Management Plan 2015-2019

Rio Bravo Conservation and Management Area

VOLUME II

CONTENTS

Protected Area Data Sheet		
Date	24.11.14	
Name of Protected Area	Rio Bravo Conservation and Management Area	
Location of Protected Area	Orange Walk District, north-western Belize	
Date of establishment	1989	
Size of Protected Area	Acres: 254,000 (Hectares: 100,400)	
Land Tenure	Private Freehold	
Management Authority	Programme for Belize	
Affiliations / Partnerships with other organizations	Government of Belize (under formal Memorandum of Understanding)	
Number of Staff	Permanent: 35	Temporary: 10 - 28
Annual Budget (Bz$) for management of protected area	c. BZ$ 2.7 million (This is the average for 2010-2014.)	
Designation (Belize or IUCN category, World Heritage Site, RAMSAR etc.)	Private Protected Area – IUCN Category VI	
Reasons for Designation	Conservation of important forest area threatened with fragmentation and clearance	
Brief Details of Past Funding	Mix of donor agency, private donation and funding via international conservation organizations plus self-generated income	
Brief Details of Present Funding	As above	
Brief Details of Future Funding	Self-generated income prioritized, supplemented by donor/charitable support.	
List the two primary protected area objectives		
Conservation of biodiversity and cultural (archaeological) heritage		
Demonstration of sustainable management of forest resources compatible with biodiversity conservation		
List the top two most important threats to the protected area (and indicate why these were chosen)		
Unmanaged fire associated with unauthorized hunting – most extensive direct threat, with serious impacts on broadleaf forest and especially on lowland pine savannah.		
Illegal logging – the single greatest of all threats to conservation targets, affecting primarily the broad-leaved lowland forest.		
List the top two critical management activities		
'Financial sustainability strategy' – ecotourism and sustainable timber harvesting to give secure/reliable budgetary underpinning to sustain conservation management programmes		
Pine savannah and fire management – addresses key threat and most degraded ecosystem		

Name/s of assessors and people consulted: Osmany Salas, Valentino Shal, and Michael F. Somerville in consultation with senior PfB administrative and field staff

Contact details: The Executive Director, PfB, 1 Eyre St, Belize City

APPENDIX 1: RBCMA-STNP SPECIES INVENTORY, PLANTS

The list is compiled from all available records of plants found to date on or around the Rio Bravo Conservation and Management Area. The taxonomy and nomenclature follows Balick et al 2000 (Balick) unless a more recent assessment has been posted on the web version of the Flora Mesoamericana (FM), in which case the FM takes precedence. Common names are standardised to assist in field work and stock surveys, favouring those in general use in north-western Belize.

The sources for inclusion in the list may be collections or sight records. Collections from the RBCMA with voucher specimens are given precedence. Where numerous specimens have been obtained only a representative selection is listed, although as many different collectors as possible are included. Sight records are only given if there is no voucher specimen or if the collecting locality is given as 'Orange Walk' (in which case the species is only listed if there are supporting sightings). The observers are noted by initials: B – Dr Nick Brokaw; RW - Roger Wilson; SS – 'stock survey', with identifications by Darrell Novello. All ATNP records are from the Rapid Ecological assessment (JM – Jan Meerman) unless noted otherwise. Important collections consist of: GoB – Forest Department herbarium; E – Royal Botanic Gardens, Edinburgh; B& S – Brokaw & Schulze, in Missouri Botanical Gardens; S&R – Standley & Record; W – Winzerling; BM – British Museum.

Family *Scientific name*	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
LYCOPODIOPHYTA					
Lycopodiaceae					
Lycopodiella caroliana (L.) Pic.Serm.		H		E	
POLYPODIOPHYTA					
Schizaeaceae					
Lygodium venustum Sw.	Wire Whiss	L		E	
Adiantaceae					
Acrostichum aureum L	Tiger Bush	H		E	
Adiantum tenerum Sw.	Black Stick		X (sp)	GoB 3219	
Adiantum villosum Sw.				GoB 3220	
Thelypteridaceae					
Thelypteris aff. ovata R.P.St.John		H		E	
Family *Scientific name*	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*

Aspleniaceae					
Cyclopeltis semicordata (Sw.) J.Smith				GoB 3222	
Blechnaceae					
Blechnum serrulatum Rich.		H		E	
Salviniaceae					
Salvinia minima Baker		H	X	E.	
Hypolepidaceae					
Pteridium caudatum			X	SR (RW)	
PINOPHYTA					
Pinaceae					
Pinus caribaea Morelet	Caribean Pine	Tl		E.	
CYCADOPHYTA					
Cycadaceae					
Zamia polymorpha D.W. Stev., A. Moretti & L. Gaudio	Camotillo, Mata Raton	H	X	E	
MAGNOLIOPHYTA *MAGNOLIOPSIDA*					
Annonaceae					
Annona glabra L.	Bobwood, Cove Apple	Tm	X (sp)	E	
Annona muricata L.	Soursop	Tm		SR (RW)	
Annona primigenia Standl. & Steyerm.	Wild Custard Apple			GoB 3281	Vera Cruz – Peten
Annona reticulata L.	Custard Apple	Tm		SR (RW,Br.)	
Cymbopetalum mayanum Lundell	Guanabano	Tm		SR (Br)	Atlantic slope
Malmea depressa (Baill.) Fries	Lancewood, Wild Soursop	Ts	X	B&S 448 (as cf. dep.). W 332.E.	
Xylopia frutescens Aubl.	Polewood	Tl		GoB 540, GoB 3251	
Lauraceae					
Cassytha filiformis L.		Hl		SR (RW)	
Licaria campechiana (Standl.) Kosterm.		T		C.S. B. 31 (S&R).	
Licaria peckii (I.M.Johnst.) Kosterm.	Timbersweet	Tl	X (?)	B&S 129 (as cf.). W 23, 34b.	
Nectandra coriacea (Sw.) Griseb.	Laurel, Timbersweet	Ts		SR (Br.)	
Nectandra salicifolia (H.B.K) Nees	Timbersweet	Tm		E (as cf salic.)	
Piperaceae					
Peperomia obtusifolia (L.) A. Dietr.		Hep		SR (RW)	
Piper aduncum L.	Spanish Elder	Ts/S		SR (RW, Br.).	
Family *Scientific name*	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*

Piper amalago L.	Spanish Elder	S		SR(RW)	
Piper auritum H.B.K.	Cowfoot, Bullhoof	Ts/S		GoB 3230	
Piper jacquemontianum Kunth.		S.	X	B&S 23, 430.	
Piper marginatum Jacq.		S.		B&S 55	
Piper peltatum L.		H/S		SR (RW)	
Piper pseudofuligineum C. DC.		S.		B&S 56	
Piper psilorhachis C. DC.	Spanish Elder	S.	X	B&S 63	Atlantic slope
Piper yucatanense C. DC.		S.		B&S 22, 278.	
Aristolochaceae					
Aristolochia maxima Jacq.				GoB 511	
Nymphaeaceae					
Nymphaea ampla (Salisb.) DC.		Hm/Ha		E.	
Ceratophyllaceae					
Ceratophyllum muricatum			X	SR (RW) – sp.	
Menispermaceae					
Cissampelos pareira L.		L		E.	
Hyperbaena winzerlingii Standl.		Ts	X	B&S 193, E	Atlantic slope
Ulmaceae					
Ampelocera hottlei (Standl.) Standl.	Female Bullhoof	Tl		B&S 41, 264	
Trema micrantha (L.) Blume	Capulin, Wild Bay Cedar	Tm		B&S 96	
Moraceae					
Brosimum alicastrum Sw.	Ramon, Red Breadnut, Ox	Tl	X	B&S 40, 379.E.	
Castilla elastica Sesse	Wild Rubber	Tl		B&S 100	
Dorstenia contrajerva L.		H.		B&S 451	
Ficus americana Aubl.	Fig	He	X sp	B&S 384, W37	
Ficus insipida Willd.	Fig, Amate	Tl		B&S 356, BM/FD	
Ficus maxima Miller		Tl		B&S 33, 34, 214,455, 478. W 589.E.	
Ficus obtusifolia Kunth.				W 85	
Ficus ovalis (Liebm.) Miq.		T		E.	
Ficus cf pertusa L.f.		He/St		SR (Br.)	
Ficus cf. popenoi Standl.		He/St		SR (Br.)	
Maclura tinctoria (L.) D.Don. ex Steud.	Fustic	Tl		B&S 450	
Pseudolmedia glabrata (Liebm.) C.C.Berg	Cherry	T		W 40	
Pseudolmedia spuria (Sw.) Griseb.	Cherry	Tm	X	B&S 131	
Trophis racemosa (L.) Urb.	White Breadnut, White Ramon	Tm		B&S 385. E. GoB 3263	

Family

Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Cecropiaceae					
Cecropia peltata L.	Trumpet, Guarumo	Tm	X	B&S 82, 370. E.	
Coussapoa oligocephala Donn. Sm.		He/Tl		B&S 210 (as C. sp.). W 192.	
Urticaceae					
Boehmeria cylindrica (L.) Sw.		H		E	
Laportea aestuans (L.) Chew	Nettle	H		SR (RW)	
Pilea microphylla (L.) Liebm.	Lace Plant	H		SR (RW)	
Urera baccifera (L.) Gaud.	Cow Itch	H/S		SR (RW, Br.)	
Myricaceae					
Myrica cerifera L.	Tea Bark, Tea Box	Ts		B&S 272. E.	
Fagaceae					
Quercus oleoides Schlect. & Cham.	Oak	Tl.		B&S 276. E.	
Phytolaccaceae					
Achatocarpus nigricans Triana		S		B&S 50, 351, 352	
Phytolacca rivinoides Kunth. & Brucht.		H		SR (RW)	
Rivina humilis L.	Bloodberry	H		B&S 86	
Nyctaginaceae					
Neea psychotrioides J.D.Smith		Ts		B&S 8, 150, 237, 279, 290. W 286.	
Pisonia aculeata L.		L.	X	SR (RW)	
Cactaceae					
Epiphyllum phyllanthus (L.) Haw. var strictum	Santa Rita	Hep		SR (RW)	
Rhipsalis baccifera (J.Miller) Stearn	Mistletoe Cactus	Hep		SR (RW)	
Selenicereus grandiflorus var. donkelaarii (Salm-Dyck) Bauer		Hep		SR (RW)	
Selenicereus testudo (Karw.) Buxbaum	Devil's Gut	Hep	X	SR (RW)	
Opuntia cochenillifera (L.) Mill.	Cochineal	S		SR (RW)	
Willmattea minutiflora Britt.& Rose		Hep		SR (RW)	Atlantic wet forest affinities
Amaranthaceae					
Iresine diffusa Willd.	Bloodleaf	H		GoB 3238	
Portulacaceae					
Portulaca pilosa L.		H		E	
Polygonaceae					
Coccoloba acapulcensis Standl.		Tm	X	W 36.	
Coccoloba barbadensis Jacq.	Wild Grape	T	X sp	E. B&S 172. W327.	
Coccoloba belizensis Standl.	Wild Grape, Uva	Tl		B&S 353. W 36.	
Coccoloba cozumelensis Hemsl.	Wild Grape	Tm.		B&S 163, 309, 449. E.	
Coccoloba diversifolia Jacq.		Ts		SR (RW)	

Family *Scientific name*	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Coccoloba reflexiflora Standl.		Ts /S		B&S 394. E (as cf.)	Northern Atlantic slope
Gymnopodium floribundum Rolfe	Bastard Logwood	Ts/S	X	B&S 190, 280.	Northern Atlantic slope
Neomillspaughia paniculata (J.D.Smith) Blake		L.		B&S 83	At northern range limit
Polygonum punctatum Elliott		H		E	
Dilleniaceae					
Curatella americana L.	Yaha	Ts		E.	
Davilla kunthii A. St.Hil.	Chaparro	L.		PA720	
Doliocarpus dentatus (Aubl.) Standl.		L.	X	SR (RW)	
Tetracera volubilis L. subsp. mollis (Standl.) Kub.	Water Tie-Tie	L.		B&S 162, W 62., E.	
Ochnaceae					
Ouratea lucens (HBK) Engler	Laurel	Ts	X sp	B&S 261. E.	
Ouratea nitida (Sw.) Engler	Bastard Blossom Berries	Ts/S		B&S 114, 446. E.	
Sauvagesia erecta L. ssp. brownii (Blanchori)Sastre		H		E.	
Sauvagesia erecta L. ssp. erecta		H		E.	
Theaceae					
Ternstroemia tepezapote Schlecht. & Cham.	River Crabboo	Tl		B&S 434. W 27. E.	
Quiinaceae					
Quiina schippii Standl.	Pigeon Plum	Tl		SR (Br.)	At northern range limit
Clusiaceae					
Calophyllum brasiliense Cambess.	Santa Maria	Tl	X	B&S 294. W 9.E.	
Clusia lundellii Standl.		He	X	B&S 218	
Hypericum pratense Cham.& Schtdl.		H		E	
Vismia camparaguey Sprague & Riley	Old William, Yellow Sangre	Tm		E	
Tiliaceae					
Corchorus siliquosus L.		H		SR (RW)	
Luehea seemanni Triana & Planch.	Caulote	Tl	X	SR (Br.)	
Luehea speciosa Willd.	Caulote, Mountain Moho	Tl		B&S 65,220	
Muntingia calabura L.	Capulin	Ts	X	SR (RW)	
Trichospermum grewiifolium (A.Rich.) Kosterm.	Moho, Narrowleaf Moho, Capulin	Tl	X	SR (RW, Br.)	
Heliocarpus americanus L		T		?	
Sterculiaceae					
Byttneria aculeata Jacq.	Zarza Hueca	L	X	B&S 121	
Guazuma ulmifolia Lam.	Bay Cedar, Pixoy	Tm	X	B&S 462	
Helicteres guazumifolia H.B.K.		S		E.	
Melochia pyramidata L.		H		SR (RW)	

Family *Scientific name*	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Melochia spicata (L.) Fryxell		H		E	
Theobroma cacao L	Cacao	Ts		SR (Br.)	Introduction
Waltheria indica L.		H		E.	
Bombacaceae					
Ceiba aesculifolia (HBK) Britt. & Baker f.		Tl		SR (Br.)	
Ceiba pentandra (L.) Gaertn.	Cotton, Ceiba	Tl	X	B&S 374, BM/FD	
Ochroma pyramidale (Lam.) Urb.	Polak, Balsa	Tl		SR (RW, Br.)	
Pachira aquatica Aubl.	Provision Bark, Provision Tree	Tl		B&S 476.E.	
Pseudobombax ellipticum (HBK) Dugand	Mapola	Tl	X	B&S 106.E.	
Quararibea sp.	Batidos	Tm		SR (Br.)	
Malvaceae					
Anoda cristata (L.) Schltdl.		H		SR (RW)	
Hampea trilobata Standl.	Moho	Tm	X	W 106. E.	
Hampea stipitata S.Wats	Moho	Tm		B&S 27	
Hibiscus costatus A. Rich.		S/L		E.	
Malachra alceifolia Jacq.	Wild Ochra, Malva	H		SR (RW)	
Malvaviscus arboreus Cav.		S	X	B&S 11	
Pavonia sp.		H		SR (RW)	
Sida acuta Burm.	Broom Weed, Wire Weed	H	X	SR (RW)	
Sida linifolia Cov.		H		E.	
Urena lobata L.	Wild Cotton, Caesar Weed	Hl/S		SR (RW)	
Droseraceae					
Drosera capillaris Poir.	Spider Plant	H		E.	
Flacourtiaceae					
Casearia corymbosa Kunth.	Paletillo	Tm		B&S 47, 348, 383, 469. E.	
Casearia sp.		T		B&S 285	
Laetia thamnia L.		Tm	X	B&S 52, 66, 329. W 1. E.	
Pleuranthodendron lindenii (Turcz.) Sleumer		T		SR (Br.)	
Xylosma flexuosa (Kunth.) Hemsley		S	X sp	W 442. E.	
Zuelania guidonia (Sw.) Britton & Millsp.	Waterwood	Tl	X	B&S 120. W 174, 355.	
Bixaceae					
Bixa orellana L.	Annatto, Achiote	Ts		SR (RW).	
Cochlospermum vitifolium Willd. ex. Spreng.	Wild Cotton	Tm		E	
Lacistemataceae					

