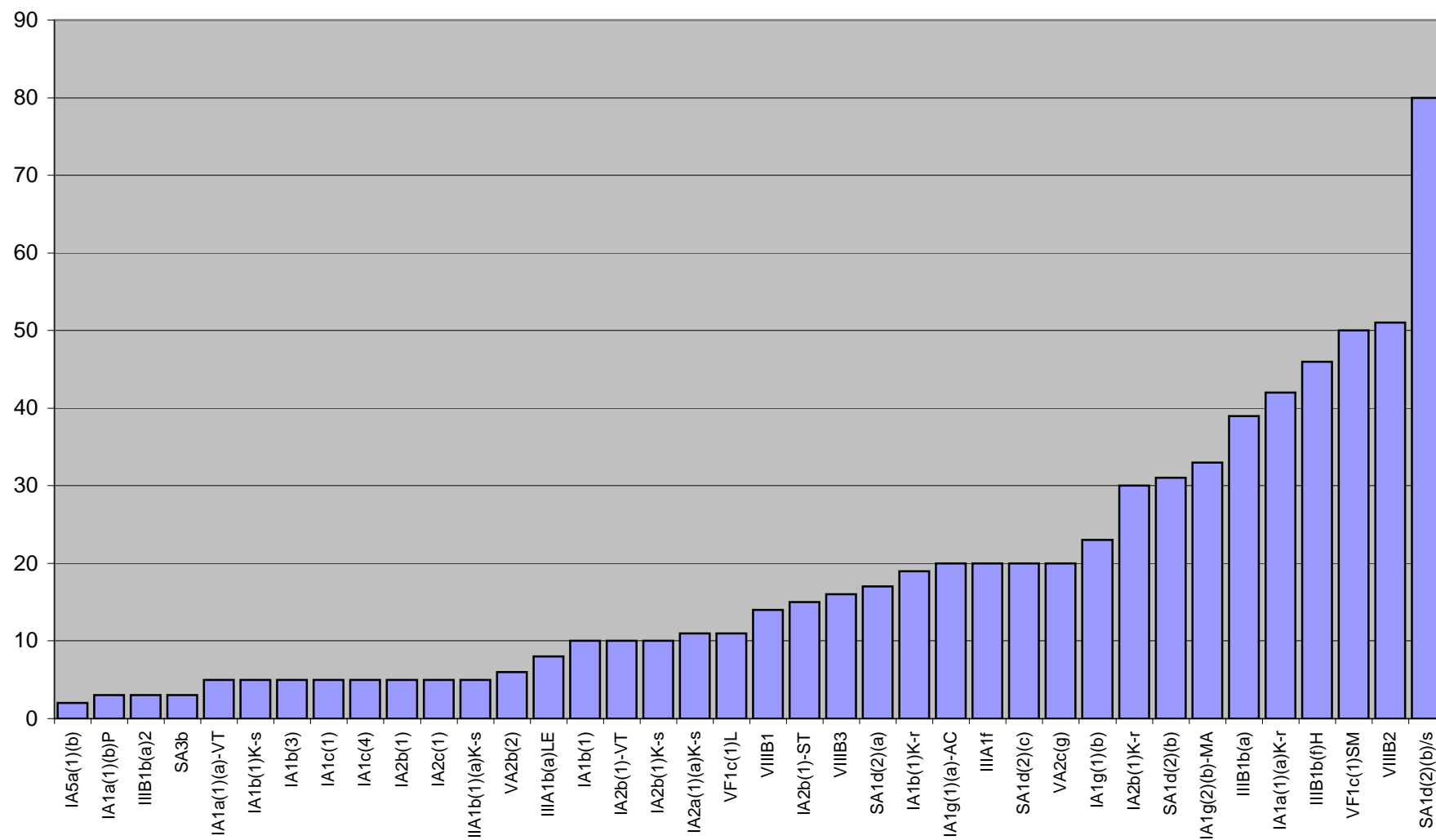


Table 1. The most important ecosystems within the existing Protected Areas System

Unesco Code	MARXAN data file#	Number of Polygons	Ecosystem Description	Scoring rationale										Total	%Target	Discrep.
				Slope	Rare	Count	Env-serv	Timber	Fisheries	Endemics	Last-wild	Low Ag	Wetland			
IA1a(1)(a)K-s	304	17	Tropical evergreen broad-leaved lowland hill forest on steep karstic terrain	40	20					10	10			80	80	-28
IA1a(1)(b)K	305	9	Tropical evergreen broad-leaved lowland forest on calcareous soils		50	10		20						80	80	-41
IA2a(1)(a)K-r	308	4	Tropical evergreen broad-leaved submontane forest on rolling karstic hills		30	10		20			10	10		80	80	-28
IA2a(1)(b)K-BR	324	6	Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Belize River variant		20	10		20						50	50	-50
IA2a(1)(b)K-CE	325	15	Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Central Eastern variant					40						40	40	-28
IA2a(1)(b)K-TP	327	32	Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Tehuantepec-Peten variant					40			10			50	50	-23
IA2a(1/2)(a)	330	4	Tropical evergreen seasonal mixed lowland hill forest	40	50	10		20						120	95	-26
IA2a(2)(a)	331	4	Tropical evergreen seasonal needle-leaved lowland hill forest		40	10		20						70	70	-56
IA2a(2)(b)	332	40	Tropical evergreen seasonal needle-leaved lowland forest		20			20			10			50	50	-28
IA2f(2)(a)	341	51	Tropical evergreen seasonal broad-leaved alluvial forest		30			20						50	50	-30
IA2g(1)(a)-SC	342	6	Tropical evergreen seasonal broad-leaved lowland swamp forest, Stann Creek variant		50	10						10		70	70	-70
IA2g(1)(a)-T	344	183	Tropical evergreen seasonal broad-leaved lowland swamp forest, tall variant					20			10	10		40	40	-31
IA3a(1)(a)	345	4	Tropical semi-deciduous broad-leaved lowland forest		40	10		20				10		80	80	-65
IA5a(1)(d)	349	456	Caribbean mangrove forest; coastal fringe mangrove		20		20				10	10		60	60	-50
IA5a(1)(e)	350	51	Caribbean mangrove forest; riverine mangrove		40		20				10	10		80	80	-68
IA5a(1)(f)	351	91	Caribbean mangrove forest; basin mangrove		30						10	10		50	50	-30
IB1a(2)	352	4	Tropical deciduous microphyllous lowland forest		50	10					10			70	70	-22
SA1a	362	17	River		40						10	10		60	60	-49
SA1b(4)(b)	363	58	Freshwater Lake		40						10	10		60	60	-36
SA3c	NA	1	Caribbean open sea			10			10					20	20	-14
SA3f	372	1	Caribbean open sea - mesopelagic/bathyal			10			10					20	20	-17
SA3g	373	2	Caribbean open sea - bathyal			10			10					20	20	-20
SA3h	374	1	Caribbean open sea - abyssal			10			10					20	20	-20
VA2a(1)(2)	375	50	Short-grass savanna with scattered needle-leaved trees					20		10		10		40	40	-21
VD1a(1)	378	6	Eleocharis marsh. Note: Probably not as badly under protected as indicated. Ecosystem often small and included as patches in other ecosystems.		30							10	10	50	50	-47
VIB3a	391	31	Tropical coastal vegetation on recent sediments (Littoral Forest)		50		10							60	60	-51
VII B1a	392	7	Tropical freshwater reed-swamp		50	10							10	70	70	-69

Findings

By comparing the target values for each ecosystem (table 3) with the actual coverage within each ecosystem (table 2), the gaps in the system become immediately obvious.

Graphic 1 visualizes the ecosystems that are insufficiently met under the current Protected Areas System, while Graphic 2 shows those ecosystems that currently exceed the set conservation feature targets. It is clear that certain ecosystems are under-represented in the system. The 27 most under-represented ecosystems (as identified by a discrepancy of 20% or more) are summarized in table 1.

Some ecosystems are currently not covered at all within the Protected Areas System (discrepancy and target% identical) or do not even meet the 10% minimum IUCN requirement. These include:

- **IA2a(1)(b)K-BR** (Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Belize River variant). This is an ecosystem in the Belize River valley and mostly if not entirely found on private property.
- **IA2g(1)(a)-T** (Tropical evergreen seasonal broad-leaved lowland swamp forest, tall variant)
- **IA2g(1)(a)-SC** (Tropical evergreen seasonal broad-leaved lowland swamp forest, Stann Creek variant). This is a poorly researched ecosystem in the Stann Creek district. There is a potential for including some of this in the protected areas system by expansion of the Gra Gra Lagoon National Park. See case study⁶.
- **VIB3a** (Tropical coastal vegetation on recent sediments). This more commonly known as “littoral forest”. Considered a very important habitat (migratory birds) but located on some of the most coveted real estate.
- **SA3c** (Caribbean open sea) This and the following ecosystem are deep water ecosystems located outside the reef. Virtually no data exist on this huge ecosystem.
- **SA3f** (Caribbean open sea - mesopelagic/bathyal). See above
- **SA3g** (Caribbean open sea – bathyal). See above.
- **SA3h** (Caribbean open sea – abyssal). See above.
- **SA1A** (River) is included in some of the protected area layers but it is unclear whether rivers within protected areas are actually included within the protection. It could very well be that this ecosystem is another one that is essentially not covered within the current system.

Attention should be called to:

- **VD1a(1)** (Eleocharis marsh) and
- **VIIB1a** (Tropical freshwater reed-swamp).

⁶ Included as a document on the resource CD

These are ecosystems that occur as patches within a number of other ecosystems but the patches are too small to be mapped on the 1:100.000 scale. Consequently, these ecosystems are probably not as under-protected as indicated here.

The same caution should be taken with:

- **IA5a(1)(d)** Caribbean mangrove forest; coastal fringe mangrove
- **IA5a(1)(e)** Caribbean mangrove forest; riverine mangrove

Both are narrow linear features in the landscape and consequently subject to mapping problems. As a result, coverage should be taken as indication only. Nevertheless, the fact that these ecosystems were analyzed as under-protected indicates that these ecosystems important for the environmental services they provide should be looked at closely during a conservation planning/implementation phase. It has to be noted that Mangroves already enjoy a certain form of protection under the “Protection of Mangrove” regulations of 1989.

Overlaying the most recent protected areas map on a map indicating the principal under-represented ecosystems gives a good visual presentation of where these under-presented ecosystems are located (figure 4). Largest gaps appear to be in the Northern Belize District, the Southern Orange Walk District and the eastern Cayo Districts. Notice that this map only shows the extend of these conservation features and not which areas need to be selected for conservation. For a rationalization of these data, the MARXAN methodology⁷ was followed.

⁷ See separate paper included on resource CD

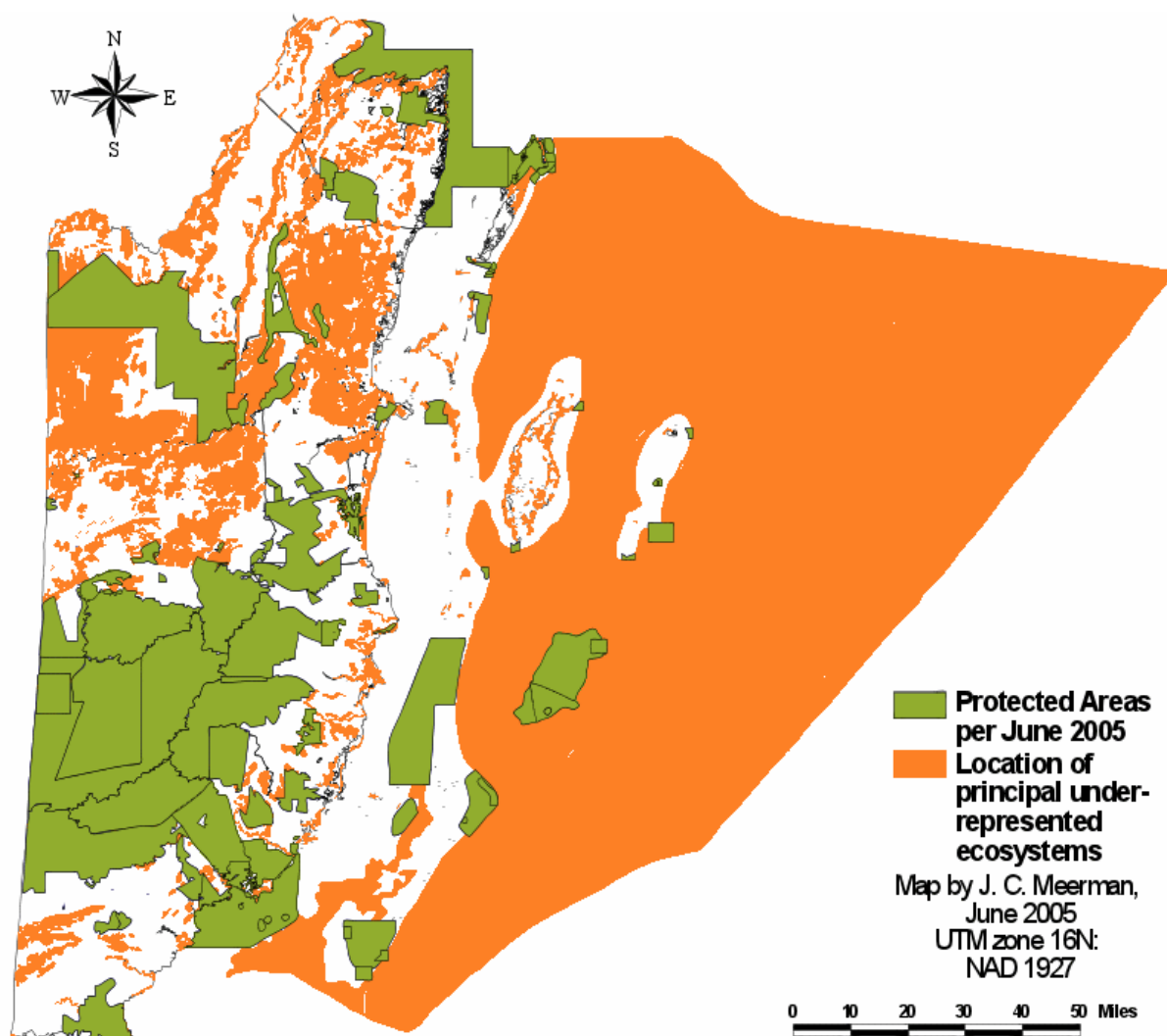


Figure 4. Location of the principal under-represented ecosystems within the current Protected Areas System. Note that this map does not indicate areas to be preserved!