Lacistema aggregatum (Berg.)Rusby	Palo Mulatto	Tm		B&S 266	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Violaceae					
Hybanthus calceolaria Schultze		H		E	
Orthion malpighiifolium (Standl.) Standl. & Steyerm.				SR (Br.)	
Rinorea guatemalensis (Wats.) Bart.	Wild Coffee, Cafecillo	Ts/Tm		B&S 104, 128, 282.	
Rinorea hummelii Sprague	Wild Coffee, Cafecillo	T		SR (Br.) S&R.	
Turneraceae					
Piriquetia cistoides (L.) Griseb.		H		E	
Turnera aromatica Arbo		S	X	B&S 212. E.	
Turnera diffusa Willd. ex Schult.	Damiana	S		E	
Turnera ulmifolia L.		H		E	
Passifloraceae					
Passiflora biflora			X		
Passiflora foetida L.		Hl	X	E.	
Passiflora mayarum			X		
Passiflora palmeri			X	SR (RW)	
Passiflora rovirosae Killip		Hl	X	B&S195	
Passiflora urbaniana Killip		Hl	X	E	Belize endemic
Caricaceae					
Carica papaya L.	Papaya	Tm		SR (RW, Br.)	
Jacaratia dolichaula	Wild Pawpaw	Tl		SR (Br.)	
Cucurbitaceae					
Cionosicyus macranthus (Pittier) C.Jeffrey				GoB 559	
Melothria pendula L.		L		SR (RW)	
Psiguria triphylla			X		
Sicydium tamnifolium (HBK) Cogn.		L		SR (RW)	
Capparaceae					
Cleome serrata Jacq.		H		SR (RW)	
Forchhammeria trifoliata Radlk.	Bastard Dogwood	Ts	X	SR (Br.)	
Sapotaceae					
Chrysophyllum mexicanum Brandege ex Standl.	Wild Star Apple	Tm	X	B&S 24, 269. W 387. E.	
Manilkara chicle (Pitt.) Gilly	Chicle Macho, Chiquebul	Tl		SR (Br, RW, SS)	
Manilkara zapota L. P. Royen	Sapodilla, Sapote	Tl	X	B&S 130. E.	
Pouteria amygdalina (Standl.) Baehni	Silion, Silly Young	Tl	X	B&S 42, 205, 252	
Pouteria belizensis			X		

Pouteria campechiana (HBK) Baehni	Mammee Ciruela	Tm	X	B&S 308, 381	
Pouteria durlandii (Standl.) Baehni	Mammee Cerera	Tm	X	B&S 126, 233. W 29, 270.	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Pouteria reticulata (Engler) Eyma	Zapotillo	Tl	X	B&S 305, 369. W 12, 75.	
Pouteria sapota (Jacq.) Moore & Stearn.	Mammee Apple, Zapote	Tl		B&S 101, 132, 360. PA721	
Sideroxylon foetidissimum Jacq subsp gaumeri (Pitt.) T.D.Penn	Cream Tree	Tl	X sp	SR (RW, SS)	Yucatec
Sideroxylon obtusifolium (Roem.& Schult.) Penn.		S		E	
Sideroxylon salicifolium (L.) Lam.	Chachiga, Mijico	Tl		SR (Br.)	
Ebenaceae					
Diospoyros bumelioides			X		
Diospyros yatesiana Standl.		T		B&S 85	Atlantic slope
Diospyros salicifolia Willd.				W 15, 78.	
Theophrastaceae					
Jacquinia macrocarpa Cav.	Knock-me-back	S	X	B&S 28, 366, 435. W 537. E.	
Myrsinaceae					
Ardisia compressa HBK	Male Blossom Berry, Grape	Ts	X	B&S 19, 113, 337, 431	Northern range limit
Myrsine sp.		S		SR (Br.)	
Parathesis cubana (A. DC.) Molinet & Maza		S	X	E.	
Connaraceae					
Connarus lambertii Britton		S		E	Northern range limit
Rourea glabra HBK.	Tie-tie	L		SR (RW)	
Chrysobalanaceae					
Chrysobalanus icaco L.	Coco Plum	Tm/S		B&S 112, 403. E.	
Hirtella americana L.	Pigeon Plum	Tl	X	B&S102,124. W2,95.GoB548.E	
Hirtella racemosa Lam.	Wild Pigeon Plum	T		E	
Licania platypus (Hemsl.) Fritsch	Monkey Apple	Tl		SR (RW, Br,SS)	
Fabaceae - Mimosoideae					
Acacia collinsii Saff.	Cockspur, Ant Thorn	Tm		B&S 43. E.	
Acacia cookii Safford		Tm	X sp	SR (Br)	
Acacia gentlei Standl.	Red Cockspur	Tm		SR (RW)	Vera Cruz-Peten
Acacia cornigera (L.) Willd.		Ts		SR (RW)	
Acacia dolichostachya Blake	Wild Tamarind, Black Tamarind	Tl		SR (RW, Br.) S&R.	
Acacia glomerosa Benth.	White Tamarind, Cantemo	Tl		B&S 123, 164. BM/FD. GoB 32	

Albizzia tomentosa (Micheli) Standl.	Wild Tamarind.	Tl		Record 27 (S&R, FoG).	Near southern range limit
Balizia leucocalyx (Britton & Rose) Barneby & Grimes	Wild Tamarind	T		C.S B. (S&R).	Atlantic slope
Calliandra belizensis (Britt. & Rose) Standl.		Ts/S		B&S 136,169,440.	Yucatec
Calliandra houstoniana (Miller) Standl.	Cabello de Angel	S		E.B&S 75..	
Calliandra tergemina (L.) Benth.		S		B&S 186, 191, 422, 444. E.	
Chloroleucon mangense (Jacq.) Britt.& Rose	Guabillo	Tl		BM/FD	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Cojoba arborea (L.) Britt. & Rose	Barba Jolote	Tl		B&S 216	
Cojoba graciliflora (S.F.Blake) Britt. & Rose	Turtle Bone, John Crow Bead	Ts		B&S 277. E. W68	
Desmanthus virgatus (L.) Willd.		H		SR (RW)	
Enterolobium cyclocarpum (Jacq.) Griseb.	Tubroos, Guanacaste	Tl		BM/FD. E.	
Havardia albicans (Kunth.) Britt&Rose		S		E	
Inga vera Willd.	Guamo, Bribri	Tm		B&S 460	
Inga sp.			X sp	SR (Br.).	
Lysiloma acapulcense (Kunth.) Benth.	Jesmo, John Crow Wood			W 624. BM/FD	
Lysiloma latisiliquum (L.) Benth.	Tsalam	Tl		E	
Mimosa albida Humb.& Bonpl. ex Willd.		S		E	
Mimosa asperata L.		S		E	
Mimosa bahamensis Benth.	Bastard Logwood	S	X	E	
Mimosa pellita Humb. & Bonpl. ex Willd. var pellita		S		SR (RW)	
Mimosa pudica L.	Sensitive Weed	H		E	
Mimosa somnians Humb.& Bonpl. ex Willd.		H		E	
Pithecellobium winzerlingii Britton & Rose	Red Fowl	Tm	X sp	C.S.B. 28 (S&R)	Vera Cruz-Peten
Pithecellobium lanceolatum (Humb. & Bonpl.) Benth	Red Fowl	Ts		H.W.W.1.2. W 565.E. B&S 458.	
Pithecellobium macrandrium Donn. Sm.	Pricklewood	T		H.W.W. (S&R). E.	Atlantic slope
Pithecellobium usumacintensis Lundell				W 68.	
Zapoteca formosa (Kunth.) H.Hearn		L		B&S 64	
Zygia peckii (Rob.) Britt. & Rose		Ts		B&S 289, GoB 554.	Atlantic slope
Zygia gigantifolia			X		
Fabacaeae: Caesalpinioideae					
Bauhinia divaricata L.	Cowfoot, Pata de Vaca	Ts	X	E	
Bauhinia herrerae (Britt. & Rose) Standl. & Steyerm.	Pata de Vaca	L	X	SR (RW)	
Bauhinia ungulata L.		S		E	
Caesalpinia gaumeri Greenm.	Warree Wood	Tl	X	SR (Br., RW)	Yucatec
Caesalpinia pulcherrima (L.) Sw.	Pride of Barbados	Ts		SR (RW)	
Caesalpinia yucatanensis Greenm. var yucatanensis	Bastard Billy Webb	Tm	X	W 148	Yucatec

Cassia grandis L.	Bookut, Stinking Toe	Tl		SR (RW, Br.)	
Chamaecrista diphylla (L.) Greene		H		SR (RW)	
Chamaecrista flexuosa (L.) Greene var. flexuosa		H		E.	
Chamaecrista hispidula (Vahl.) H.S.Irwin & Barneby		H		E.	
Chamaecrista nictitans (L.) Moench. var dissadena	Tamarandillo	H/S		SR (RW)	
Dialium guianense (Aubl.) Steud.	Ironwood	Tl		SR (Br., SS).	
Haematoxylon campechianum L.	Logwood	Tm		E.	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Schizolobium parahybum (Vell.) Blake	Quamwood	Tl		S&R.. BM/FD	
Senna papillosa (Britton & Rose) H.S.Irwin & Barneby	Frijol de Cabra	S		SR (RW)	
Senna pendula			X		
Senna peralteana (H.B.K.) H.S.Irwin & Barneby		S		SR (RW)	
Senna undulata (Benth.) H.S.Irwin & Barneby		S	X	E, GoB 525	
Senna uniflora (Mill.) H.S.Irwin & Barneby		H		E	
Tamarindus indica L.	Tamarind	Tm		SR (RW)	
Fabaceae: Papilionoideae					
Acosmium panamensis (Benth.) Yakoul.	Billy Webb	Tl		BM/FD	
Andira inermis HBK	Ballseed	Tl		E.	
Canavalia brasiliensis Mart. ex Benth.		Hl		SR (RW)	
Centrosema angustifolium (Kunth.) Benth.		H		E.	
Centrosema virginianum (L.) Benth.	Butterfly Pea	Hl		SR (RW)	
Clitoria guianensis (Aubl.) Benth.		H		E	
Crotalaria sagittalis L.		H		E	
Dalbergia glabra (Miller) Standl.	Logwood Brush	Ts/L		E	
Desmodium axillare (Sw.) DC.		H		SR (RW)	
Desmodium barbatum (L.) Benth.& Oerst.		H		E	
Desmodium incanum DC.		S		E	
Desmodium tortuosum (Sw.) DC.		H		SR (RW)	
Erythrina folkersii Kruk. & Mold.	Pita, Coral Tree, Tiger Tree	Ts		SR (Br.)	
Galactia striata (Jacq.) Urb.		Hl		E.	
Gliricidia sepium (Jacq.) Steud.	Madre de Cacao	Tm		B&S 144. W 530.E.	
Gliricidia maculata			X		
Lonchocarpus castilloi Standl.	Black cabbage bark, Machich	Tl	X	W 45.BM/FD	
Lonchocarpus guatemalensis Benth.	Dogwood	Tl	X	SR (Br.)	
Lonchocarpus luteomaculatus Pittier		T	X sp	E	
Lonchocarpus rugosus Benth.	Black Cabbage Bark	Tl	X	W 428.E.	

Lonchocarpus xuul Lundell				GoB 538	
Machaerium cirrhiferum Pittier		L		SR (RW)	
Machaerium seemanni Benth.		L		SR (RW)	
Machaerium sp. (cirrhiferum or falciformis)				W 396	
Myroxylon balsamum (L.) Harms	Balsam of Peru	Tl		SR (Br.)	
Ormosia sp.	Hormigo	Tl		SR (Br.)	
Pachyrhizus ferrugineus (Piper) Sorensen		L	X	SR (RW)	
Piscidia piscipula (L.) Sarg.	Jabin	Tl		SR (Nov.)	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Platymischium dimorphandrum Donn. Sm.	Granadillo	Tl		W 377.	
Pterocarpus officinalis Jacq.	Swamp Kaway	Tl		SR (Nov.)	
Pterocarpus rohrii Vahl.	Mountain Kaway	Tl		SR (RW, Br.)	
Rhynchosia americana (Mill.) Metz.		L		E.	
Rhynchosia minima (L.) DC.	Least Snoutbean	Hl		SR (RW)	
Stylosanthes guianensis (Aubl.) Sw.		H		E.	
Stylosanthes viscosa Sw.		H		E.	
Swartzia cubensis (Britt. & Rose) Standl.	Bastard/Northern Rosewood	Tl	X	W 43, 358. BM/FD.E. GoB 544	
Swartzia cf. robinaefolia Willd.				W 198.	
Vatairea lundellii (Standl.) Killip	Bitter Wood	Tl		SR (Br, SS)	
Zornia reticulata Sm		H		E.	
Proteaceae					
Roupala montana Aubl		Ts		B&S258x. E.	
Myrtaceae					
Calyptranthes bartlettii (Standl.)		Ts	X spp	SR (DN)	Belize endemic
Calyptranthes chytraculia (L.) Sw.		S/Ts		SR (Br.)	
Calyptranthes karlingii Standl.		S		SR (Br.)	Atlantic slope
Calyptranthes millspaughii Urb.	Walk-Naked, Indio Desnudo			W 505	Yucatec
Eucalyptus sp.	Eucalyptus	Tl		SR (RW, Br.)	
Eugenia axillaris (Sw.) Willd.		Ts	X spp	E. (as cf axil). GoB 27	
Eugenia buxifolia Lam.		Ts		E	
Eugenia capuli (Schltdl. & Cham.) O.Berg		Ts		SR (DN.)	Atlantic slope
Eugenia origanoides O.Berg.		Ts		E.	
Eugenia rhombea Krug.& Urb. ex Urb.		S		Br 215	
Eugenia winzerlingii Standl.		Ts		E.	Vera Cruz-Peten
Eugenia yucatanensis Standl.	Blossom Berry	T		C.S.B. 27 (S&R).	Yucatec
Myrciaria floribunda (Willd.) Berg.				SR (Br.)	