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	IA1a(1)(a)-C	IA1a(1)(a)-VT	IA1a(1)(a)K-r	IA1a(1)(a)K-s	IA1a(1)(b)K	IA1a(1)(b)P	IA1b(1)	IA1b(1)K-r	IA1b(1)K-s
Actun Tunichil Muknal NM									
Aguacaliente WS				137		872			
Aguacate Lagoon									
Aguas Turbias NP									
Bacalar Chico MR									
Bacalar Chico NP									
Barton Creek									
Billy Barquedeer NP									
Bladen NR		11,831	21,062	15,585		2,010	4,004	5,666	6,362
Block 127					224	4,664			
Blue Hole NM									
Burdon Canal NR									
Cahal Pech									
Caracol									
Caye Caulker FR									
Caye Caulker MR									
Chiquibul FR									
Chiquibul NP							38,753		
Cockscomb Basin WS		7,246		2		549			
Columbia River FR	11,945		28,752	27,705			17,120	23,080	25,627
Community Baboon Sanctuary									
Corozal Bay WS									
Crooked Tree WS									
Deep River FR				4,289	1,057	20,915			
Dog Flea SA									
El Pilar									
Emily or Caye Glory SA									
Five Blues Lake NP									
Fresh Water Creek FR									
Gales Point WS									
Gladden Spit SA									
Gladden Spit and Silk Cayes MR									
Glovers Reef MR									
Golden Stream				465	507	8,347			
Gragra Lagoon NP									
Grants Works FR									
Guanacaste NP									
Halfmoon Caye NM									
Hol Chan MR									
Honey Camp NP									
Lamanai									
Laughing Bird Caye NP									
Machaca FR						2,080			
Manatee FR									
Mango Creek (1) FR									
Mango Creek (4) FR									
Maya Mountain FR		1,408				8,960	3,999		
Mayflower Bocawina NP									
Monkey Bay NP									
Monkey Bay									
Monkey Caye FR									
Mountain Pine Ridge FR									
Nicholas Caye SA									
Nojkaaxmeen Eligio Panti NP									
Northern Glovers Reef SA									
Payne's Creek NP					44	1,688			
Port Honduras MR									
Rio Blanco NP									
Rio Bravo C&MA									
Rise and Fall Bank SA									
Rocky Point SA									
Runaway Creek									
Sandbore SA									
Sapodilla Cayes MR									
Sarstoon-Temash NP	3,423					3,058			
Seal Caye SA									
Shipstern Nature Reserve									
Sibun FR									
Silk Cayes MR									
Sittee River FR									
South Point Lighthouse SA									
South Point Turneffe SA									
South Water Caye MR									
Spanish Creek WS									
St. Herman's Blue Hole NP									
Swallow Caye WS									
Swasey-Bladen FR						2,463			
Tapir Mountain NR									
Thousand Foot Falls NM									
Vaca FR									
Victoria Peak NM									
In PA's	15,368	20,486	49,814	48,181	1,832	55,057	64,426	28,745	31,990
National total	22,720	20,486	54,346	92,939	4,671	164,828	64,426	28,993	31,995
% in PA's	67.6	100.0	91.7	51.8	39.2	33.4	100.0	99.1	100.0
Target set	80	95	50	80	80	30	90	80	95
Discrepancy	(12)	5	42	(28)	(41)	3	10	19	5

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	IA1b(3)	IA1c(1)	IA1c(4)	IA1f(2)	IA1f(2)(a)K	IA1g(1)(a)	IA1g(1)(a)-AC	IA1g(1)(b)	IA1g(2)(b)-MA
Actun Tunichil Muknal NM									
Aguacaliente WS						889	1,082		
Aguacate Lagoon									
Aguas Turbias NP									
Bacalar Chico MR									
Bacalar Chico NP									
Barton Creek									
Billy Barquedeer NP									
Bladen NR	22,307	446	556		6,986				
Block 127					207				
Blue Hole NM									
Burdon Canal NR									
Cahal Pech									
Caracol									
Caye Caulker FR									
Caye Caulker MR									
Chiquibul FR									
Chiquibul NP	1,940	1,692	985						
Cockscomb Basin WS					955				
Columbia River FR	5,542				1,310				
Community Baboon Sanctuary									
Corozal Bay WS									
Crooked Tree WS									
Deep River FR					1,650				
Dog Flea SA									
El Pilar									
Emily or Caye Glory SA									
Five Blues Lake NP									
Fresh Water Creek FR									
Gales Point WS									
Gladden Spit SA									
Gladden Spit and Silk Cayes MR									
Glovers Reef MR									
Golden Stream					1,916				
Gragra Lagoon NP									
Grants Works FR									
Guanacaste NP									
Halfmoon Caye NM									
Hol Chan MR									
Honey Camp NP									
Lamanai									
Laughing Bird Caye NP									
Machaca FR						17			
Manatee FR									
Mango Creek (1) FR									
Mango Creek (4) FR				1,645	107				
Maya Mountain FR					395				
Mayflower Bocawina NP									
Monkey Bay NP									
Monkey Bay									
Monkey Caye FR				875	182				
Mountain Pine Ridge FR									
Nicholas Caye SA									
Nojkaaxmeen Eligio Panti NP									
Northern Glovers Reef SA									
Payne's Creek NP				651	3,010				
Port Honduras MR									
Rio Blanco NP									
Rio Bravo C&MA									
Rise and Fall Bank SA									
Rocky Point SA									
Runaway Creek									
Sandbore SA									
Sapodilla Cayes MR									
Sarstoon-Temash NP						12,936		7,026	5,681
Seal Caye SA									
Shipstern Nature Reserve									
Sibun FR									
Silk Cayes MR									
Sittee River FR									
South Point Lighthouse SA									
South Point Turneffe SA									
South Water Caye MR									
Spanish Creek WS									
St. Herman's Blue Hole NP									
Swallow Caye WS									
Swasey-Bladen FR									
Tapir Mountain NR									
Thousand Foot Falls NM									
Vaca FR									
Victoria Peak NM									
In PA's	29,789	2,138	1,541	3,171	16,718	13,841	1,082	7,026	5,681
National total	29,789	2,138	1,541	6,094	31,423	49,770	1,082	8,477	6,092
% in PA's	100.0	100.0	100.0	52.0	53.2	27.8	100.0	82.9	93.3
Target set	95	95	95	60	60	40	80	60	60
Discrepancy	5	5	5	(8)	(7)	(12)	20	23	33

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	IA2a(1)(a)-ST	IA2a(1)(a)-VT	IA2a(1)(a)K-r	IA2a(1)(a)K-s	IA2a(1)(b)K	IA2a(1)(b)K-BR	IA2a(1)(b)K-CE	IA2a(1)(b)K-CW	IA2a(1)(b)K-TP
Actun Tunichil Muknal NM			278		172				
Aguacaliente WS									
Aguacate Lagoon									214
Aguas Turbias NP									5,089
Bacalar Chico MR									
Bacalar Chico NP									
Barton Creek									
Billy Barquedeer NP	1,586								
Bladen NR			14						
Block 127									
Blue Hole NM									
Burdon Canal NR									
Cahal Pech									
Caracol			7,096	12,095					
Caye Caulker FR									
Caye Caulker MR									
Chiquibul FR	4,015		1,177	2,944					
Chiquibul NP	20,216		7,458	24,472					
Cockscomb Basin WS	58,558	4,168	3,899						
Columbia River FR									
Community Baboon Sanctuary					4,112		1,406		
Corozal Bay WS									
Crooked Tree WS							1,213		
Deep River FR									
Dog Flea SA									
El Pilar									37
Emily or Caye Glory SA									
Five Blues Lake NP				880	2,842				
Fresh Water Creek FR									
Gales Point WS									
Gladden Spit SA									
Gladden Spit and Silk Cayes MR									
Glovers Reef MR									
Golden Stream									
Gragra Lagoon NP									
Grants Works FR									
Guanacaste NP									
Halfmoon Caye NM									
Hol Chan MR									
Honey Camp NP									
Lamanai								750	
Laughing Bird Caye NP									
Machaca FR									
Manatee FR	34,021	2,136	682	21,225	11,113				
Mango Creek (1) FR	1,335				1,648				
Mango Creek (4) FR									
Maya Mountain FR	21,752	858		4					
Mayflower Bocawina NP	7,084								
Monkey Bay NP				1,344					
Monkey Bay					190				
Monkey Caye FR									
Mountain Pine Ridge FR				12,908					
Nicholas Caye SA									
Nojkaaxmeen Eligio Panti NP				9,780					
Northern Glovers Reef SA									
Payne's Creek NP									
Port Honduras MR									
Rio Blanco NP									
Rio Bravo C&MA					174		10,928	63,164	82,887
Rise and Fall Bank SA									
Rocky Point SA									
Runaway Creek				2,196	268				
Sandbore SA									
Sapodilla Cayes MR									
Sarstoon-Temash NP									
Seal Caye SA									
Shipstern Nature Reserve									
Sibun FR	16,457	8,858	3,796		21				
Silk Cayes MR									
Sittee River FR	27,991	47,824							
South Point Lighthouse SA									
South Point Turneffe SA									
South Water Caye MR									
Spanish Creek WS					32		4,682		
St. Herman's Blue Hole NP			450	214					
Swallow Caye WS									
Swasey-Bladen FR									
Tapir Mountain NR	571		4,613		77				850
Thousand Foot Falls NM	344								
Vaca FR				27,606					462
Victoria Peak NM	782	561							
In PA's	194,711	64,405	29,464	115,669	20,649	0	18,229	63,914	89,538
National total	296,914	68,967	92,543	163,958	84,181	41,090	147,368	133,983	337,577
% in PA's	65.6	93.4	31.8	70.5	24.5	0.0	12.4	47.7	26.5
Target set	80	95	60	60	40	50	40	50	50
Discrepancy	(14)	(2)	(28)	11	(15)	(50)	(28)	(2)	(23)

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	IA2a(1)(b)K-Y	IA2a(1)(b)S	IA2a(1)(2)(a)	IA2a(2)(a)	IA2a(2)(b)	IA2b(1)	IA2b(1)-ST	IA2b(1)-VT	IA2b(1)K-r
Actun Tunichil Muknal NM									
Aguacaliente WS									
Aguacate Lagoon									
Aguas Turbias NP									
Bacalar Chico MR									
Bacalar Chico NP									
Barton Creek									
Billy Barquedeer NP									
Bladen NR							943		
Block 127									
Blue Hole NM									
Burdon Canal NR		274							
Cahal Pech									
Caracol									785
Caye Caulker FR									
Caye Caulker MR									
Chiquibul FR							16,188	13,963	61,099
Chiquibul NP							71,190	50,762	9,982
Cockscomb Basin WS		13,827					8,904	22,496	
Columbia River FR									
Community Baboon Sanctuary									
Corozal Bay WS									
Crooked Tree WS									
Deep River FR									
Dog Flea SA									
El Pilar									
Emily or Caye Glory SA									
Five Blues Lake NP									
Fresh Water Creek FR	21,239								
Gales Point WS									
Gladden Spit SA									
Gladden Spit and Silk Cayes MR									
Glovers Reef MR									
Golden Stream									
Gragra Lagoon NP		3							
Grants Works FR		1,703			2,617				
Guanacaste NP									
Halfmoon Caye NM									
Hol Chan MR									
Honey Camp NP	4,363								
Lamanai									
Laughing Bird Caye NP									
Machaca FR									
Manatee FR		131			2,179				
Mango Creek (1) FR		153			650				
Mango Creek (4) FR					200				
Maya Mountain FR					1,416			2,167	
Mayflower Bocawina NP		563							
Monkey Bay NP		675							
Monkey Bay									
Monkey Caye FR									
Mountain Pine Ridge FR			630						14,627
Nicholas Caye SA									
Nojkaaxmeen Eligio Panti NP			14	2,476					
Northern Glovers Reef SA									
Payne's Creek NP									
Port Honduras MR									
Rio Blanco NP									
Rio Bravo C&MA		319							
Rise and Fall Bank SA									
Rocky Point SA									
Runaway Creek		2,896							
Sandbore SA									
Sapodilla Cayes MR									
Sarstoon-Temash NP									
Seal Caye SA									
Shipstern Nature Reserve	2,442								
Sibun FR				723			6,643	28,716	
Silk Cayes MR									
Sittee River FR							1,579	14,535	
South Point Lighthouse SA									
South Point Turneffe SA									
South Water Caye MR									
Spanish Creek WS									
St. Herman's Blue Hole NP									
Swallow Caye WS									
Swasey-Bladen FR					2,689				
Tapir Mountain NR									
Thousand Foot Falls NM							119		
Vaca FR				3					
Victoria Peak NM						255		3,217	
In PA's	28,044	20,544	643	3,201	9,751	255	105,566	135,855	86,493
National total	116,962	65,910	935	22,986	44,400	255	111,487	135,857	71,866
% in PA's	24.0	31.2	68.8	13.9	22.0	100.0	94.7	100.0	120.4
Target set	40	50	95	70	50	95	80	90	90
Discrepancy	(16)	(19)	(26)	(56)	(28)	5	15	10	30

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	IA2b(1)K-s	IA2b(1/2)	IA2b(2)	IA2c(1)	IA2f(2)(a)	IA2g(1)(a)-SC	IA2g(1)(a)-Sh	IA2g(1)(a)-T	IA3a(1)(a)
Actun Tunichil Muknal NM									
Aguacaliente WS									
Aguacate Lagoon								47	
Aguas Turbias NP							2,313	1,007	
Bacalar Chico MR									
Bacalar Chico NP									
Barton Creek									
Billy Barquedeer NP									
Bladen NR									
Block 127									
Blue Hole NM									
Burdon Canal NR							28		
Cahal Pech									
Caracol	2,626								
Caye Caulker FR									
Caye Caulker MR									
Chiquibul FR	43,007		2,592						
Chiquibul NP	25,713	3,152							
Cockscomb Basin WS									
Columbia River FR									
Community Baboon Sanctuary									
Corozal Bay WS									
Crooked Tree WS			1,585				11,521	1,646	
Deep River FR									
Dog Flea SA									
El Pilar									
Emily or Caye Glory SA									
Five Blues Lake NP									
Fresh Water Creek FR							1,738	1,384	
Gales Point WS									
Gladden Spit SA									
Gladden Spit and Silk Cayes MR									
Glovers Reef MR									
Golden Stream									1,820
Gragra Lagoon NP						1			
Grants Works FR									
Guanacaste NP									
Halfmoon Caye NM									
Hol Chan MR									
Honey Camp NP							195	3,138	
Lamanai								185	
Laughing Bird Caye NP									
Machaca FR									
Manatee FR							8,959		
Mango Creek (1) FR								2,321	
Mango Creek (4) FR									
Maya Mountain FR									
Mayflower Bocawina NP									
Monkey Bay NP									
Monkey Bay									
Monkey Caye FR									
Mountain Pine Ridge FR		29,179	24,283						
Nicholas Caye SA									
Nojkaaxmeen Eligio Panti NP									
Northern Glovers Reef SA									
Payne's Creek NP									
Port Honduras MR									
Rio Blanco NP									
Rio Bravo C&MA					6,825			16,414	
Rise and Fall Bank SA									
Rocky Point SA									
Runaway Creek									
Sandbore SA									
Sapodilla Cayes MR									
Sarstoon-Temash NP									
Seal Caye SA									
Shipstern Nature Reserve								1,680	489
Sibun FR		1,371	7,901						
Silk Cayes MR									
Sittee River FR									
South Point Lighthouse SA									
South Point Turneffe SA									
South Water Caye MR									
Spanish Creek WS							214	156	
St. Herman's Blue Hole NP									
Swallow Caye WS									
Swasey-Bladen FR									
Tapir Mountain NR									
Thousand Foot Falls NM		9							
Vaca FR	1,030								
Victoria Peak NM				26					
In PA's	72,375	33,711	36,361	26	6,825	1	24,969	27,977	2,310
National total	72,376	36,942	43,151	26	34,485	3,579	93,014	305,539	15,049
% in PA's	100.0	91.3	84.3	100.0	19.8	0.0	26.8	9.2	15.3
Target set	90	95	95	95	50	70	30	40	80
Discrepancy	10	(4)	(11)	5	(30)	(70)	(3)	(31)	(65)