Pimenta dioica (L.) Merrill	Allspice	Tl	X	SR (RW, Br, DN)	
Psidium guajuva	Guava	Ts		SR(RW)	
Onagraceae					
Ludwigia peruviana (L.) H.Hara		H		SR (RW)	
Ludwigia octovalvis (Jacq.) Raven		H	X	E.	
Melastomaceae					
Clidemia capitellata (Bonpl.) Don.		S	X sp	SR (RW)	
Clidemia novemnervia Triana		S		E	Northern range limit
Clidemia octona (Bonpl.) L.O.Wms		S		B&S 62	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Clidemia sericea D.Don.		S		E	
Clidemia strigillosa (Sw.) DC.		S		SR (RW)	Northern range limit
Conostegia xalapensis (Bonpl.) Don.		S/Ts		SR (RW)	
Henrietta succosa (Aubl.) DC.		S		E	
Miconia albicans Triana		S		E.	
Miconia argentea (Sw) DC.	White Maya	Tm	X	B&S 323	
Miconia ciliata (Rich.) DC	Maya	S		E.	
Miconia impetiolaris (Sw.) D.Don.	Maya	Ts		SR (Br.)	
Miconia longifolia (Aubl.) DC.		T		B&S 209	
Miconia prasina (Sw.) DC.		S		E.	
Miconia cf schlimii Triana	Maya	Tm		SR (RW)	Northern range limit
Miconia cf serrulata (DC.) Naudin		Ts		SR (RW)	
Miconia stenostachya DC.	Pine Ridge Sirin	S		SR (RW)	
Mouriri myrtilloides subsp. parvifolia (Benth.) Morley	Jug, Half Crown	Tm		SR (RW, Br.)	
Pterolepis stenophylla Gleason		H		E.	
Combretaceae					
Bucida buceras L.	Bullet Tree	Tl	X	B&S 118. W 489.E.	
Combretum fruticosum (Loefl.) Stuntz	Tie-tie, Curassow Comb	L		GoB 3294	
Combretum laxum Jacq.		L		B&S 241	
Conocarpus erectus L.	Buttonwood	Ts		SR (Br.)	
Terminalia amazonia (Gmel.) Exell.	Nargusta	Tl	X	B&S 293. W 74.BM/FD	Introduction
Terminalia catappa L.	Almond	Tl		SR (Br, RW)	
Rhizophoraceae					
Cassipourea guianensis Aubl.	Water Wood	Tm	X	B&S 156, 165 (as cf.). W 406. E.	
Rhizophora mangle L.	Red Mangrove	Tm		E.	
Olacaceae					
Schoepfia schreberi J.F.Gmel.		Ts		B&S 187, 188, 441	

Ximenia americana		Ts		Stewart	
Loranthaceae					
Phthirusa pyrifolia (HBK) Eichler		He-pa		E	
Psittacanthus pinicola Kuijt		He-pa		B&S 247	
Struthanthus cassythoides Millsp.		He-pa		SR (RW)	
Struthanthus orbicularis (Kunth.) Blume ex Schult.				E	
Viscaceae					
Phoradendron sp.		He-pa		B&S 117	

Family *Scientific name*	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Balanophoraceae					
Helosis cayennensis (Sw.) Spreng. var mexicana		H-pa		SR (RW)	
Celastraceae					
Crossopetalum gaumeri (Loes.) Lundell		S		B&S 29, 141, 15, 333. Stewart.	
Crossopetalum gentlei (Lundell) Lundell		S		E	Belize endemic
Semialarum mexicanum (Miers.) A.M.W. Mennaga		S		E	
Hippocrateaceae					
Hemiangium excelsum (HBK) A.C.Sm.		Tm		SR (Br.)	
Hippocratea sp.			X sp	Stewart	
Aquifoliaceae					
Ilex guianensis (Aubl.) Kuntze	Cassada, Bird Cherry	T		B&S 407, E.	
Dichapetalaceae					
Dichapetalum donnell-smithii Engler	Auselin	L/T		B&S 429	
Euphorbiaceae					
Adelia barbinervis Schlect. & Cham.	Wild Lime	Ts		B&S 468	
Alchornea latifolia Sw.	Fiddlewood	Tl		B&S 342	
Astrocasia tremula (Griseb.) Webster		Ts		B&S 363	
Bernardia interrupta (Schltdl.) Mull. Arg.	Waika Ribbon	T/S		SR (Br.)	Atlantic slope
Caperonia castaneaefolia (L.) A.St.Hil.		H		E	
Caperonia palustris (L.) St. Hil.		H	X	SR (RW)	
Chamaesyce hirta (L.) Millsp.		H		SR (RW)	
Chamaesyce hypericifolia (L.) Millsp.	Chicken Seed, Wild Pissabed	H		SR (RW)	
Cnidoscolus multilobus (Pax) I.M.Johnst.	Nettle, Picapica	Ts/H		SR (RW, ?Br.).	
Codiaeum variegatum (L.) Blume		S		SR (RW)	
Croton schiedeanus Schltdl.	Wild Cinnamon	Ts		SR (RW)	
Croton glandulosepalus Millsp.		Ts/S		SR (RW)	
Croton hirtus L'Herit.		H		E.	

Croton billbergianus Mull Arg subsp. pyramidalis		Ts/S	X	SR (RW, Br)	
Croton niveus Jacq.		Ts		B&S 273, 398, 399, 436. W267.	
Croton sp.		Ts/S		B&S 183, 334, 364.	
Dalechampia scandens L.		Hl		SR (RW)	
Dalechampia schippii Standl.		L	X	E.	Belize endemic
Drypetes brownii Standl.	Male Bullhoof	Tl	X	C.S.B.38 (S&R) GoB 474	
Drypetes lateriflora (Sw.) Krug. & Urb.		Tm		B&S 53, 157, 306, 317, 439.	
Euphorbia cyathophora Murr.	Redhead	H		SR (RW).	
Euphorbia pulcherrima Willd. ex. Klotzch.	Flor de Pascua	Ts/S		SR (RW)	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Gymnanthes lucida Sw.	False Lignum Vitae	Tm		B&S 134, 292. W 6.	
Jatropha curcas L.		Ts		B&S 109	
Jatropha gaumeri Greenm.			X	W 524, E.	Yucatec
Manihot esculenta Crantz.	Cassava	S		SR (RW)	
Margaritaria nobilis L.f.	Clawberry, Ramon Macho.	Tm	X	B&S 463, 477.	
Phyllanthus acuminatus Vahl.		S		E.	
Plukenetia penninervia Muell.-Arg.		L	X	SR (RW)	
Ricinus communis L.	Castor Oil	Ts/S		SR (RW)	
Sapium lateriflorum Hemsl.	Leche de Maria	Tl	X	SR (RW,Nov,Br)	
Sebastiana adenophora Pax & K.Hoffm.		T	X sp	E.	
Sebastiana confusa Lundell	White Poisonwood	Ts/Tm		W 40a	Greater Peten
Rhamnaceae					
Colubrina arborescens (Mill.) Sarg.		T		B&S 390	
Gouania polygama (Jacq.) Urb.		L.		B&S 122, 194.	
Krugiodendron ferreum (Vahl.) Urb.	Axemaster, Quebracho	Tl		B&S 479	
Ziziphus mauritiana Lam.	Governor's Plum.	Ts/Tm		SR (RW)	
Vitaceae					
Cissus gossypifolia Standl.		L	X	SR (RW)	
Cissus microcarpa Vahl		L		SR (RW)	
Cissus verticillata (L.) Nicolson & Jarvis		L		B&S 3	
Erythroxylaceae					
Erythroxylum guatemalense Lundell	Redwood	S	X	W 518. E. B&S 116.	
Erythroxylum rotundifolium Lunan		S	X	B&S 189, 421. E.	
Malphighiaceae					
Bunchosia sp.		T		SR (RW, Br.)	
Byrsonima bucidaefolia Standl.	Crabboo	T	X	SR (Br.)	
Byrsonima crassifolia (L.) DC.	Crabboo	Tm	X	E.	

Heteropteris brachiata (L.) DC	Sobach	L		GoB 3268	
Heteropteris laurifolia (L.) A.Juss.		S		E.	
Hiraea fagifolia (DC.) Juss.		L		SR (RW)	
Malpighia glabra L	Wild Crabboo	T	X	S&R, SR (RW)	
Stigmaphyllon ellipticum (Kunth.) A. Juss.		L		E.	
Tetrapteris arcana Morton				GoB 504	
Tetrapteris schiedeana Schlecht. & Cham.		L		SR (RW)	
Vochysiaceae					
Vochysia hondurensis Sprague	Yemeri	Tl		SR (RW, Br,DN)	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Polygalaceae					
Polygala longicaulis H.B.K		H		SR (RW)	
Polygala variabilis H.B.K.		H		E	
Polygala sp.		H		E	
Securidaca diversifolia (L.) Blake		L		SR (RW)	
Sapindaceae					
Allophyllus cominia (L.) Sw.	Cherry, Huesillo	Ts/Tm	X	B&S 17. E.	
Blomia prisca (Standl.) Lundell		Tl		B&S 99, 301, 316, 380.	Greater Peten
Cardiospermum grandiflorum Sw.		L		SR (RW)	
Cupania belizensis Standl.	Bastard Grande Betty	Tm	X	B&S 171, 321.	North Atlantic slope
Cupania rufescens Triana & Planche	White Grande Betty	Tm		W 296. E.	northern range limit
Exothea diphylla (Standl.) Lundell	Uayamcox	Tm		SR (Br.)	Yucatec
Exothea paniculata (Juss.) Radlk.		T		SR (Br.)	
Matayba apetala (Madfad.) Radlk.	Boyjob	Tl	X	B&S 320. W 55. E.	
Paullinia cururu L.		L		B&S 7	
Paullinia pinnata L.		L	X	E.	
Sapindus saponaria L.	Soap-seed Tree	Tl		SR (Br, RW)	
Serjanea adiantoides Radlk.		L		E	
Serjania atrolineata Sauvalle & C.Wright		L		SR (RW)	
Serjanea sp.		L.	X sp	E.	
Talisia oliviformis (Kunth.) Radlk.		T		B&S 174, 176	
Talisia floresii Standl.		T		B&S 219	
Thinouia tomocarpa Standl.		L		SR (RW)	Greater Peten
Thouinia paucidentata Radlk.		Tm		B&S 125	Yucatec
Urvillea ulmacea HBK		L		SR (RW)	
Burseraceae					
Bursera simarouba L	Red Gombolimbo	Tl	X	B&S 90, 365. BM/FD.E.	

Protium copal (Schlect. & Cham.) Engler	Copal	Tm	X	B&S 155, 265.E.	
Protium costaricense (Rose) Engler	Copal Macho	T		S&R	Northern range limit
Protium. cf multiramiflorum Lundell	Copal Colorado	Tm		SR (Br.).	Vera Cruz-Peten
Anacardiaceae					
Astronium graveolens Jacq.	Jobillo, Palo Mulatto	Tl		B&S 81	
Astronium fraxinifolium Schott. ex Spreng.				W 342, 360.	
Mangifera indica L.	Mango	Tm/Tl		W 46	Introduction
Metopium brownii (Jacq.) Urb.	Black Poisonwood, Chechem	Tl	X	B&S 295, W 50, GoB 35988	
Mosquitoxylum jamaicense Krug. & Urb.	Bastard Mahogany	Tl		B&S 158	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Spondias mombin L.	Hog Plum	Tl	X	BM/FD	
Spondias purpurea L.	May Plum	Tm		SR (RW)	
Spondias radlokoferi Donn. Sm.	Hog Plum	Tl		SR (Br.)	
Simaroubeaceae					
Simarouba glauca DC.	Negrito	Tl	X	W 21, 566. E. B&S 139	
Picramnia antidesma Sw.		Ts		B&S 146, 369	
Meliaceae					
Cedrela odorata L.	Cedar, Spanish Cedar	Tl	X	B&S 340.BM/FD	Vulnerable
Guarea glabra Vahl.	Cramantee	Tm		B&S 314, 354	
Guarea grandifolia DC.	Wild Ackee	Tl		SR (Br.)	
Melia azedarach L.	Paradise Tree	T		SR (Br.)	
Swietenia macrophylla King	Mahogany, Caoba	Tl	X	B&S 296, 345.BM/FD	Vulnerable
Trichilia havanensis Jacq.	Bastard Lime	Tm	X	B&S 234	
Trichilia minutiflora Standl.	Wild Lime	Tm	X	B&S 39	
Trichilia pallida Sw.	Carbon del Rio	Tm	X	B&S 44	
Rutaceae					
Amyris balsamifera L.		Tm		B&S 433	
Citrus sp.		Tm		SR (RW, Br.)	Introduction
Zanthoxylum caribaeum Lam.	Bastard Prickly Yellow	Tm		B&S 453	
Zanthoxylum ekmanni (Urb.) Alain	Prickly Yellow	Tl		SR (RW, Br.)	
Zanthoxylum juniperinum Poepp.	Black Prickly Yellow	Tm		B&S 341	Northern range limit
Zanthoxylum riedelianum Engl.	Prickly Yellow	T		S&R. W 219.	
Zanthoxylum microcarpum Griseb.	Alligator-toothed Prickly Yellow	T		S&R	
Oxalidaceae					
Oxalis frutescens L.		H		E.	

Araliaceae					
Dendropanax arboreus (L.) Decne & Planch.	White Gombolimbo	Tl	X	B&S 15, 137	
Oreopanax liebmannii Marchal	Yaxyulup	Ts		Winzerling (Yale 9889) (S&R).	
Oreopanax obtusifolius L.O.Williams		He		B&S 217	
Umbelliferae					
Centella asiatica (L.) Urban		H		E	
Loganiaceae					
Mitreola petiolata (J.F.Gmel.) Torr.& Gray		H		E.	
Polypremum procumbens L.		H		E.	
Spigelia anthelmia L.		H		SR (RW)	
Spigelia humboldtiana Cham. & Schlecht.		H		SR (RW)	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Strychnos panamensis Seeman.	Snake-Seed	L	X	B&S 37	
Gentianaceae					
Coutoubia spicata Aubl.		H	X	E.	
Lisianthus axillaris Hemsl.		S		B&S 111. E.	
Schultesia guianensis (Aubl.) Malme		H		E.	
Voyria sp.		H		B&S 262	
Apocynaceae					
Aspidosperma cruentum Woods	Red Mylady	Tl	X (sp)	SR (Br.)	
Aspidosperma megalocarpon Muell.-Arg.	White Mylady	Tl		W 30.E.	
Cameraria latifolia L.	Savanna White Poisonwood	Tm		B&S 332, E.	
Pentalinon andrieuxii (Mull.-Arg) Hanson & Wunderlin	Contrayerba	L		SR (RW)	
Plumeria obtusa (C.Wright) Woods	Zopilote	Tm	X	SR (Br.)	
Plumeria rubra L.	Frangipani	Tm		SR (Br.)	Introduction
Rauvolfia tetraphylla L.		S		E.	
Stemmadenia donnell-smithii (Rose ex J.D.Smith) Woodson	Cojoton	Tl		B&S 45	
Tabernaemontana alba Mill.	Cojon de Perro	Tm	X(sp)	W 379., E. B&S 35	
Tabernaemontana arborea Rose				GoB 3223	
Thevetia ahouai (L.) DC.	Cojon de Mico, Grandpa's Balls	Ts	X	E. GoB 534.	
Thevetia gaumeri Hemsl.	Good-Luck Seed	Ts		SR (RW)	
?Urechites sp.			X(sp)		
Asclepiadaceae					
Asclepias curassavica L.	Curacao Milkweed	H	X	B&S 68	
Matalea gentlei (Lundell & Standl.) Woodson		L		B&S 79, 238	Yucatec

Metastelma schlechttendalii Decne		L		SR (RW)	
Metastelma stenomeres (Standl. & Steryerm.) Stevens		Hl.		E.	Belizean endemic
Sarcostemma bilobum Hook. & Arn.		L		B&S 74	
Solanaceae					
Capsicum annuum L. var aviculare D'Arcy & Eshb.	Bird Pepper, Chile	S		SR (RW)	
Cestrum racemosum Ruiz & Pavon	Night Bloom	Tm		B&S 376	
Physalis gracilis Miers		H		SR (RW)	
Solandra grandiflora Swartz.	Cup of Gold	S		SR(RW)	Introduction
Solanum americanum Mill.	Common Nightshade	H		SR (RW)	
Solanum erianthum D.Don.	Tabaquillo	Ts		SR (RW)	
Solanum hirtum Vahl.	Shumpa	S		SR (RW)	
Solanum tampicense Dunal	Sosumba	H		SR (RW)	
Solanum nudum Kunth.		S	X	B&S 31	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Solanum rugosum Dunal.		Ts		SR (Br.)	northern range limit
Convolvulaceae					
Evolvulus sericeus Sw.	Zig-Zag Morning Glory	H		E	
Ipomoea alba L.	Morning Glory	Hl	X sp	SR (RW.)	
Ipomea crinicalyx Moore		Hl		SR (RW)	
Ipomoea hederifolia L.	Scarlet Creeper	H		SR (RW)	
Ipomea heterodoxa Standl. & Steyerm.		L		B&S 179	
Ipomea indica (Burm) Merill.	Morning Glory, Gloria de Manana	Hl		E	
Ipomea sagittata Lam.	Glades Morning Glory	Hl		E	
Ipomea sepacuitensis Donn. Sm.				GoB 542	
Ipomea cf. setosa Ker.		Hl		SR(RW)	
Ipomea tiliacea (Willd.) Choisy	Quilamul, Hebil, Campanola	Hl		SR (RW)	
Ipomea tuxtlensis House		L		B&S 18, E.	Atlantic slope
Jacquemontia pentantha (Jacq.) D.Don.		Hl		SR (RW)	
Merremia cissoides (Grisseb.) Hall. f.		Hl		SR (RW)	
Merremia umbellata (L.) Hall. f.		Hl		SR (RW)	
Merremia quinquefolia (L.) Hall. f.	White Cowslip	Hl		SR (RW)	
Menyanthaceae					
Nymphoides indica (L.) Kuntze		H		E.	
Hydrophyllaceae					
Hydrolea spinosa L.		H		SR (RW)	
Boraginaceae					

Bourreria mollis Standl.	Black Fiddlewood, Roble	T		C.S.B. (S&R). B&S 88	
Bourreria oxyphyllaria Standl.	Sacpah	Tl		SR (RW, Br., DN). S&R.	Atlantic slope
Cordia alliodora (R.& P.) Oken	Salmwood	Tl		SR (Br., RW,DN)	
Cordia curassavica (Jacq.) Roem. & Schult.		S		SR (RW)	
Cordia dodecandra DC.	Ziricote	Tm		SR (RW, DN)	Yucatec
Cordia sebestena L.	Ziricote	Tm		SR (Br, RW)	Planted, native at San Felipe?
Cordia spinescens L.		S		E.	
Cordia stellifera I.M.Johnston	Bastard Salmwood	T		GoB 30328. S&R	Atlantic slope
Heliotropium angiospermum Murr.		H		SR (RW)	
Heliotropum fruticosum L.		H		E.	
Tournefortia hirsutissima L.		L		SR (RW)	
Verbenaceae					
Aegiphila elata Sw.		S/L		SR (RW)	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Aegiphila monstrosa Moldenke	Vara Blanca	S/Ts		B&S 297, S&R.	
Callicarpa acuminata	Pukin			SR (Br.)	
Cornutia pyramidata L.		S		E	
Gmelina arborea Roxb.	Gmelina	Tl		SR (RW, Br.)	Introduction
Lantana camara L.	Wild Sage, Cinco Negritos	S		E	
Lippia nodiflora Cham.		H		E	
Lippia stoechadifolia (L.) HBK.)		H		E	
Petrea volubilis L.	Purple Wreath	L		SR (RW)	
Priva lappulacea (L.) Pers.		H		SR (RW)	
Rehdera penninervia Standl. ex Moldenke	Hinge Hinge	Tl		B&S 94, 228, 230	
Tectona grandis L.	Teak	Tl		SR (RW, Br.)	Introduction
Stachytarpheta cayennensis (L.Rich.) Vahl.	Wild Verbena	H	X	SR (RW)	
Stachytarpheta jamaicensis (L.) Vahl		H		E	
Stachytarpheta mineacea Moldenke		H/S	X	B&S 223	Greater Peten
Vitex gaumeri Greenm.	Fiddlewood, Yashnik	Tl	X	B&S 119. W 56, 83, 581.BM/FD.E.	
Lamiaceae					
Hyptis conferta Pohl ex Benth.		H		E	
Marsypianthes chamaedrys (Vahl.) Kuntze		H		E	
Teucrium vesicarium Miller	Verbena	H		SR (RW)	
Scrophulariaceae					
Agalinis harperi Pennell		H		E	
Angelonia ciliaris Robins.		H	X	E	

Anisantherina hispidula (Mart.) Pennell		H		E	
Bacopa lacertosa Standl.		H		SR (RW)	
Bacopa monnieri (L.) Pennell		H		E	
Buchnera pusilla Kunth.		H		E	
Russelia campechiana Standl.		HL		SR (RW)	
Russelia sarmentosa Jacq.		H		E	
Stemodia verticillata (Mill.) Hemsl.		H		SR (RW)	
Acanthaceae					
Aphelandra scabra R.Br.	Chacanal	S		B&S 2, 38, 92. E.	
Blechum pyramidatum (Lam.) Urb.		H		GoB 495	
Odontonema callistachyum (Schltdl&Cham.)Kuntze		S		E	
Ruellia nudiflora (Engel. & Gray) Urb.		H		SR (RW)	
Bignoniaceae					
Adenocalymma inundatum DC				GoB 556	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Amphitecna latifolia (Miller) Gentry	River Calabash	Ts/S	X	B&S 244	
Arrabidaea florida P. DC.		L		B&S 1	
Arrabidaea podopogon (DC) A. Gentry				GoB 535	
Crescentia cujete L.	Calabash	Ts		SR (RW, Br.)	
Parmentiera aculeata (HBK) Seem.	Cow Okra	Tm		SR (RW, Br.)	
Tabebuia guayacan (Seem.) Hemsl.	Yellow Mayflower	Tl		Brown 15. B&S 304, 331	
Tabebuia chrysantha (Jacq.) Nich.	Cortez	Tl		SR (RW, DN). C.S.B. (S&R).	
Tabebuia rosea (Bertol.) DC.	Mayflower	Tl	X(sp)	B&S 470 (as cf.) W 84, 558, 587.	
Tynanthus guatemalensis Donn. Sm.		L		SR (RW)	
Lentibulariaceae					
Utricularia adpressa St. Hil.		H		SR (RW)	
Utricularia foliosa L.		Ha		E.	
Utricularia simulans Pilg.		H		SR (RW)	
Campanulaceae					
Lobelia cardinalis L.		H		E.	
Rubiaceae					
Alibertia edulis (L.Rich.(A. Rich.)	Wild Guava	Ts		B&S 9. E.	
Alseis yucatanensis Standley	Wild Mammee	Tl	X	B&S 36	Atlantic slope
Amaioua corymbosa HBK		Tm		B&S 93. E.	
Appunia guatemalensis J.D.Smith		L		B&S 58	
Chiococca alba (L.) Hitch.		L/S		E.	
Chomelia protracta (Bart.) Standley		S		B&S 254. E.	

Coccocypselum guianense (Aubl.) K. Schum.		H		E	
Cosmocalyx spectabilis Standley		Tl		B&S 232, 330	Yucatec
Coutarea hexandra (Jacq.) K.Schum.		T		B&S 349, 371, 454, 456, 457.	
Diodia apiculata (Willd. ex Roem.&Schult) Schum.		H		E	
Diodia sarmentosa Sw.		H		SR (RW)	
Faramea occidentalis (L.) Rich.		Ts		B&S 251	
Geophila repens (L.) I.M. Johnston		H	X	B&S 4	
Guettarda combsii Urb.	Glassy Wood	Tl	X	B&S 97. W 20. E.	
Guettarda elliptica Sw.	Prickle Wood	T		B&S 406, 464	
Guettarda gaumeri Standl.		S		E.	Yucatec
Guattarda macrosperma J.D.Smith		T		B&S 5	
Hamelia patens Jacq.	Fire Bush	S		B&S 20, 25	
Machaonia acuminata Kunth.		S		E.	
Machaonia lindeniana Baill.		S		W 170. E.	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Morinda royoc L.		S		E.	
Morinda yucatanensis Greenm.		S		SR (RW)	Greater Peten
Palicourea triphylla DC.		S		E.	
Psychotria chiapensis Standley	Cassada, White Wood	T	X sp	B&S 287, 346, 355	
Psychotria costivenia Griseb.		S		B&S 12, 21, 59, 67, 70, 215, 283,	
Psychotria domingensis Jacq.		S		B&S 32	
Psychotria fruticetorum Standley		S		B&S 184, 255, 312, 313. E.	
Psychotria horizontalis Sw.		S		B&S 13, 475	
Psychotria officinalis Kuntze		S		E.	northern range limit
Psychotria pubescens Sw.		S		B&S 30. 71, 108, 239, 248, 275	
Psychotria nervosa Sw.		S		SR (RW)	
Psychotria tenuifolia Sw.		S		B&S 14	
Randia aculeata L.		S		B&S 89, 143, 185, 324, 445. E.	
Randia lundelliana Standl		S/L	X sp	E.	
Randia sp.		S		E.	
Richardia scabra L.		H		SR (RW)	
Simira salvadorensis (Standl.) Steyerm.	John Crow Redwood	Tl	X	B&S 196. W 151, 408.	
Spermacoce assurgens Ruiz & Pav.		H		SR (RW)	
Spermacoce verticillata L.		H	X ?	E.	
Compositae					
Acmella pilosa R.K.Jansen		H		SR (RW)	

Ageratum radicans B.L.Rob.		H		E	Belize endemic
Bidens pilosa L	Spanish Needle	H		SR (RW)	
Bidens squarrosa			X		
Calea jamaicense (L.) L.		H		E	
Clibadium arboreum Donn.Sm.		Ts		SR (Br.)	Atlantic slope
Chromolaena odorata (L.) King & Rob.	Crucito	S/L		SR (RW)	
Cosmos caudatus HBK.		H		SR (RW)	
Cyanthillium cinereum (L.) H. Rob.		H		SR (RW)	
Emilia fosbergii Nicolson		H		E	
Hebeclinum macrophyllum (L.) DC		H		SR (RW)	
Goldmanella sarmentosa Greenm.		H		SR (RW)	Greater Peten
Harleya oxylepis (Benth.) Blake		H		SR (RW)	
Koanophyllon albicaule (Sch.Bip.ex Klatt) King & Rob.	Old Woman's Walking Stick	Ts		SR (Br., RW)	
Lasianthaea fruticosa (L.) Becker		S	X	GoB 494	
Melanthera nivea (L.) Small	Spanish Needle	H		E	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Mikania micrantha Kunth		L		E	
Montanoa atriplicifolia (Pers.) Sch.Bip.		L		SR (RW)	
Neurolaena lobata (Sw.) R.Br.	Jack-ass Bitters	H		GoB 3226	
Parthenium hysterophorus L.		H		SR (RW)	
Perymenium gymnolomoides (Less.) DC.		S/L		SR (RW)	
Pluchea odorata (L.) Cass.		S		SR (RW)	
Pluchea foetida L.		H		E	
Spiracantha cornifolia HBK.		H		SR (RW)	
Sphagneticola trilobata (L.) Pruski		H		SR (RW)	
Vernonanthura patens (HBK) L.Robb.				GoB 512	
Wedelia acapulcensis Kunth.		H		E	
Zexmenia serrata La Llave		L		SR (RW)	
LILIOPSIDA					
Dioscoreaceae					
Dioscoria sp.	Wild Yam	L		SR (RW)	
Smilacaceae					
Smilax mollis H.& B.	Sarsaparilla	L		SR (RW)	
Smilax spinosa Miller		L		E	
Dracaenaceae					
Dracaena americana J.D.Smith	Candle Wood	Tm	X	B&S 138	

Hypoxidaceae					
Hypoxis decumbens L.	Star Grass	H		SR (RW)	
Amaryliidaceae					
Hymenocallis littoralis (Jacq.) Salisb.		H		E	
Iridaceae					
Cipura campanulata Ravenna		H		E	
Agavaceae					
Agave angustifolia			X		
Orchidaceae					
Bletia purpurea (Lam.) DC.		H		E	
Catasetum integerrimum			X		
Encyclia bractescens (Lindl.) Hoehne		He	X	SR (RW)	
Encyclia cochleata (L.) Lemee	Black Orchid	He		SR (RW)	
Epidendrum anceps Jacq.	Dingy Epidendrum			SR (RW)	
Epidendrum nocturnum			X		
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Epidendrum paniculatum			X		
Epidendrum rigidum Jacq.	Rigid Epidendrum	He	X	SR (RW)	
Epidendrum stamfordianum Batem.		He		SR (RW)	
Maxillaria rufescens			X		
Maxillaria tenuifolia Lindl.		He	X	SR (RW)	
Maxillaria variabilis			X		
Myrmecophila tibicinis (Batem. ex Lindl.) Rolfe	Canyo, Horn Orchid	He		SR (RW)	
Oeceoclades maculate			X		
Oncidium ascendens Lindl.	Onion Orchid	He	X	SR (RW)	
Oncidium sphacelatum			X		
Ornitocephalus gladiatus			X		
Pleurothallus ?cobanensis			X		
Pleurothallis grobyi Batem. ex Lindl.		He	X sp	SR (RW)	
Polystachya clavata Lindl.		He	X	SR (RW)	
Sacoila lanceolata (Aubl.) Garay		H		SR (RW)	
Spiranthes torta (Thunb.) Gray & H.R.Sweet		H		E	
Rhynchlaelia digbyana			X		
Trigonidium egertonianum Batem. ex Lindl.	Dragon's Mouth	He	X	SR (RW)	
Vanilla planifolia Andrews	Vanilla	L	X	SR (RW)	
Araceae					
Anthurium schlechtendalii Kunth.	Pheasant's Tail	He		SR (RW)	

Dieffenbachia seguine (Jacq.) Schott.	Dumb Cane	H		SR (RW)	Introduction
Montrichardia arborescens (L.) Schott.		Ha		SR (RW)	
Philodendron sp.		H		E.	
Pistia stratiotes L.	Water Lettuce	Ha		SR (RW)	
Syngonium angustatum Schott.		H	X(sp)	E.	
Syngonium podophyllum Schott.	Ochil	Le		SR (RW)	
Lemnaceae					
Lemna sp.			X		
Triuridaceae					
Sciaphila picta Miers		pa (sap)		SR (RW)	
Alismataceae					
Sagittaria lancifolia L.		Ha		E	
Najadaceae					
Najas wrightiana A. Br.		Ha		SR (RW)	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Bromeliaceae					
Aechmea magdalenae (Andre) Andre ex Baker	Silk Grass	H		SR (RW)	
Aechmaea tillandsioides var tillands. (Mart) Baker				GoB 3216	
Aechmea bracteata			X		
Ananas comosus (.) Merr.	Pineapple	H		SR (RW)	
Bromelia penguin			X		
Catopsis sp			X		
Tillandsia balbisiana Schult.f.		He	X	E.	
Tillandsia bulbosa Hook.		He	X	SR (RW)	
Tillandsia fasciculata			X		
Tillandsia festucoides Brong. ex Mez.		He	X	GoB 3247	
Tillandsia juncea (R.& P.) Poir.		He	X	SR (RW)	
Tillandsia streptophylla Scheidw.		He	X	SR (RW)	
Tillandsia usneoides L.	Spanish Moss	He		SR (RW)	
Pontederiaceae					
Pontederia cordata L. var cordata	Pickerel Weed	Ha		SR (RW)	
Typhaceae					
Typha domingensis Pers.		Ha		E.	
Heliconiaceae					
Heliconia latispatha Benth.		H		SR (RW)	
Heliconia rostrata Ruiz & Pavon.		H		SR (RW)	Introduction