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	IA5a(1)(a)	IA5a(1)(b)	IA5a(1)(c)	IA5a(1)(d)	IA5a(1)(e)	IA5a(1)(f)	IB1a(2)	IIIA1b(1)(a)K-s	IIIA1b(a)LE
Actun Tunichil Muknal NM									
Aguacaliente WS									
Aguacate Lagoon									
Aguas Turbias NP									119
Bacalar Chico MR									
Bacalar Chico NP	5,327		581	1,150		133			
Barton Creek									
Billy Barquedeer NP									
Bladen NR								829	
Block 127		1,141	2,033		318				
Blue Hole NM									
Burdon Canal NR			2,338		97	1,122			
Cahal Pech									
Caracol									
Caye Caulker FR				94					
Caye Caulker MR									
Chiquibul FR									
Chiquibul NP									
Cockscomb Basin WS									
Columbia River FR									
Community Baboon Sanctuary									
Corozal Bay WS	3		1,533	227					
Crooked Tree WS									
Deep River FR	2,996	5,488	1,087		16				
Dog Flea SA									
El Pilar									
Emily or Caye Glory SA									
Five Blues Lake NP									
Fresh Water Creek FR			3,783			2,080			1,992
Gales Point WS			31		7	31			
Gladden Spit SA									
Gladden Spit and Silk Cayes MR									
Glovers Reef MR									
Golden Stream			108						
Gragra Lagoon NP			200			655			
Grants Works FR									
Guanacaste NP									
Halfmoon Caye NM									
Hol Chan MR				210					
Honey Camp NP									
Lamanai									
Laughing Bird Caye NP				33					
Machaca FR									
Manatee FR									
Mango Creek (1) FR									
Mango Creek (4) FR			37						
Maya Mountain FR									
Mayflower Bocawina NP									
Monkey Bay NP									
Monkey Bay									
Monkey Caye FR				28					
Mountain Pine Ridge FR									
Nicholas Caye SA									
Nojkaaxmeen Eligio Panti NP									
Northern Glovers Reef SA									
Payne's Creek NP		5,015	4,017	864	314				
Port Honduras MR				1,683					
Rio Blanco NP									
Rio Bravo C&MA		2,678							35,444
Rise and Fall Bank SA									
Rocky Point SA									
Runaway Creek									
Sandbore SA									
Sapodilla Cayes MR				250					
Sarstoon-Temash NP			384	712	731	1,090			
Seal Caye SA									
Shipstern Nature Reserve	6,258	414		4		333	488		89
Sibun FR									
Silk Cayes MR									
Sittee River FR									
South Point Lighthouse SA									
South Point Turneffe SA									
South Water Caye MR									
Spanish Creek WS									
St. Herman's Blue Hole NP									
Swallow Caye WS				1,013					
Swasey-Bladen FR									
Tapir Mountain NR									
Thousand Foot Falls NM									
Vaca FR									
Victoria Peak NM									
In PA's	14,584	14,736	16,133	6,267	1,483	5,444	488	829	37,644
National total	40,674	28,112	67,132	60,917	11,900	27,302	1,016	829	78,295
% in PA's	35.9	52.4	24.0	10.3	12.5	19.9	48.1	100.0	48.1
Target set	40	50	40	60	80	50	70	95	40
Discrepancy	(4)	2	(16)	(50)	(68)	(30)	(22)	5	8

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	IIIA1b(a)MI	IIIA1f	IIIB1b(a)	IIIB1b(a)2	IIIB1b(b)	IIIB1b(f)H	IIIB1b(f)P	SA1a	SA1b(4)(b)
Actun Tunichil Muknal NM									
Aguacaliente WS				1,588			259		
Aguacate Lagoon									
Aguas Turbias NP				222					
Bacalar Chico MR									
Bacalar Chico NP									
Barton Creek									
Billy Barquedeer NP									
Bladen NR			266		650	11			
Block 127									
Blue Hole NM									
Burdon Canal NR	136								
Cahal Pech									
Caracol									
Caye Caulker FR									
Caye Caulker MR									
Chiquibul FR						2,841			
Chiquibul NP			307		684	454			
Cockscomb Basin WS						1,655			
Columbia River FR				3,449		40			
Community Baboon Sanctuary				27				1,210	
Corozal Bay WS									
Crooked Tree WS	1,227							225	3,290
Deep River FR	1,256			910			8	60	
Dog Flea SA									
El Pilar									
Emily or Caye Glory SA									
Five Blues Lake NP									
Fresh Water Creek FR									404
Gales Point WS									
Gladden Spit SA									
Gladden Spit and Silk Cayes MR									
Glovers Reef MR									
Golden Stream				1,717					
Gragra Lagoon NP									
Grants Works FR				257					
Guanacaste NP								10	
Halfmoon Caye NM									
Hol Chan MR									
Honey Camp NP									72
Lamanai									
Laughing Bird Caye NP									
Machaca FR				7					
Manatee FR	485								
Mango Creek (1) FR									
Mango Creek (4) FR									
Maya Mountain FR							763		
Mayflower Bocawina NP									
Monkey Bay NP							102		
Monkey Bay	549						208		
Monkey Caye FR									
Mountain Pine Ridge FR			4,593		17,701	1,650			
Nicholas Caye SA									
Nojkaaxmeen Eligio Panti NP			164					91	
Northern Glovers Reef SA									
Payne's Creek NP								28	
Port Honduras MR									
Rio Blanco NP				94					
Rio Bravo C&MA	3,463			519			6		63
Rise and Fall Bank SA									
Rocky Point SA									
Runaway Creek							229		
Sandbore SA									
Sapodilla Cayes MR									
Sarstoon-Temash NP		3,715		139				621	
Seal Caye SA									
Shipstern Nature Reserve									
Sibun FR				1,318	4,215				
Silk Cayes MR									
Sittee River FR									
South Point Lighthouse SA									
South Point Turneffe SA									
South Water Caye MR									
Spanish Creek WS							888	1	
St. Herman's Blue Hole NP									
Swallow Caye WS									
Swasey-Bladen FR	87						80		
Tapir Mountain NR									
Thousand Foot Falls NM				376	442				
Vaca FR						48		242	
Victoria Peak NM									
In PA's	7,203	3,715	5,330	10,622	23,692	6,700	2,543	2,488	3,830
National total	51,470	3,715	5,994	45,651	35,479	7,012	11,122	21,833	15,909
% in PA's	14.0	100.0	88.9	23.3	66.8	95.6	22.9	11.4	24.1
Target set	30	80	50	20	80	50	40	60	60
Discrepancy	(16)	20	39	3	(13)	46	(17)	(49)	(36)