Zingiberaceae					
Renealmia sp.		H		SR (RW)	
Costaceae					
Costus pulverulentus C. Presl.		H		SR (RW)	
Marantaceae					
Maranta arundinacea L.	Arrowroot	H		E.	
Maranta gibba Smith				GoB 3235	
Commelinaceae					
Tradescantia spathacea Sw.		H		SR (RW).	
Tripogandra grandiflora (J.D.Sm.) Woodson				GoB 3248	
Xyridaceae					
Xyris jupicai L.Rich.		H		E	
Cyperaceae					
Bulbostylis cf.barbata C.B.Clarke		H		E	
Bulbostylis cf. juncoides (Vahl.) Kukenth.		H		E	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Bulbostylis tenuifolia (Rudge) Macbr.		H		SR (RW)	
Cladium jamaicense Crantz.	Cutting Grass	H		E	
Cyperus cf. aggregatus Endl.		H		E	
Eleocharis interstincta R.Br.		H		E	
Eleocharis sp.		H		E (S304)	
Fuirena cf umbellata Rottb.		H		E	
Rhynchospora barbata (Vahl.) Kunth.		H		SR (RW)	
Rhynchospora contracta Nees) J.Raynal		H		SR (RW)	
Rynchospora holoschoenoides Vahl.		H		E	
Rhynchospora nervosa (Vahl.) Boeck. subsp. ciliata		H		SR (RW)	
Rynchospora sp.		H		E (S256)	
Scleria bracteata Cav.		H	X	E	
Scleria distans Poir.		H	X	E	
Gramineae					
Andropogon bicornis L.		H		E	
Andropogon glomeratus (Walt.) B.S.P.	Broom Sedge	H		SR (RW)	
Andropogon virginicus L.		H		E	
Dichanthelium acuminatum (Swartz) Goul & Clark		H		E	
Dichanthelium strigosum (Muhl.) Freekmann		H		E	
Digitaria cf cayoensis Swallen		H		E	
Digitaria sp.		H		E -B94	

Echinochloa colona (L.) Link		H		E	
Eragrostis elliottii S.Wats.		H		E	Greater Peten
Guadua spinosa (Swallen) McClure	Spiny Bamboo	Woody		SR (RW)	
Homolepis aturensis (Kunth.) Chase		H		E	
Ischaemum latifolium (Spreng.) Kunth.		H		E	
Lasiacis divaricata (L.) Hitchc.		Woody		SR (RW)	
Merostachys pauciflora Swallen		Woody		SR (RW)	
Mesosetum filifolium Hubb.		H		E	
Olyra latifolia L.		Woody		SR (RW)	
Panicum cyanescens Nees		H		E	
Panicum altum Hitch. & Chase		H		E	
Paspalum blodgetti Chapm.		H		SR (RW)	
Paspalum pulchellum Kunth.		H		E	
Paspalum serpentinum Hochst. ex Steud.		H		E	
Paspalum setaceum Michx.		H		E	
Family					
Scientific name	*Common name*	*Form*	*ATNP*	*Sources*	*Conservation status (range)*
Paspalum vaginatum Sw.		H		SR (RW)	
Rhipidocladum bartlettii			X		
Setaria parviflora (Poir.) Kerguelen		H		E	
Sorghastrum setosum Hitchcock		H		E	
Palmae					
Acoellorhaphe wrightii (H.Wendl.) Beccari	Palmetto, Pimenta	Tm	X	B&S 271. E.	
Acrocomia aculeata (Jacq.) Lodd. ex Mart.	Suppa Palm	Tl		SR (RW)	
Attalea cohune Mart.	Cohune	Tl		B&S 487x.	
Bactris major Jacq.	Porknoboy	Tm	X	SR (RW, Br.)	
Bactris mexicana Mart.	Porknoboy	Tm		B&S 180	Atlantic slope
Chamaedorea oblongata Mart.	Xate	Ts	X	SR (RW)	
Chamaedorea sp.	Xate	Ts		B&S 26, 80	
Cocos nucifera L.	Coconut	Tl		SR (Br., RW).	
Crysophila stauracantha (Heynh.) R.Evans	Give and Take	Tm	X	B&S 225, 226	Greater Peten
Desmoncus orthacanthos Mart.	Basket Tie-Tie	L	X	SR (RW)	
Gaussia maya (Cook) Quero & Reed		Tm	X	B&S 319. W 11. GoB 3249, 508	
Roystonea regia (Kunth.) O.F.Cook	Royal Palm	Tl		SR (RW, Br.)	
Sabal mauritiiformis (Karst.) Griseb. & H.Wendle	Botan, Sabal	Tl	X	B&S 486x. E.	

APPENDIX 2: SPECIES OF CONSERVATION CONCERN

Common name	Scientific name	Status	List	Status on RBCMA
Mammals				
Yucatan black howler monkey	Alouatta pigra	Endangered Trade controls	IUCN Red List CITES	Common throughout, high forest
Baird's Tapir	Tapirus bairdii	Endangered Trade controls	IUCN Red List CITES	Frequent, widespread
West Indian Manatee	Trichecus manatus	Vulnerable Trade controls	IUCN Red List CITES	Ranges into New River Lagoon
Elegant Myotis (bat)	Myotis elegans	Near-threatened	IUCN Red List	Recorded
Jaguar	Panthera onca	Near-threatened Trade controls	IUCN Red List CITES	Widespread, frequent to common
Puma	Panthera concolor	Near-threatened	IUCN Red List	Status uncertain, widespread and fairly frequent?
Great false vampire bat	Vampyra spectra	Near-threatened	IUCN Red List	Status uncertain, seen at La Milpa ruins
Neotropical river otter	Lutris longicaudis	Trade controls	CITES	Status uncertain, fairly frequent?
Jaguarundi	Herpailurus yaguarondi	Trade controls	CITES	Status uncertain, recorded
Ocelot	Leopardus pardalis	Trade controls	CITES	Status uncertain, frequent?
Margay	Leopardus wiedii	Trade controls	CITES	Status uncertain, frequent?
Birds				
Yellow-headed parrot	Amazona oratrix	Endangered Trade controls	IUCN Red List CITES	Common, RBCMA pine savannah is nationally important habitat
White-crowned pigeon	Columba leucocephala	Near-threatened	IUCN Red List	Rare, marginal range but recorded at Hill Bank

Olive-sided flycatcher	Contopus cooperi	Near-threatened	IUCN Red List	Regular passage migrant
Great curassow	Crax rubra	Near-threatened	IUCN Red List	Widespread, frequent
Harpy eagle	Harpya harpyia	Near-threatened Trade controls	IUCN Red List CITES	Re-introduced to western RBCMA
Black crake	Laterallus jamaicensis	Near-threatened	IUCN Red List	Status uncertain, rare or local
Black Catbird	Melanoptila glabirostris	Near-threatened	IUCN Red List	Local
Ocellated Turkey	Meleagris ocellata	Near-threatened	IUCN Red List	Widespread, locally common
Crested eagle	Morphnus guianensis	Near-threatened	IUCN Red List	Very uncommon
Golden-winged warbler	Vermivora chrysoptera	Near-threatened	IUCN Red List	Recorded, passage migrant on western RBCMA
Jabiru	Jabiru mycteria	Trade controls	CITES	Frequent on wetlands, breeder
Peregrine Falcon	Falco peregrinus	Trade controls	CITES	Uncommon winter visitor/transient
Reptiles				
Central American river turtle, Hiccattee	Dermatemys mawii	Endangered	IUCN Red List	Common, deeper rivers are important habitat
Mexican giant mud turtle	Staurotypus triporcatus	Near-threatened	IUCN Red List	Frequent to common in deeper water-bodies
Narrow-bridged musk turtle	Claudius angustatus	Near-threatened	IUCN Red List	Recorded, infrequently seen.
Morelet's Crocodile	Crocodylus morelettii	Near-threatened Trade controls	IUCN Red List CITES	Common, all water-bodies
Tabasco mud turtle	Kinosternon acutum	Near-threatened	IUCN Red List	Recorded, La Milpa.

Common slider	Trachemys scripta	Near-threatened	IUCN Red List	Regularly seen in water-bodies
Boa constrictor	Boa constrictor	Trade controls	CITES	Widespread, fairly common
Plants				
Pigeonplum, mosquito stick	Quiina schippii	Endangered	IUCN Red List	Frequent in high forest, eastern RBCMA
Fiddlewood	Vitex gaumeri	Endangered	IUCN Red List	One of commonest species, all forest types
Prickly Yellow	Zanthoxylum ekmanni	Endangered	IUCN Red List	Occurs (NB – sight records and stock surveys usually lump all prickly yellows, fairly common as a group)
Bastard prickly yellow	Zanthoxylum caribaeum	Endangered	IUCN Red List	Occurs, collected on western RBCMA
Black prickly yellow	Zanthoxylum juniperinum	Endangered	IUCN Red List	Occurs, collected on western RBCMA
Vara blanca	Aegiphila monstrosa	Endangered	IUCN Red List	Occurs, collected on western RBCMA
Cedar	Cedrela odorata	Vulnerable	IUCN Red List	Widespread, locally common to fairly common
Palm	Gaussia maya	Vulnerable	IUCN Red List	Frequent, western RBCMA
Silly Young	Pouteria amygdalina	Vulnerable	IUCN Red List	Frequent, mainly western RBCMA
Mahogany	Swietenia macrophylla	Vulnerable	IUCN Red List	Common, all forest types
White Mylady	Aspidosperma megalocarpon	Near-threatened	IUCN Red List	Frequent, all forest types but mainly western
Mata raton	Zamia polymorpha	Near-threatened	IUCN Red List	Fairly common

APPENDIX 3: RBCMA FISH SPECIES

Scientific Name	***International name***	***Creole name***	***Notes***
Cichlidae			
Cichlasoma aureus	Golden Cichlid		*Thorichthys* in DeRahm. Variable and out of range according toOut of range in lit but some 'C. meeki' specimens best ID'd here
			to literature but some specimens may fit here (French 2001).
Cichlasoma freidrichstahli		Mosmos	*Parapetenia* in DeRham.
Cichlasoma intermedium			Strong current
Cichlasoma maculicauda	Spotted Cichlid		
Cichlasoma meeki	Fire-mouth cichlid	Bluefish, Moko Jek	*Thorichthys* in DeRahm. V. common but variable. Confusable
			with *C. aureus.*
Cichlasoma octofasciatum	Jack Dempsey		
Cichlasoma robertsoni	False Fire-mouth Cichlid	Night and Day	*Amphilophus* in DeRham
Cichlasoma salvini	Yellow-belly cichlid	Pritty Fish, Green Gial	*Parapetenia* in DeRham.
Cichlasoma spilurum	Yellow-belly cichlid	Crana	*Archocentrus* in DeRham. Confusable with C. urophthalmus.
Cichlasoma synspilum	Red-head cichlid	Tuba, Mountain Tuba	V. variable. Omnivorous.
Cichlasoma urophthalmus	Mayan cichlid	Crana	Common, carnivorous. *Parapetenia* in DeRham.
Oreochromis nilotica	Tilapia	Tilapia	Introduced, potentially invasive
Petenia splendida		Bay snook	Common, with four colour variants – normal, white, black, red.
Gerreidae			
Eugerres plumieri			
Eleotridae			
Gobiomorus dormitor	Bigmouth Sleeper	Sleeper	
Atherinidae			
Atherinella sp.			As *Melaniris* sp in DeRham?
Poecilidae			NB: DeRham also notes Poecilia sp/spp at Whitewater Lagoon.
Belonesox belizanus	Pike killifish	Poopsy	Carnivorous
Gambusia luma	Sleek mosquitofish	Poopsy	
Gambusia sexradiata		Poopsy	
Heterandria bimaculata			
Phallichthys fairweatheri			

Poecilia ?nicaraguensis	Nicaraguan Gambusia		
Poecilia mexicana	Shortfin molly	Poopsy	
Poecilia ?orri	Mangrove Molly		
Xiphophorus helleri	Green Swordtail		
Xiphophorus maculatus	Southern Platyfish		
Cyprinodontidae			
Rivulus tenuis			
Ictaluridae			
Ictalurus furcatus	Blue Catfish	Bakra	
Ictaluridae sp.		Tiger Bakra	
Ariidae			
Ariopsis assimilis		Catfish	
Pimelodidae			
Rhamdia guatemalensis		Buttersea	
Rhamdia laticauda		Buttersea	
Characidae			
Astyanax aeneus	Banded Tetra	Billam, Sardine	Syn A. fasciatus mexicanus
Brycon ?guatemalensis			
Hyphessobrycon compressus		Billam	As H. milleri/obesus in DeRham. As Brycon sp. ?guatemalensis
			in French 2001.
Clupeidae			
Dorosoma petenense	Threadfin shad	Yellow-striped Billum	
Megalopidae			
Megalops atlanticus	Tarpon	Tarpon	
Synbranchidae			
Synbranchus marmoratus			
Anguillidae			
Anguila rostrata	American Eel	Conger Eel	

APPENDIX 4: RBCMA-ATNP SPECIES INVENTORY - MAMMALS

Base list consists of all species ranging into area according to Emmons & Feer 1997, Reid 1997. References are the earliest written record (published paper, research report) located. Sight records: RW – Roger Wilson; JM – John Masson.

Common name	Scientific name	RBCMA	ATNP	Notes
New World Opossums	Didelphimorpha			
American Opossums	*Didelphidae*			
Common Opossum	Didelphis marsupialis			
Virginia Opossum	Dideplhis virginiana	X		Jacobson et al, 1990
Grey Four-eyed Opossum	Philander opossum	X		Jacobson et al, 1990
Water Opossum	Chironectes minimus			
Mexican Mouse Opossum	Marmosa mexicana	X		Unidentified mouse opossum, Jacobson et al, 1990.
Central American Woolly Opossum	Caluromys derbianus			
Anteaters, Sloths and Armadillos	Xenarthra			
Anteaters	*Myrmecophagidae*			
Northern Tamandua	Tamandua mexicana	X		Jacobson et al, 1990
Silky Anteater	Cyclopes didactylus			
Armadillos	*Dasypodidae*			
Nine-banded Armadillo	Dasypus novemcinctus			
Insectivores	Insectivora			
Shrews	*Soricidae*			
Maya Small-eared Shrew	Cryptotis mayensis			Recorded, ref? (in small mammal trap).
Bats	Chiroptera			
Sac-winged Bats	*Emballonuridae*			
Proboscis Bat	Rhynchonycteris naso	X		Smith, 1994
Greater White-lined Bat	Saccopteryx bilineata	X		Smith, 1994
Lesser White-lined Bat	Saccopteryx leptura	X		Hill Bank, range extension?. Smith, 1994.
Shaggy Bat	Centronycteris maximiliani			
Lesser Dog-like Bat	Peropteryx macrotis			
Greater Dog-like Bat	Peropteryx kappleri			
Least Sac-winged Bat	Balantiopteryx io			
Northern Ghost Bat	Diclidurus albus			
Fishing and Bulldog Bats	*Noctilionidae*			
Greater Fishing Bat	Noctilio leporinus	X		Sight records, New River Lagoon. RW
Leaf-chinned Bats	*Mormoopidae*			
Ghost-faced bat	Mormoops megalophylla			

Common Moustached Bat	Pteronotus parnellii	X		Jacobson et al, 1990
Lesser Moustached Bat	Pteronotus personatus	X		Hill Bank, Smith 1994.
Davy's Naked-backed Bat	Pteronotus davyi	X		Smith, 1994
Leaf-nosed Bats	*Phyllostomidae*			
Common Big-eared Bat	Mycronycteris microtis			
Schmidt's Big-eared Bat	Micronycteris schmidtorum			
Orange-throated Bat	Micronycteris brachyorum			
Bartica Bat	Micronycteris daviesi	X		Hill Bank, range extension?. Smith, 1994.
Common Sword-nosed Bat	Lonchorhina aurita			
Long-legged Bat	Macrophyllum macrophyllum			
Stripe-headed Round-eared Bat	Tonatia saurophila			
Pygmy Round-eared Bat	Tonatia brasiliense			
Davis' Round-eared Bat	Tonatia evotis			
Golden Bat	Mimon bennettii			
Striped Hairy-nosed Bat	Mimon crenulatum	X		Hill Bank, Smith 1994.
Pale Spear-nosed Bat	Phyllostomus discolor			
Pale-faced Bat	Phylloderma stenops			
Fringe-lipped Bat	Trachops cirrhosus	X		Jacobson et al, 1990
Woolly False Vampire Bat	Chrotopterus auritus	X		Smith, 1994
Great False Vampire Bat	Vampyrum spectrum	X		Smith, n.d.
Common Long-tongued Bat	Glossophaga soricina	X		Jacobson et al, 1990
Brown Long-tongued Bat	Glossophaga commissarii	X		Hill Bank, Smith 1994.
Short-tailed Bats	*Carolliinae*			
Silky Short-tailed Bat	Carollia brevicaudata	X		Jacobson et al, 1990
Seba's Short-tailed Bat	Carollia perspicillata	X		Jacobson et al, 1990
Tailless Bats	*Stenodermatinae*			
Little Yellow-shouldered Bat	Sturnira lilium	X		Jacobson et al, 1990
Great Fruit-eating Bat	Artibeus lituratus	X		Jacobson et al, 1990
Intermediate Fruit-eating Bat	Artibeus intermedius	X		Jacobson et al, 1990
Jamaican Fruit-eating Bat	Artibeus jamaicensis	X		Jacobson et al, 1990
Toltec Fruit-eating Bat	Artibeus tolteca	X		Smith, 1994
Pygmy Fruit-eating Bat	Artibeus phaeotis	X		Jacobson et al, 1990
Thomas' Fruit-eating Bat	Artibeus watsoni			
Velvety Fruit-eating Bat	Enchisthenes hartii	X		Smith, 1994. Range extension?