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	SA 1b(5)	SA 1d(2)(a)	SA 1d(2)(b)	SA 1d(2)(b)/s	SA 1d(2)(c)	SA 3b	SA 3c	SA 3d	SA 3f
Actun Tunichil Muknal NM									
Aguacaliente WS			84						
Aguacate Lagoon									
Aguas Turbias NP									
Bacalar Chico MR	619	1,261	518		1,487			1,611	
Bacalar Chico NP	2,102								
Barton Creek									
Billy Barquedeer NP									
Bladen NR									
Block 127	644								
Blue Hole NM									
Burdon Canal NR	395								
Cahal Pech									
Caracol									
Caye Caulker FR									
Caye Caulker MR		1,697			1,664			2,650	513
Chiquibul FR									
Chiquibul NP									
Cockscomb Basin WS									
Columbia River FR									
Community Baboon Sanctuary									
Corozal Bay WS									
Crooked Tree WS									
Deep River FR									
Dog Flea SA		122			183			980	140
El Pilar									
Emily or Caye Glory SA		342						512	497
Five Blues Lake NP			10						
Fresh Water Creek FR									
Gales Point WS	8,909								
Gladden Spit SA		898	86					719	2,221
Gladden Spit and Silk Cayes MR		1,989	3,857			5,373		3,152	4,752
Glovers Reef MR		6,835	1,387	37,644	1,746				24,754
Golden Stream									
Gragra Lagoon NP	295								
Grants Works FR									
Guanacaste NP									
Halfmoon Caye NM		52	134		372			691	1,986
Hol Chan MR		731			359			456	44
Honey Camp NP									
Lamanai									
Laughing Bird Caye NP			1,464			8,315	308		
Machaca FR									
Manatee FR	1								
Mango Creek (1) FR									
Mango Creek (4) FR									
Maya Mountain FR									
Mayflower Bocawina NP									
Monkey Bay NP									
Monkey Bay									
Monkey Caye FR									
Mountain Pine Ridge FR									
Nicholas Caye SA		463	21					900	280
Nojkaaxmeen Eligio Panti NP									
Northern Glovers Reef SA									1,149
Payne's Creek NP	453								
Port Honduras MR	34		1,922			25,136	1,531		
Rio Blanco NP									
Rio Bravo C&MA									
Rise and Fall Bank SA		557				3,304	264	127	
Rocky Point SA		192	6		318			584	237
Runaway Creek									
Sandbore SA		77			239			396	575
Sapodilla Cayes MR		4,610	2,328			20,306	5,437	2,723	
Sarstoon-Temash NP									
Seal Caye SA		230				1,366			
Shipstern Nature Reserve	4,809								
Sibun FR									
Silk Cayes MR						8			
Sittee River FR									
South Point Lighthouse SA		36			127			534	562
South Point Turneffe SA		16			20			796	546
South Water Caye MR		2,402	7,625			68,458	3,146	8,334	
Spanish Creek WS									
St. Herman's Blue Hole NP									
Swallow Caye WS									
Swasey-Bladen FR									
Tapir Mountain NR									
Thousand Foot Falls NM									
Vaca FR									
Victoria Peak NM									
In PA's	18,262	22,510	19,442	37,644	6,515	132,265	10,685	25,165	38,256
National total	65,665	60,586	38,340	37,645	16,151	564,533	177,929	183,875	1,237,423
% in PA's	27.8	37.2	50.7	100.0	40.3	23.4	6.0	13.7	3.1
Target set	40	20	20	20	20	20	20	20	20
Discrepancy	(12)	17	31	80	20	3	(14)	(6)	(17)

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	SA 3g	SA 3h	VA 2a(1)(2)	VA 2b(2)	VA 2c(g)	VD 1a(1)	VE 1a(1)	VF 1c(1)L	VF 1c(1)SM
Actun Tunichil Muknal NM									
Aguacaliente WS					372				
Aguacate Lagoon									
Aguas Turbias NP									
Bacalar Chico MR									
Bacalar Chico NP							1,829		
Barton Creek									
Billy Barquedeer NP									
Bladen NR			81	29					
Block 127									
Blue Hole NM									
Burdon Canal NR				216		38			
Cahal Pech									
Caracol									
Caye Caulker FR									
Caye Caulker MR									
Chiquibul FR									
Chiquibul NP									
Cockscomb Basin WS									
Columbia River FR			726						
Community Baboon Sanctuary			1,810	783					
Corozal Bay WS									
Crooked Tree WS			3,249	2,630					
Deep River FR			2,204	23,677					
Dog Flea SA									
El Pilar									
Emily or Caye Glory SA									
Five Blues Lake NP									
Fresh Water Creek FR							606		
Gales Point WS									
Gladden Spit SA									
Gladden Spit and Silk Cayes MR									
Glovers Reef MR	734								
Golden Stream									
Gragra Lagoon NP									
Grants Works FR				1,932					
Guanacaste NP									
Halfmoon Caye NM	5,749								
Hol Chan MR									
Honey Camp NP									
Lamanai									
Laughing Bird Caye NP									
Machaca FR									
Manatee FR			2,293	6,393					
Mango Creek (1) FR			2,357	4				1,231	
Mango Creek (4) FR			2,856	8,924					
Maya Mountain FR									
Mayflower Bocawina NP									
Monkey Bay NP									
Monkey Bay				199					
Monkey Caye FR				106					
Mountain Pine Ridge FR								309	258
Nicholas Caye SA									
Nojkaaxmeen Eligio Panti NP									
Northern Glovers Reef SA	378								
Payne's Creek NP			1,136	12,283					
Port Honduras MR									
Rio Blanco NP									
Rio Bravo C&MA			15,548	7,520					
Rise and Fall Bank SA									
Rocky Point SA									
Runaway Creek				1,408					
Sandbore SA									
Sapodilla Cayes MR									
Sarstoon-Temash NP									
Seal Caye SA									
Shipstern Nature Reserve							3,327		
Sibun FR									
Silk Cayes MR									
Sittee River FR									
South Point Lighthouse SA									
South Point Turneffe SA									
South Water Caye MR									
Spanish Creek WS									
St. Herman's Blue Hole NP									
Swallow Caye WS									
Swasey-Bladen FR			9,456						
Tapir Mountain NR									
Thousand Foot Falls NM									
Vaca FR									
Victoria Peak NM									
In PA's	6,861	0	41,718	66,103	372	38	5,761	1,540	258
National total	2,518,460	2,438,756	218,739	251,561	372	1,416	48,622	5,040	258
% in PA's	0.3	0.0	19.1	26.3	100.0	2.7	11.8	30.6	100.0
Target set	20	20	40	20	80	50	30	20	50
Discrepancy	(20)	(20)	(21)	6	20	(47)	(18)	11	50

Gap Analysis: Belize Ecosystem/Protected Area Gap Analysis: Table 2

	VIB3a	VIB1a	VIB4	VIIA	VIII1	VIII2	VIII3
Actun Tunichil Muknal NM							
Aguacaliente WS							
Aguacate Lagoon							
Aguas Turbias NP							
Bacalar Chico MR				3,113	3,328	4,007	
Bacalar Chico NP	22				1		
Barton Creek							
Billy Barquedeer NP							
Bladen NR							
Block 127							
Blue Hole NM				629	317		
Burdon Canal NR			595				
Cahal Pech							
Caracol							
Caye Caulker FR							
Caye Caulker MR				3,146			
Chiquibul FR							
Chiquibul NP							
Cockscomb Basin WS							
Columbia River FR							
Community Baboon Sanctuary							
Corozal Bay WS				1,913	3,475	173,324	
Crooked Tree WS			9,644				
Deep River FR							
Dog Flea SA							
El Pilar							
Emily or Caye Glory SA							
Five Blues Lake NP							
Fresh Water Creek FR							
Gales Point WS				4			
Gladden Spit SA							72
Gladden Spit and Silk Cayes MR				2,206			4,650
Glovers Reef MR	11				12,180		
Golden Stream			133				
Gragra Lagoon NP		36	104				
Grants Works FR							
Guanacaste NP							
Halfmoon Caye NM	76			389	321		
Hol Chan MR				1,574	10	28	
Honey Camp NP							
Lamanai							
Laughing Bird Caye NP							
Machaca FR							
Manatee FR							
Mango Creek (1) FR							
Mango Creek (4) FR							
Maya Mountain FR							
Mayflower Bocawina NP							
Monkey Bay NP							
Monkey Bay							
Monkey Caye FR							
Mountain Pine Ridge FR							
Nicholas Caye SA							
Nojkaaxmeen Eligio Panti NP							
Northern Glovers Reef SA					9		
Payne's Creek NP	227		4,800				
Port Honduras MR				69,694			
Rio Blanco NP							
Rio Bravo C&MA			11,794				
Rise and Fall Bank SA							
Rocky Point SA					72		
Runaway Creek							
Sandbore SA							
Sapodilla Cayes MR							2,941
Sarstoon-Temash NP				190			
Seal Caye SA							
Shipstern Nature Reserve							
Sibun FR							
Silk Cayes MR							370
Sittee River FR							
South Point Lighthouse SA				58			
South Point Turneffe SA				1			
South Water Caye MR				24,356	93		1,733
Spanish Creek WS							
St. Herman's Blue Hole NP							
Swallow Caye WS				7,959			
Swasey-Bladen FR							
Tapir Mountain NR							
Thousand Foot Falls NM							
Vaca FR							
Victoria Peak NM							
In PA's	336	36	27,069	115,232	19,806	177,359	9,766
National total	3,933	2,986	92,977	967,195	58,942	250,056	27,506
% in PA's	8.6	1.2	29.1	11.9	33.6	70.9	35.5
Target set	60	70	30	20	20	20	20
Discrepancy	(51)	(69)	(1)	(8)	14	51	16

Gap Analysis: Target cover for ecosystem conservation features with rationale - Table 3

Unesco code	ID # shape file	Count	Ecosystem name	Acres	Hectare	Slope	Rare	Count	Env-serv	Timber	Fisheries	Endemics	Last-wild	Low Ag	Wetland	Total	% Target
IA1a(1)(a)-C	301	3	Tropical evergreen broad-leaved lowland hill forest, Callophyllum variant	22,720	9,195		40	10		20			10			80	80
IA1a(1)(a)K-r	303	14	Tropical evergreen broad-leaved lowland hill forest on rolling karstic terrain	54,346	21,993		20			20			10			50	50
IA1a(1)(a)K-s	304	17	Tropical evergreen broad-leaved lowland hill forest on steep karstic terrain	92,939	37,611	40	20					10	10			80	80
IA1a(1)(a)-VT	302	3	Tropical evergreen broad-leaved lowland hill forest, Vochysia-Terminalia variant	20,486	8,290	40	40	10		20			10			120	95
IA1a(1)(b)K	305	9	Tropical evergreen broad-leaved lowland forest o calcareous soils	4,671	1,890		50	10		20						80	80
IA1a(1)(b)P	306	41	Tropical evergreen broad-leaved lowland forest o poor or sandy soils	164,828	66,704					20			10			30	30
IA1b(1)	307	2	Tropical evergreen broad-leaved submontane forest	64,426	26,073	40	20	10					10	10		90	90
IA1b(1)K-r	308	4	Tropical evergreen broad-leaved submontane forest on rolling karstic hills	29,010	11,740		30	10		20			10	10		80	80
IA1b(1)K-s	309	7	Tropical evergreen broad-leaved submontane forest on steep karstic hills	32,000	12,950	40	30	10				10	10	10		110	95
IA1b(3)	310	3	Tropical evergreen broad-leaved submontane palm forest	29,789	12,055	40	30	10					10	10		100	95
IA1c(1)	311	2	Tropical evergreen broad-leaved lower-montane forest	2,138	865	40	50	10						10		110	95
IA1c(4)	312	2	Tropical evergreen broad-leaved lower montane palm forest	1,541	624	40	50	10						10		110	95
IA1f(2)	313	10	Tropical evergreen broad-leaved alluvial forest	6,094	2,466		40			20						60	60
IA1f(2)(a)K	314	32	Tropical evergreen broad-leaved alluvial forest on calcareous soils	31,423	12,716		30			20			10			60	60
IA1g(1)(a)	315	28	Tropical evergreen broad-leaved lowland swamp forest	49,770	20,141		20			20						40	40
IA1g(1)(a)-AC	316	1	Tropical evergreen broad-leaved lowland swamp forest, Aguacaliente variant	1,082	438		50	10						10	10	80	80
IA1g(1)(b)	317	9	Tropical evergreen broad-leaved permanently waterlogged lowland swamp forest	8,477	3,431		40	10						10		60	60
IA1g(2)(b)-MA	318	4	Tropical evergreen broad-leaved permanently waterlogged lowland swamp forest with palms. Manicaria variant	6,092	2,465		40	10						10		60	60

Gap Analysis: Target cover for ecosystem conservation features with rationale - Table 3

Unesco code	ID # shape file	Count	Ecosystem name	Acres	Hectare	Slope	Rare	Count	Env-serv	Timber	Fisheries	Endemics	Last-wild	Low Ag	Wetland	Total	% Target
IA2a(1)(a)K-r	321	23	Tropical evergreen seasonal broad-leaved lowland hill forest, on rolling karstic terrain	92,543	37,451		20			20		10	10			60	60
IA2a(1)(a)K-s	322	50	Tropical evergreen seasonal broad-leaved lowland hill forest on steep karstic terrain	163,958	66,352	40						10	10			60	60
IA2a(1)(a)-ST	319	9	Tropical evergreen seasonal broad-leaved lowland hill forest, Simarouba-Terminalia variant	296,915	120,158	40		10		20			10			80	80
IA2a(1)(a)-VT	320	9	Tropical evergreen seasonal broad-leaved lowland hill forest, Virola-Terminalia variant	68,967	27,910	40	20	10		20			10			100	95
IA2a(1)(b)K	323	53	Tropical evergreen seasonal broadleaf lowland forest over lime-rich alluvium	84,099	34,034		20			20						40	40
IA2a(1)(b)K-BR	324	6	Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Belize River variant	41,090	16,629		20	10		20						50	50
IA2a(1)(b)K-CE	325	15	Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Central Eastern variant	147,368	59,638					40						40	40
IA2a(1)(b)K-CW	326	16	Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Central West variant	133,938	54,203					40			10			50	50
IA2a(1)(b)K-TP	327	32	Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Tehuantepec-Peten variant	337,578	136,613					40			10			50	50
IA2a(1)(b)K-Y	328	31	Tropical evergreen seasonal broad-leaved lowland forest on calcareous soils, Yucatan variant	116,967	47,335					40						40	40
IA2a(1)(b)S	329	54	Tropical evergreen seasonal broad-leaved lowland forest on poor or sandy soils	63,272	25,606		20			20			10			50	50
IA2a(1/2)(a)	330	4	Tropical evergreen seasonal mixed lowland hill forest	935	378	40	50	10		20						120	95
IA2a(2)(a)	331	4	Tropical evergreen seasonal needle-leaved lowland hill forest	22,986	9,302		40	10		20						70	70
IA2a(2)(b)	332	40	Tropical evergreen seasonal needle-leaved lowland forest	44,283	17,921		20			20			10			50	50
IA2b(1)	333	2	Tropical evergreen seasonal broad-leaved submontane elfin forest	255	103	40	50	10						10		110	95
IA2b(1)K-r	336	5	Tropical evergreen seasonal broad-leaved submontane forest on rolling karstic hills	71,866	29,083		20	10	20	20			10	10		90	90

Gap Analysis: Target cover for ecosystem conservation features with rationale - Table 3