Common Tent-making Bat	Uroderma bilobatum	X		Jacobson et al, 1990
Heller's Broad-nosed Bat	Platyrrhinus helleri	X		Jacobson et al, 1990
Great Stripe-faced Bat	Vampyrodes major	X		Hill Bank, range extension?. Smith, 1994.
Hairy Big-eyed bat	Chiroderma villosum	X		Smith, 1994
Little Yellow-eared Bat	Vampyressa pusilla	X		Jacobson et al, 1990
Wrinkle-faced Bat	Centurio senex	X		Jacobson et al, 1990
Vampire Bats	*Desmodontinae*			
Common Vampire Bat	Desmodus rotundus	X		Smith, 1994
Hairy-legged Vampire Bat	Diphylla ecaudata			
Funnel-eared Bats	*Natalidae*			
Mexican Funnel-eared Bat	Natalus stramineus	X		Smith, 1994
Plain-nosed Bats	*Vespertilionidae*			
Elegant Myotis	Myotis elegans	X		Smith, 1994
Hairy-legged Myotis	Myotis keaysi			
Argentine Brown Bat	Eptesicus furinalis	X		Smith, 1994
Central American Yellow Bat	Rhogeesa aeneus	X		Smith, 1994 (as R. tumida)
Western Red Bat	Lasiurus blossevillii	X		Jacobson et al, 1990
Northern Yellow Bat	Lasiuris intermedius			
Southern Yellow Bat	Lasiurus ega			
Free-tailed Bats	*Molossidae*			
Broad-eared Bat	Nyctinomops laticaudatus			
Black Bonnetted Bat	Eumops auripendulus			
Underwood's Bonnetted Bat	Eumops underwoodii			
Wagner's Bonnetted Bat	Eumops glaucinus			
Dwarf Bonnetted Bat	Eumops bonariensis	X		Smith, 1994
Black Mastiff Bat	Molossus ater			
Sinaloan Mastiff Bat	Molossus sinaloae			
Little Mastiff Bat	Molossus molossus			
Monkeys	Primates			
New World Monkeys	*Cebidae*			
Yucatan Black Howler	Alouatta pigra	X	X	Fragoso et al, 1990, REA

Central American Spider Monkey	Ateles geoffroyi	X	X	Fragoso et al, 1990. REA
Rodents	Rodentia			
Squirrels	*Sciuridae*			
Yucatan Squirrel	Sciurus yucatanensis	X		Sight record. East gate. RW.
Deppe's Squirrel	Sciurus deppei	X		Jacobson et al, 1990
Pocket Gophers	*Geomyidae*			
Hispid Pocket Gopher	Orthogeomys hispidus			
Pocket Mice	*Heteromyidae*			
Gaumer's Spiny Pocket Mouse	Heteromys gaumeri			
Forest Spiny Pocket Mouse	Heteromys desmarestianus	X		Jacobson et al, 1990
Rats and mice	*Muridae*			
Coues' Rice Rat	Oryzomys couesi	X		Jacobson et al, 1990
Rusty Rice Rat	Oryzomys rostratus			
Alfaro's Rice Rat	Oryzomys alfaroi			
Northern Pygmy Rice Rat	Oligoryzomys fulvescens			
Hispid Cotton Rat	Sigmodon hispidus	X		Jacobson et al, 1990
Northern climbing Rat	Tylomys nudicaudatus	X		Jacobson et al, 1990 (remains in scat)
Big-eared Climbing Rat	Ototylomys phyllotis	X		Jacobson et al, 1990
Vesper Rat	Nyctomys sumichrastii			
Yucatan Vesper Mouse	Otonyctomys hatti			
Slender Harvest Mouse	Reithrodontomys gracilis			
Roof Rat	Rattus rattus			
House Mouse	Mus musculus			
New World Porcupines	*Erethizontidae*			
Mexican Porcupine	Couendou mexicanus			
Agoutis	*Dasyproctidae*			
Central American Agouti	Dasyprocta punctata	X		Sight record, La Milpa. RW.
Pacas	*Agoutidae*			
Paca	Agouti paca	X		Jacobson et al, 1990

Carnivores	Carnivora			
Dogs and Foxes	*Canidae*			
Grey Fox	Urocyon cinereoargenteus	X		Jacobson et al, 1990
Raccoons and allies	*Procyonidae*			
Cacomistle	Bassariscus sumichrastii	?		Possible sight record, J.M.
Northern Raccoon	Procyon lotor	X	X	Jacobson et al, 1990
White-nosed Coati	Nasua narica	X	X	Jacobson et al, 1990
Kinkajou	Potos flavus	X		Jacobson et al, 1990
Weasels, skunks and allies	*Mustelidae*			
Long-tailed Weasel	Mustela frenata			
Greater Grison	Galictis vittata			
Tayra	Eira barbara	X		Jacobson et al, 1990
Spotted Skunk	Spilogale putorius			
Striped Hog-nosed Skunk	Conepatus semistriatus	X		Jacobson et al, 1990
Neotropical River Otter	Lutra longicaudis	X		Jacobson et al, 1990
Cats	*Felidae*			
Ocelot	Leopardus pardalis	X		Jacobson et al, 1990
Margay	Leopardus wiedii	X		Jacobson et al, 1990
Jaguarundi	Herpailurus yaguarondi	X		Jacobson et al, 1990
Puma	Puma concolor	X	X	Jacobson et al, 1990. REA
Jaguar	Panthera onca	X	X	Jacobson et al, 1990. A. Reimer, pers.comm.
Manatees and Dugongs	Sirenia			
Manatees	*Trichechidae*			
West Indian Manatee	Trichechus manatus	X		New River Lagoon
Odd-toed Ungulates	Perissodactyla			
Tapirs	*Tapiridae*			
Baird's Tapir	Tapirus bairdii	X		Fragoso et al, 1990
Even-toed Ungulates	Artiodactyla			
Peccaries	*Tayassuidae*			

Collared Peccary	Tayassu tajacu	X	X	Fragoso et al, 1990
White-lipped Peccary	Dicotyles pecari	X	X	Fragoso et al, 1990
Deer	*Cervidae*			
White-tailed Deer	Odocoileus virginianus	X	X	Fragoso et al, 1990. REA
Red Brocket Deer	Mazama americana	X		Fragoso et al, 1990
Yucatan Grey Brocket Deer	Mazama pandora			Newly described. Recorded from Campeche near N.W. Belize. Evidence for RBCMA inconclusive, Fragoso 1990.

APPENDIX 5: RBCMA-ATNP BIRDS

Taxonomy and order standardised to Lee Jones, 2003. All ATNP records derived from the Rapid Environmental Assessment. Western RBCMA records derived from Mallory & Brokaw 1992. Eastern RBCMA records derived from Vallely & Whitman 1996. Further records derived from Mallory et al 1998, Lee Jones 2003 and sight records.

		ATNP	W. RBCMA	E. RBCMA				RBA	EXTRAS	Status
				F	Sc	PS	W			
Tinamidae										
Great Tinamou	Tinamus major	X	X	C	R			X		R
Little Tinamou	Crypturellus soui	X		R	C			X		R
Thicket Tinamou	Crypturellus cinnamomeus	X	X	F	F			X		R
Slaty-breasted Tinamou	Crypturellus boucardii		X	F	F			X		R
Podicipidae										
Least Grebe	Tachybaptus dominicus	X	X				V	X		R
Pied-billed Grebe	Podilymbus podiceps						R	X		R+W
Pelecanidae										
American White Pelican	Pelecanus erythrorhynchos								Blue Crk, Lee Jones 2003	V
Brown Pelican	Pelecanus occidentalis		X				V	X		R
Phalacrocoracidae										
Neotropic Cormorant	Phalacrocorax brasilianus		X				C	X		R
Double-crested Cormorant	Phalacrocorax auritus								New River, Lee Jones 2003	V
Anhingidae										
Anhinga	Anhinga anhinga		X				R	X		R
Fregatidae										
Magnificent Frigatebird	Fregata magnificens		X				V	X		R
Ardeidae										
Pinnated Bittern	Botaurus pinnatus		X							R
American Bittern	Botaurus lentiginosus		X				V	X		W
Least Bittern	Ixobrychus exilis		X				R	X		R+W
Bare-throated Tiger-heron	Tigrisoma mexicanum		X	R			R	X		R
Great Blue Heron	Ardea herodias		X				R	X		R+W
Great Egret	Egretta alba		X				C	X		R+W
Snowy Egret	Egretta thula		X				C	X		R+W
Little Blue Heron	Egretta caerulea		X				C	X		W
Tricolored Heron	Egretta tricolor		X				F	X		R+W
Cattle Egret	Bubulcus ibis		X					X		R
Green Heron	Butorides virescens		X					X		R+W
Agami Heron	Agamia agami		X					X		R
Black-crowned Night-heron	Nycticorax nycticorax							X		R+W
Yellow-crowned Night-heron	Nyctanassa violacea		X					X		R+W
Boat-billed Heron	Cochlearius cochlearius		X					X		R
Threskiornithidae										
White Ibis	Eudocimus albus		X				V	X		W
Roseate Spoonbill	Platalea ajaja		X							W
Ciconiidae										
Jabiru	Jabiru mycteria		X	R		R	U	X		V

Wood Stork	Mycteria americana	X	X				R	X		R
Cathartidae										
Black Vulture	Coragyps atratus	X	X	C	C			X		R
Turkey Vulture	Cathartes aura	X	X	C	C			X		W+R
Lesser Yellow-headed Vulture	Cathartes burrovianus		X			U	U	X		R
King Vulture	Sarcorhamphus papa		X	U		U		X		R
Anatidae										
Black-bellied Whistling Duck	Dendrocygna autumnalis		X				U	X		R
Fulvous Whistling Duck	Dendrocygna bicolor									R
Snow Goose	Chen caerulescens								Tres Leguas, Lee Jones 2003	V
Muscovy Duck	Cairina moschata		X				R	X		R
Blue-winged Teal	Anas discors		X					X		W
American Wigeon	Anas americana								Blue Creek, Lee Jones 2003	W
Cinnamon Teal	Anas cyanoptera								Blue Creek, Lee Jones 2003	W
Northern Shoveller	Anas clypeata								RW, Blue Creek	W
Northern pintail	Anas acuta							X	RW, Blue Creek	W
Lesser Scaup	Aythya affinis							X		W
Accipitridae										
Osprey	Pandion haliaetus		X				V	X		W+R
Grey-headed Kite	Leptodon cayanensis		X	R	R			X		R
Hook-billed Kite	Chndrohierax uncinatus		X	R	R			X		R
Swallow-tailed Kite	Elanoides forficatus		X	R	R	R		X		S
White-tailed Kite	Elanus leucurus		X		C			X		R
Snail Kite	Rostrhamus sociabilis		X				C	X		R
Double-toothed Kite	Harpagus bidentatus		X	U	U			X		R
Plumbeous Kite	Ictinia plumbea		X	U	U			X		S
Black-collared Hawk	Busarellus nigricollis		X				R	X		R
Bicolored Hawk	Accipiter bicolor		X					X		R
Crane Hawk	Geranospiza caerulescens		X	U	U			X		R
White Hawk	Leucopternis albicollis		X	U				X		R
Common Black Hawk	Buteogallus anthracinus	X	X	U	U	R		X		R
Great Black Hawk	Buteogallus urubitinga		X					X		R
Solitary Eagle	Harpyhaliaetus solitarius		X(?)							R
Grey Hawk	Asturina nitida		X	C	C	C		X		R
Roadside Hawk	Buteo magnirostris	X	X	U	C	C		X		R
Short-tailed Hawk	Buteo brachyurus		X	C	C			X		W
White-tailed Hawk	Buteo albicaudatus		X		R	R		X		R
Red-tailed Hawk	Buteo jamaicensis								RW 92-94, also Lee Jones	R+W
Crested Eagle	Morphnus guianensis		X					X		R
Harpy Eagle	Harpia harpyja		X						Re-introduction, 2005.	R
Black-and-white Hawk-eagle	Spizastur melanoleucus		X					X		R

Black Hawk Eagle	Spizaetus tyrranus		X	R	R			X		R
Ornate Hawk Eagle	Spizaetus ornatus	X	X	U				X		R
Falconidae										
Barred Forest-falcon	Micrastur ruficollis	X	X	U				X		R
Collared Forest-falcon	Micrastur semitorquatus	X	X	U	U			X		R
Laughing Falcon	Herpetotheres cachinnans		X	F	F			X		R
American Kestrel	Falco sparverius		X		R	R		X		R+W
Merlin	Falco columbarius		X							W
Aplomado Falcon	Falco femoralis				R	U		X		R
Bat Falcon	Falco rufigularis	X	X	R	C	U		X		R
Peregrine Falcon	Falco peregrinus		X		R	R	V	X		W
Cracidae										
Plain Chachalaca	Ortalis vetula	X	X	U	C			X		R
Crested Guan	Penelope purpurascens	X	X	U				X		R
Great Curassow	Crax rubra	X	X	U				X		R
Phasianidae										
Ocellated Turkey	Meleagris ocellata	X	X		V			X		R
Odontophoridae										
Black-throated Bobwhite	Calinus nigrogularis		X			U		X		R
Spotted Wood-quail	Odontophorus guttatus		X	V				X		R
Singing Quail	Dactylortyx thoracicus		X							R
Rallidae										
Ruddy Crake	Laterallus ruber	X	X		C		C	X		R
Gray-breasted Crake	Laterallus exilis								Gall. Jug, Lee Jones 2003	R
Black Crake	Laterallus jamaicensis							X		R+W
Grey-necked Woodrail	Aramides cajanea		X	U	C		C	X		R
Uniform Crake	Amaurolimnus concolor		X	R	R			X		R
Sora	Porzana carolina						V	X		W
Yellow-breasted Crake	Porzana flaviventer						V		Also RW, New River Lagoon	R
Spotted Rail	Pardirallus maculatus							X		R
Purple Gallinule	Porphyrio martinica								RW, Blue Creek	R+W
Common Moorhen	Gallinula chloropus		X							W
American Coot	Fulica americana		X					X		W
Heliornithidae										
Sungrebe	Heliornis fulica		X	U				X		R
Aramidae										
Limpkin	Aramus guarauna		X				C	X		R
Charadriidae										
American Golden Plover	Pluvialis dominica						V	X	Also RW, Blue Creek	Trans
Semipalmated Plover	Charadrius semipalmatus		X							W
Killdeer	Charadrius vociferus						R			W

Recurvirostridae										
Black-necked Stilt	Himantopus mexicanus		X				V	X		Trans
Jacanidae										
Northern Jacana	Jacana spinosa		X				C	X		R
Scolopacidae										
Greater Yellowlegs	Tringa melanoleuca		X				R	X		W
Lesser Yellowlegs	Tringa flavipes						U	X		W
Solitary Sandpiper	Tringa solitaria		X				U	X		W
Willet	Catoptrophorus semipalmatus						R	X		W
Spotted Sandpiper	Actitis macularia		X				U	X		W
Upland Sandpiper	Bartramia longicauda								RW 93, Tres Leguas	Trans
Hudsonian Godwit	Limosa haemastica								RW, Blue Creek	Trans
Least Sandpiper	Calidris minutilla		X							W
White-rumped Sandpiper	Calidris fuscicollis		X							W
Pectoral Sandpiper	Calidris melanotus						V	X		Trans
Stilt Sandpiper	Calidris himantopus									Trans
Short-billed Dowitcher	Limnodromus griseus									Trans
Long-billed Dowitcher	Limnodromus scolopaceus									Trans
Wilson's Snipe	Gallinago delicata		X							W
Laridae										
Laughing Gull	Larus atricilla		X							V
Bonaparte's Gull	Larus philadelphia								Hill Bank, Lee Jones 2003	V
Herring Gull	Larus argentatus							X		V
Royal Tern	Sterna maxima		X							V
Sooty Tern	Sterna fuscata		X							V
Black Skimmer	Rynchops niger								Hill Bank, Lee Jones 2003	V
Columbidae										
Pale-vented Pigeon	Columba cayennensis	X	X	C	C			X		R
Scaled Pigeon	Columba speciosa		X	C	C			X		R
White-crowned Pigeon	Columba leucocephala								Hill Bank, Lee Jones 2003	V
Red-billed Pigeon	Columba flavirostris	X	X	C	C			X		R
Short-billed Pigeon	Columba nigrirostris		X	C				X		R
White-winged Dove	Zenaida asiatica								RW 92-94	LM
Mourning Dove	Zenaida macroura		X		V			X		W
Common Ground-dove	Columbina passerina		X							R
Plain-breasted Ground-dove	Columbina minuta		X			U		X		R
Ruddy Ground-dove	Columbina talpacoti	X	X		U			X		R
Blue Ground-dove	Claravis pretiosa		X	F	C			X		R
White-tipped Dove	Leptoptila verrauxi	X	X		F	U		X		R
Grey-fronted Dove	Leptoptila rufaxilla		X	C				X		R
Grey-chested Dove	Leptoptila cassinii		X							R

Ruddy Quail-dove	Geotrygon montana		X	C						R
Psittacidae										
Olive-throated Parakeet	Aratinga nana	X	X	C	C			X		R
Brown-hooded Parrot	Pionopsitta haematotis	X	X	C	U			X		R
White-crowned Parrot	Pionus senilis		X	C	C			X		R
White-fronted Parrot	Amazona albifrons	X	X	C	C			X		R
Yellow-lored Parrot	Amazona xantholora	X			R	U		X		R
Red-lored Parrot	Amazona autumnalis	X	X	C	C			X		R
Mealy Parrot	Amazona farinosa	X	X	U				X		R
Yellow-headed Parrot	Amazona oratrix			U	U	U		X		R
Cuculidae										
Yellow-billed Cuckoo	Coccyzus americanus		X							Trans
Squirrel Cuckoo	Piaya cayana	X	X	C	C			X		R
Striped Cuckoo	Tapera naevia		X		U			X		R
Pheasant Cuckoo	Dromococcyx phasianellus		X	V				X		R
Groove-billed Ani	Crotophaga sulcirostris		X		U			X		R
Tytonidae										
Barn Owl	Tyto alba		X		V			X		R
Strigidae										
Vermiculated Screech-owl	Otus guatemalae	X	X	C				X		R
Spectacled Owl	Pulsatrix perspicillata		X							R
Central American Pygmy Owl	Glaucidium griseiceps		X	R				X		R
Ferruginous Pygmy Owl	Glaucidium brasilianum		X					X		R
Mottled Owl	Ciccaba virgata	X	X	C	U			X		R
Black-and-White Owl	Ciccaba nigrolineata	X	X	U				X		R
Stygian Owl	Asio stygius							X		W
Caprimulgidae										
Lesser Nighthawk	Chordeiles acutipennis		X		R			X		W
Common Nighthawk	Chordeiles minor		X					X		Trans
Common Pauraque	Nyctidromus albicollis	X	X	C?	C			X		R
Yucatan Poorwill	Nyctiphrynus yucatanicus		X	V	V			X		R
Yucatan Nightjar	Caprimulgus badius		X	V	V			X		W
Nyctibiidae										
Northern Potoo	Nyctibius jamaicensis		X							R
Apodidae										
White-collared Swift	Streptoprocne zonaris		X	V	V			X		R
Vaux's Swift	Chaetura vauxi		X	U	U			X		R
Lesser Swallow-tailed Swift	Panyptila cayennensis		X	F	F			X		R
Trochilidae										
Long-tailed Hermit	Phaethornis superciliosus	X	X	U				X		R
Stripe-throated Hermit	Phaethornis striigularis	X	X	C				X		R

Scaly-breasted Hummingbird	Phaeochroa cuvierii		X	R				X		R
Wedge-tailed Sabrewing	Campylopterus curvipennis	X	X	U				X		R
White-necked Jacobin	Florisuga mellivora		X	R	U			X		R
Brown Violet-ear	Colibri delphini				R			X		R
Green-breasted Mango	Anthracocorax prevostii		X		U			X		R
Canivet's Emerald	Chlorostilbon canivetii	X	X		R			X		R
White-bellied Emerald	Amazilia candida		X	C	U			X		R
Azure-crowned Hummingbird	Amazilia cyanocephala		X	R	R			X		R
Rufous-tailed Hummingbird	Amazilia tzacatl	X	X	C	C	C		X		R
Buff-bellied Hummingbird	Amazilia yucatanensis					R		X		R
Purple-crowned Fairy	Heliothryx barroti		X	R	R			X		R
Sparkling-tailed Hummingbird	Tilmatura dupontii								Prob. Tres Leg. Lee Jones	LM
Ruby-throated Hummingbird	Archilochus colubris		X					X		W
Trogonidae										
Black-headed Trogon	Trogon melanocephalus	X	X	C	C			X		R
Violaceous Trogon	Trogon violaceus	X	X	C	C			X		R
Collared Trogon	Trogon collaris		X	F				X		R
Slaty-tailed Trogon	Trogon massena		X	C				X		R
Momotidae										
Tody Motmot	Hylomanes momotula		X	R				X		R
Blue-crowned Motmot	Momotus momota	X	X	U				X		R
Alcedinidae										
Ringed Kingfisher	Ceryle torquata		X		R		C	X		R
Belted Kingfisher	Ceryle alcyon		X				R	X		W
Amazon Kingfisher	Chloroceryle amazona		X	R			C	X		R
Green Kingfisher	Chloroceryle americana		X	U			U	X		R
Pygmy Kingfisher	Chloroceryle aenea	X	X	U			U	X		R
Bucconidae										
White-necked Puffbird	Notharchus macrorhynchus		X	R	R			X		R
White-whiskered Puffbird	Malacoptila panamensis		X	U				X		R
Galbulidae										
Rufous-tailed Jacamar	Galbula ruficauda	X	X	U				X		R
Ramphastidae										
Emerald Toucanet	Aulacorhynchus prasinus		X					X		R
Collared Aricari	Pteroglossus torquatus	X	X	C	U			X		R
Keel-billed Toucan	Ramphastos sulfuratus	X	X	C	C			X		R
Picidae										
Acorn Woodpecker	Melanerpes formicivorus		X			C		X		R
Black-cheeked Woodpecker	Melanerpes pucherani		X	C				X		R
Yucatan Woodpecker	Melanerpes pygmaeus		X					X		R
Golden-fronted Woodpecker	Melanerpes aurifrons	X	X		U			X		R

Yellow-bellied Sapsucker	Sphyrapicus varius		X	R				X		W
Ladder-backed Woodpecker	Picoides scalaris					U		X		R
Smoky-brown Woodpecker	Veniliornis fumigatus		X	U	R			X		R
Golden-olive Woodpecker	Piculus rubiginosus	X	X	U	U			X		R
Chestnut-colored Woodpecker	Celeus castaneus	X	X	U	R			X		R
Lineated Woodpecker	Dryocopus lineatus	X	X	U	C			X		R
Pale-billed Woodpecker	Campephilus guatemalensis	X	X	C				X		R
Furnariidae										
Rufous-breasted Spinetail	Synallaxis erythrothorax		X	R	C			X		R
Buff-throated Foliage-gleaner	Automolus ochrolaemus	X	X	R				X		R
Plain Xenops	Xenops minutus		X	C	U			X		R
Scaly-throated Leaftosser	Scelurus guatemalensis	X	X	U				X		R
Dendrocolaptidae										
Tawny-winged Woodcreeper	Dendrocincla anabatina	X	X	C	U			X		R
Ruddy Woodcreeper	Dendrocincla homochroa	X	X	C				X		R
Olivaceous Woodcreeper	Sittasomus griseicapillus	X	X	C	R			X		R
Wedge-billed Woodcreeper	Glyphorynchus spirurus	X	X	R				X		R
Strong-billed Woodcreeper	Xiphocolaptes promeropirhynchus	X	X	V				X		R
Northern Barred Woodcreeper	Dendrocolaptes sanctithomae	X	X	U				X		R
Ivory-billed Woodcreeper	Xiphorhynchus flavigaster	X	X	C	R			X		R
Streak-headed Woodcreeper	Lepidocolaptes souleyetii		X	V		R		X		R
Thamnophilidae										
Great Antshrike	Taraba major		X		V			X		R
Barred Antshrike	Thamnophilus doliatus	X	X	R	C			X		R
Plain Antvireo	Dysithamnus mentalis	X	X	V				X		R
Dot-winged Antwren	Microrhopias quixensis	X	X	C	R			X		R
Dusky Antbird	Cercomacra tyrannina		X	U	R			X		R
Black-faced Ant-thrush	Formicarius analis	X	X	C	U			X		R
Tyrannidae										
Yellow-bellied Tyrannulet	Ornithion semiflavum	X	X	C				X		R
Northern Beardless Tyrannulet	Camptostoma imberbe		X		U	U		X		R
Greenish Elaenia	Myiopagis viridicata	X	X	C	U			X		R
Yellow-bellied Elaenia	Elaenia flavogaster		X	R	C	U?		X		R
Ochre-bellied Flycatcher	Mionectes oleaginus	X	X	C	U			X		R
Sepia-capped Flycatcher	Leptopogon amaurocephalus		X	R				X		R
Paltry Tyrannulet	Zimmerius vilissimus		X							R
Northern Bentbill	Oncostoma cinereigulare	X	X	C	C			X		R
Slate-headed Tody-flycatcher	Poecilotriccus sylvia		X		R			X		R
Common Tody-flycatcher	Todirostrum cinereum		X		U	U		X		R
Eye-ringed Flatbill	Rhynchocyclus brevirostris		X	C				X		R
Yellow-olive Flycatcher	Tolmomyias sulphurescens	X	X	C	C			X		R

Stub-tailed Spadebill	Platyrinchus cancrominus	X	X	C				X		R
Royal Flycatcher	Onychorhynchus coronatus	X	X	R	U			X		R
Ruddy-tailed Flycatcher	Terenotriccus erythrurus		X	R				X		R
Sulphur-rumped Flycatcher	Myiobius sulphureipygius	X	X	U				X		R
Olive-sided Flycatcher	Contopus cooperi		X					X		Trans
Eastern Peewee	Contopus virens		X	U	U			X		Trans
Tropical Peewee	Contopus cinereus	X	X		U	U		X		R
Yellow-bellied Flycatcher	Empidonax flaviventris	X	X	C				X		W
Acadian Flycatcher	Empidonax virescens		X	V				X		Trans
White-throated Flycatcher	Empidonax albigularis		X					X		W
Least Flycatcher	Empidonax minimus		X		C			X		W
Vermilion Flycatcher	Pyrocephalus rubinus		X		U	C		X		R
Bright-rumped Attila	Attila spadiceus	X	X		C	U		X		R
Rufous Mourner	Rhyptipterna holerythera		X	U				X		R
Yucatan Flycatcher	Myiarchus yucatanensis		X	R	U			X		R
Dusky-capped Flycatcher	Myiarchus tuberculifer	X	X	C	C			X		R
Great Crested Flycatcher	Myiarchus crinitus		X	C	F			X		W
Brown-crested Flycatcher	Myiarchus tyrranulus	X	X	U	U			X		R
Great Kiskadee	Pitangus sulphuratus	X	X	R	C	F		X		R
Boat-billed Flycatcher	Megarynchus pitangua	X	X	U	U			X		R
Social Flycatcher	Myiozetetes similis	X	X	F	C	C		X		R
Streaked Flycatcher	Myiodynastes maculatus		X	U	U			X		S
Sulphur-bellied Flycatcher	Myiodynastes luteiventris		X		U			X		S
Piratic Flycatcher	Legatus leucophaius		X		R			X		S
Tropical Kingbird	Tyrannus melancholicus	X	X		C	C		X		R
Couch's Kingbird	Tyrannus couchii		X		U	U		X		R
Cassin's Kingbird	Tyrranus vociferans								Gall. Jug, Lee Jones 2003	W
Eastern Kingbird	Tyrannus tyrannus		X		R			X		Trans
Grey Kingbird	Tyrannus dominicensis								La Milpa, Lee Jones 2003	W
Fork-tailed Flycatcher	Tyrannus savana		X		R	C	U	X		R
Incertae Sedis										
Thrush-like Schiffornis	Schiffornis turdinus	X	X	C				X		R
Rufous Piha	Lipaugus unirufus		X	R				X		R
Speckled Mourner	Laniocera rufescens		X	U				X		R
Cinnamon Becard	Pachyramphus cinnamomeus	X		V				X		R
Grey-collared Becard	Pachyramphus major	X		R	V			X		R
Rose-throated Becard	Pachyramphus aglaiae	X		R	R			X		R
Masked Tityra	Tityra semifasciata	X		U				X		R
Black-crowned Tityra	Tityra inquisitor			V				X		R
Cotingidae										
Lovely Cotinga	Cotinga amabilis		X					X		R