Unesco code	ID # shape file	Count	Ecosystem name	Acres	Hectare	Slope	Rare	Count	Env-serv	Timber	Fisheries	Endemics	Last-wild	Low Ag	Wetland	Total	% Target
IA2b(1)K-s	337	8	Tropical evergreen seasonal broad-leaved submontane forest on steep karstic hills	72,376	29,289	40	20	10					10	10		90	90
IA2b(1)-ST	334	10	Tropical evergreen seasonal broad-leaved submontane forest, Simarouba-Terminalia variant	111,487	45,117	40				20			10	10		80	80
IA2b(1)-VT	335	4	Tropical evergreen seasonal broad-leaved submontane forest: Virola-Terminalia variant	135,857	54,980	40		10		20			10	10		90	90
IA2b(1/2)	338	2	Tropical evergreen seasonal mixed submontane forest	36,942	14,950	40	30	10		20			10	10		120	95
IA2b(2)	339	5	Tropical evergreen seasonal needle-leaved submontane forest	43,151	17,463	40	20	10		20			10	10		110	95
IA2c(1)	340	1	Tropical evergreen seasonal broad-leaved lower montane elfin forest	26	11	40	50	10						10		110	95
IA2f(2)(a)	341	51	Tropical evergreen seasonal broad-leaved alluvial forest	34,485	13,955		30			20						50	50
IA2g(1)(a)-SC	342	6	Tropical evergreen seasonal broad-leaved lowland swamp forest, Stann Creek variant	4,704	1,904		50	10						10		70	70
IA2g(1)(a)-Sh	343	55	Tropical evergreen seasonal broad-leaved lowland swamp forest, short tree variant	95,092	38,483		20							10		30	30
IA2g(1)(a)-T	344	183	Tropical evergreen seasonal broad-leaved lowland swamp forest, tall variant	305,534	123,646					20			10	10		40	40
IA3a(1)(a)	345	4	Tropical semi-deciduous broad-leaved lowland forest	15,049	6,090		40	10		20				10		80	80
IA5a(1)(a)	346	25	Caribbean mangrove forest; dwarf mangrove scrub	40,674	16,460		20							10	10	40	40
IA5a(1)(b)	347	14	Caribbean mangrove forest; freshwater mangrove scrub	28,154	11,394		30							10	10	50	50
IA5a(1)(c)	348	151	Caribbean mangrove forest; mixed mangrove scrub	66,436	26,886		20							10	10	40	40
IA5a(1)(d)	349	456	Caribbean mangrove forest; coastal fringe mangrove	60,917	24,652		20		20					10	10	60	60
IA5a(1)(e)	350	51	Caribbean mangrove forest; riverine mangrove	11,900	4,816		40		20					10	10	80	80
IA5a(1)(f)	351	91	Caribbean mangrove forest; basin mangrove	27,881	11,283		30							10	10	50	50

Gap Analysis: Target cover for ecosystem conservation features with rationale - Table 3

Unesco code	ID # shape file	Count	Ecosystem name	Acres	Hectare	Slope	Rare	Count	Env-serv	Timber	Fisheries	Endemics	Last-wild	Low Ag	Wetland	Total	% Target
IB1a(2)	352	4	Tropical deciduous microphyllous lowland forest	1,016	411		50	10						10		70	70
IIIA1b(1)(a)K-s	353	15	Tropical evergreen broad-leaved shrubland on steep karstic hills	829	336	40	50							10		100	95
IIIA1b(a)LE	354	84	Evergreen broad-leaved lowland shrubland dominated by leguminous shrubs	78,295	31,685		20						10	10		40	40
IIIA1b(a)MI	355	28	Evergreen broad-leaved lowland shrubland, Miconia variant	51,470	20,829		20							10		30	30
IIIA1f	356	5	Evergreen broad-leaved lowland peat shrubland with Sphagnum	3,715	1,503		50	10						10	10	80	80
IIIB1b(a)	357	8	Deciduous broad-leaved lowland shrubland, well-drained, over poor soils	5,994	2,426		40	10								50	50
IIIB1b(a)2	358	56	Deciduous broad-leaved lowland disturbed shrubland	45,654	18,476		20									20	20
IIIB1b(b)	359	24	Deciduous mixed submontane shrubland over poor soils	35,479	14,358	40	30							10		80	80
IIIB1b(f)H	360	5	Deciduous broad-leaved lowland riparian shrubland in hills	7,012	2,838		40	10								50	50
IIIB1b(f)P	361	39	Deciduous broad-leaved lowland riparian shrubland of the plains	11,122	4,501		40									40	40
SA1a	362	17	River	21,822	8,831		40							10	10	60	60
SA1b(4)(b)	363	58	Freshwater Lake	15,748	6,373		40							10	10	60	60
SA1b(5)	364	133	Brackish/saline lake	65,673	26,577		20							10	10	40	40
SA1d(2)(a)		58	Coral reef of the Caribbean; Shallow Reefs	60,586	24,529		20		20		10					50	30
SA1d(2)(b)		72	Coral reef of the Caribbean; Patch Reefs	38,340	15,522		30				10					40	30
SA1d(2)(b)/s		5	Coral reef of the Caribbean; Patch Reefs scattered in seagrass beds	37,645	15,241		30	10			10					50	30
SA1d(2)(c)		14	Coral reef of the Caribbean; Spur and groove	16,151	6,539		40		20		10					70	30
SA3b		2	Caribbean inner lagoon	564,682	228,616			10			10					20	30
SA3c		1	Caribbean open sea	177,929	72,036			10			10					20	30
SA3d	371	2	Caribbean open sea	183,873	74,443			10			10					20	30
SA3f	372	1	Caribbean open sea - mesopelagic/bathyal	1,237,423	500,981			10			10					20	30
SA3g	373	2	Caribbean open sea - bathyal	2,340,947	947,752			10			10					20	30
SA3h	374	1	Caribbean open sea - abyssal	2,616,269	1,059,218			10			10					20	30

Gap Analysis: Target cover for ecosystem conservation features with rationale - Table 3

Unesco code	ID # shape file	Count	Ecosystem name	Acres	Hectare	Slope	Rare	Count	Env-serv	Timber	Fisheries	Endemics	Last-wild	Low Ag	Wetland	Total	%Target
VA2a(1)(2)	375	50	Short-grass savanna with scattered needle-leave trees	218,741	88,522					20		10		10		40	40
VA2b(2)	376	73	Short-grass savanna with shrubs	251,561	101,803							10		10		20	20
VA2c(g)	377	5	Short-grass swamp savanna without trees or shrubs	372	150		50	10						10	10	80	80
VD1a(1)	378	6	Eleocharis marsh. Note: not as rare as indicated. Partly included as patches in other ecosystems	1,416	573		30							10	10	50	50
VE1a(1)	379	45	Marine salt marsh rich in succulents	48,622	19,677		20							10		30	30
VF1c(1)L	380	4	Fire-induced lowland fern thicket. Note: disturbance indicator. No conservation priority	5,040	2,040									10		10	20
VF1c(1)SM	390	1	Fire-induced submontane fern thicket. Note: disturbance indicator. No conservation priority	258	104	40								10		50	50
VIB3a	391	31	Tropical coastal vegetation on recent sediments	3,932	1,591		50		10							60	60
VIIb1a	392	7	Tropical freshwater reed-swamp	3,267	1,322		50	10							10	70	70
VIIb4	393	93	Tropical lowland tall herbaceous swamp	92,827	37,566		20								10	30	30
VIIIA		33	Seagrass Beds	967,086	391,533				20		10					30	30
VIIIB1		59	Sparse algae/sand	58,942	23,863		20				10					30	30
VIIIB2		6	Sparse algae/silt	250,056	101,237			10			10					20	30
VIIIB3		9	Fleshy Brown Algae/Gorgonians	27,506	11,136		30	10			10					50	30