Pipridae										
White-collared Manakin	Manacus candei	X	X		U			X		R
Red-capped Manakin	Pipra mentalis	X	X	C	U			X		R
Vireonidae										
White-eyed Vireo	Vireo griseus	X	X	R	U			X		W
Mangrove Vireo	Vireo pallens	X	X	R	C			X		R
Yellow-throated Vireo	Vireo flavifrons		X	R				X		W
Philadelphia Vireo	Vireo philadelphicus		X							W
Red-eyed Vireo	Vireo olivaceus		X	C	C			X		Trans
Yellow-green Vireo	Vireo flavoviridis		X	U	C			X		S
Yucatan Vireo	Vireo magister		X							R
Tawny-crowned Greenlet	Hylophilus ochraceiceps	X	X	C				X		R
Lesser Greenlet	Hylophilus decurtatus	X	X	C	U			X		R
Green Shrike-vireo	Vireolanius pulchellus		X	C				X		R
Rufous-browed Peppershrike	Cyclarhis gujanensis	X	X		R	U		X		R
Corvidae										
Green Jay	Cyanocorax yncas	X	X	R	R			X		R
Brown Jay	Cyanocorax morio	X	X	C	C	C		X		R
Yucatan Jay	Cyanocorax yucatanicus	X	X					X		R
Hirundinidae										
Purple Martin	Progne subis		X		C			X		Trans
Grey-breasted Martin	Progne chalybea		X		C		C	X		R
Tree Swallow	Tachycineta bicolor		X		U		U	X		W
Mangrove Swallow	Tachycineta albilinea		X		C		C	X		R
Northern Rough-winged Swallow	Stelgidopteryx serripennis		X		U	R	U	X		W
Ridgway's Rough-winged Swallow	Stelgidopteryx (serripenis) ridgwayi								RW, 2005. La Milpa	R
Bank Swallow	Riparia riparia				R			X		Trans
Cave Swallow	Petrochelidon fulva								Blue Creek, Lee Jones 2003	W
Barn Swallow	Hirundo rustica		X		U		U	X		W
Troglodytidae										
Band-backed Wren	Campylorhynchus zonatus								Lamanai, Lee Jones 2003	R
Spot-breasted Wren	Thryothorus maculipectus	X	X	C	C			X		R
White-browed Wren	Thryothorus ludovicianus (albinucha)		X					X		R
Plain Wren	Thryothorus modestus		X							R
Southern House Wren	Troglodytes aedon		X		U			X		R
White-bellied Wren	Uropsila leucogastra	X	X	C	U			X		R
White-breasted Wood-wren	Henicorhina leucosticta	X	X	C				X		R
Nightingale Wren	Microcerculus philomela		X							R
Sylviidae										
Long-billed Gnatwren	Ramphocaenus melanurus	X	X	C				X		R
Blue-grey Gnatcatcher	Polioptera caerulea	X			U	C		X		W

Tropical Gnatcatcher	Polioptera plumbea	X	X	C				X		R
Turdidae										
Veery	Catharus fuscescens		X					X		Trans
Grey-cheeked Thrush	Catharus minimus		X					X		Trans
Swainson's Thrush	Catharus ustulatus		X	R				X		W
Wood Thrush	Catharus mustelinus	X	X	C				X		W
Clay-colored Robin	Turdus grayi	X	X	R	U			X		R
White-throated Robin	Turdus assimilis		X	R				X		R
American Robin	Turdus migratorius								Hill Bank, Lee Jones 2003	V
Mimidae										
Grey Catbird	Dumutella carolinensis	X	X	C	C	C		X		W
Black Catbird	Melanoptila glabirostris								Gall. Jug, Lee Jones 2003	R
Tropical Mockingbird	Mimus gilvus		X		C			X		R
Bombycillidae										
Cedar Waxwing	Bombycilla cedrorum							X		W
Parulinae										
Blue-winged Warbler	Vermivora pinus		X	R	R			X		Trans
Golden-winged Warbler	Vermivora chrysoptera		X					X		W
Lawrence's Warbler	V. pinus x V. chrysoptera								Lamanai, Lee Jones 2003	W
Tennessee Warbler	Vermivora penegrina		X	R	R			X		W
Northern Parula	Parula americana		X	U	U			X		W
Yellow Warbler	Dendroica petechia aestiva		X		U	U		X		W
Chestnut-sided Warbler	Dendroica pensylvanica		X	C	C	C		X		W
Magnolia Warbler	Dendroica magnolia	X	X	C	C	C		X		W
Black-throated Blue Warbler	Dendroica caerulescens		X							W
Yellow-rumped (Myrtle) Warbler	Dendroica coronata coronata		X			V		X		W
Black-throated Green Warbler	Dendroica virens		X	C	U			X		W
Blackburnian Warbler	Dendroica fusca		X	V				X		Trans
Yellow-throated Warbler	Dendroica dominica		X	R	U			X		W
Grace's Warbler	Dendroica graciae					C		X		R
Palm Warbler	Dendroics palmarum							X		W
Bay-breasted Warbler	Dendroica castanea		X	U				X		Trans
Blackpoll Warbler	Dendroica striata		X							W
Black-and-White Warbler	Mniotilta varia	X	X	C	U			X		W
American Redstart	Setophaga ruticilla	X	X	C	C			X		W
Prothonotary Warbler	Protonotaria citrea		X	V				X		Trans
Worm-eating Warbler	Helmitheros vermivorus		X	U				X		W
Swainson's Warbler	Helmitheros swainsonii		X	V	V			X		W
Ovenbird	Seiurus aurocapilla	X	X	U	C			X		W
Northern Waterthrush	Seiurus noveboracensis	X	X	U	U			X		W
Louisiana Waterthrush	Seiurus motacilla		X	C	R			X		W

Kentucky Warbler	Oporornis formosus	X	X	C				X		W
Mourning Warbler	Oporornis philadelphia		X							Trans
Common Yellowthroat	Geothlypis trichas	X	X		C	C	C	X		W
Grey-crowned Yellowthroat	Geothlypis poliocephala		X		C	C		X		R
Hooded Warbler	Wilsonia citrina	X	X	C	C			X		W
Wilson's Warbler	Wilsonia pusilla		X					X		W
Golden-crowned Warbler	Basileuterus culucivorus	X	X	R				X		R
Yellow-breasted Chat	Icteria virens	X	X		U	U		X		W
Grey-throated Chat	Granatellus sallaei	X	X	U				X		R
Coerebinae										
Bananaquit	Coereba flaveola		X					X		R
Thraupidae										
Grey-headed Tanager	Eucometis penicillata	X	X	U				X		R
Black-throated Shrike-tanager	Lanio aurantius	X	X	C				X		R
Red-crowned Ant-tanager	Habia rubica	X	X	C				X		R
Red-throated Ant-tanager	Habia fuscicauda	X	X	C	U			X		R
Rose-throated Tanager	Piranga roseogularis	X	X	R	R			X		R
Hepatic Tanager	Piranga flava		X			C		X		R
Summer Tanager	Piranga rubra	X	X	F	C			X		W
Scarlet Tanager	Piranga olivacea				R			X		Trans
Western Tanager	Piranga ludoviciana		X							W
White-winged Tanager	Spermagra leucoptera							X		R
Blue-grey Tanager	Thraupis episcopus		X		U			X		R
Yellow-winged Tanager	Thraupis abbas		X	R	U			X		R
Scrub Euphonia	Euphonia affinis	X	X	V	R			X		R
Yellow-throated Euphonia	Euphonia hirundinacea	X	X	C	C			X		R
Olive-backed Euphonia	Euphonia gouldii	X	X	C	R			X		R
Golden-hooded Tanager	Tangara larvata		X	R	R			X		R
Green Honeycreeper	Chlorophanes spiza		X					X		R
Red-legged Honeycreeper	Cyanerpes cyaneus	X	X	C	U			X		R
Emberizidae										
Blue-black Grassquit	Volatinia jacarina		X		U	U				R
Slate-colored Seedeater	Sporophila schistacea									R
Variable Seedeater	Sporophila aurita		X		U	U				R
White-collared Seedeater	Sporophila torqueola	X	X	R	C	C				R
Thick-billed Seedfinch	Oryzoborus funereus	X	X		U	U				R
Blue Seedeater	Amaurospia concolor								Hill Bank, Lee Jones 2003	R
Yellow-faced Grassquit	Tiaris olicavea								Gall. Jug, Lee Jones 2003	R
Grassland Yellow-finch	Tiaris olivacea								Blue Creek, Lee Jones 2003	R
Orange-billed Sparrow	Arremon aurantiirostris								Lamanai, Lee Jones 2003	R
Olive Sparrow	Arremonops rufivirgatus				C	C				R

Green-backed Sparrow	Arremonops chloronotus	X	X	C	C					R
Botteri's Sparrow	Aimophila botterii				U	U				R
Chipping Sparrow	Spizella passerina		X		U	U				R
Grasshopper Sparrow	Ammodramus savannarum					U				V
Cardinalidae										
Greyish Saltator	Saltator coerulescens		X		V			X		R
Buff-throated Saltator	Saltator maximus	X	X					X		R
Black-headed Saltator	Saltator atriceps	X	X	C	C			X		R
Black-faced Grosbeak	Carythraustes poliogaster	X	X	C				X		R
Northern Cardinal	Cardinalis cardinalis		X		U			X		R
Rose-breasted Grosbeak	Pheucticus ludovicianus		X		V			X		W
Blue-black Grosbeak	Cyanocompsa cyanoides	X	X	C	C			X		R
Blue Bunting	Cyanocompsa parellina		X	U	U			X		R
Blue Grosbeak	Passerina caerulea		X		U	U		X		W
Indigo Bunting	Passerina cyanea		X	R	C	C		X		W
Dickcissel	Spiza americana		X		U			X		Trans
Icteridae										
Red-winged Blackbird	Agelaius phoeniceus		X		V		U	X		R
Eastern Meadowlark	Sturnella magna				V	U		X		R
Melodious Blackbird	Dives dives	X	X		C			X		R
Great-tailed Grackle	Quiscalus mexicanus		X		C		R	X		R
Bronzed Cowbird	Molothrus aeneus		X							R
Brown-headed Cowbird	Molthrus ater								Gall. Jug, Lee Jones 2003	W
Giant Cowbird	Molothrus oryzivora		X							R
Black-cowled Oriole	Icterus dominicensis	X	X	C	U			X		R
Orchard Oriole	Icterus spurius		X	U	C			X		W
Hooded Oriole	Icterus cucullatus		X		U					R
Yellow-backed Oriole	Icteris chrysater		X			U		X		R
Yellow-tailed Oriole	Icterus mesomelas			U	U	U		X		R
Altamira Oriole	Icterus gularis				R			X		R
Baltimore Oriole	Icterus galbula		X	C	C	C		X		W
Yellow-billed Cacique	Amblycercus holosericeus	X	X	R	F			X		R
Montezuma Oropendula	Psarocolius montezuma	X	X	C	C			X		R
Fringillidae										
Red Crossbill	Loxia curvirostra					V		X		R
Lesser Goldfinch	Carduelis psaltria								RW, San Felipe	R

APPENDIX 6: RBCMA-ATNP HERPETOFAUNA

Base-list includes all species in Stafford & Meyer 2000 with ranges in north-western Belize. All ATNP records are from the REA (Meerman et al, 2003). Other records are derived from Stafford & Meyer 2000, Meyer 1994, Meyer 1995, Platt & Rainwater 1998.

		ATNP	RBCMA	Notes
Amphibia				
Caudata				
	Bolitoglossa mexicana			
Anura				
Marine Toad	Bufo marinus		X	
Gulf Coast toad	Bufo valliceps		X	
Lowland Rainfrog	Eleutherodactylus rhodopsis			Recorded from Gallon Jug (only known Belizean site)
Central American Rainfrog	Eleutherodactylus rugulosus			Recorded from Gallon Jug
White-lipped Frog	Leptodactylus labialis		X	
Black-backed Frog	Leptodactylus melanonotus		X	
Tungara Frog	Physolaemus pustulosus	X	X	Restricted to NW in Belize
Gulf Chirping Frog	Syrrhophus leprus		X	
Elegant Narrowmouth Frog	Gastrophryne elegans			Known in Belize from 4 localities only
Sheep Frog	Hypopachus variolosus		X	
Red-eyed Treefrog	Agalychnis callidryas		X	
Variegated Treefrog	Hyla ebraccata	X	X	
Red-footed Treefrog	Hyla loquax		X	
Yellow Treefrog	Hyla microcephala		X	
Cricket Treefrog	Hyla picta		X	
Pepper Treefrog	Phrynohyas venulosa		X	
Stauffer's Treefrog	Scinax staufferi		X	
Mexican Treefrog	Smilisca baudinii		X	
Casquehead Treefrog	Triprion petasatus		X	
Rio Grande Leopard Frog	Rana berlandierii	X	X	
Rainforest Frog	Rana vaillantiii		X	
Mexican Burrowing Frog	Rhinophrynus dorsalis		X	
Reptilia				
Crocodilia (Crocodiles)				
Crocodylidae				
Morelet's Crocodile	Crocodylus moreletii		X	
Testudines (Turtles)				
Dermatydidae				
Central American River Turtle	Dermatemys mawii		X	Polisar 1990
Kinosternidae				

Narrow-bridged Musk Turtle	Claudius angustatus		X	Polisar 1990
Tabasco Mud Turtle	Kinosternon acutum		X	Sight record, La Milpa
White-lipped Mud Turtle	Kinosternon leucostomum		X	Sight record, La Milpa
Scorpion Mud Turtle	Kinosternon scorpioides	X	X	Sight record, Rancho savannah
Mexican Giant Mud Turtle	Staurotypus triporcatus		X	Polisar 1990
Emydidae				
Furrowed Wood Turtle	Rhinoclemmys areolata		X	Polisar 1990
Slider	Trachemys scripta		X	Polisar 1990
Squamata - Sauria (Lizards)				
Eublepharidae				
Yucatan Banded Gecko	Coleonyx elegans		X	
Gekkonidae				
Yellow-bellied Leaf-toed Gecko	Phyllodactylus tuberculosus			More coastal
Dwarf Gecko	Sphaerodactylus glaucus			Recorded on Gallon Jug
Spotted Gecko	Sphaerodactylus millepunctatus			
Turnip-tailed Gecko	Thecadactylus rapicaudata			Recorded from Lamanai
Corytophanidae				
Striped Basilisk	Basiliscus vittatus		X	
Smooth-headed Helmeted Basilisk	Corytophanes cristatus		X	Sight record
Hernandez's Helmeted Basilisk	Corytophanes hernandezii			Recorded on Gallon Jug
Eastern Casque-headed Iguana	Laemanctus longipes			Recorded on Gallon Jug
Serrated Casque-headed Iguana	Laemanctus serratus			More northern
Iguanidae				
Black Iguana	Ctenosaura similis		X	
Green Iguana	Iguana iguana		X	
Phrynosomatidae				
Yellow-spotted Spiny Lizard	Sceloporus chrysostictus			Recorded from Lamanai
Polychrotidae				
Central American Green Anole	Norops biporcatus		X	
Big-headed Anole	Norops capito		X	
Ghost Anole	Norops lemurinus		X	
Lichen Anole	Norops pentaprion			Recorded from Cayo, probably throughout.
Smooth Anole	Norops rodriguezii			Recorded from Orange Walk Town
Brown Anole	Norops sagrei			More coastal. Reaches Gold Button.
Silky Anole	Norops sericeus			Recorded from Guinea Grass
Greater Scaly Anole	Norops tropidonotus		X	

Lesser Scaly Anole	Norops uniformis	X		First north Belizean record (REA)
Scincidae				
Schwartze's Skink	Eumeces schwartzei		X	
Central American Mabuya	Mabuya unimarginata		X	
Brown Forest Skink	Sphenomorphus cherriei		X	
Gymnophthalmidae				
Golden-spectacled Lizard	Gymnophthalmus speciosus			Recorded from Carmelita
Teiidae				
Rainbow Ameiva	Ameiva undulata		X	Sight record
Yucatan Whiptail	Cnemidophorus angusticeps			More coastal
Maslin's Racerunner	Cnemidophorus maslinii			Recorded from Guinea Grass
Squamata - Serpentes (Snakes)				
Typhlopidae				
Yucatan Blindsnake	Typhlops microstomus			Recorded from Altun ha
Leptotyphlopidae				
Black Blindsnake	Leptotyphlops goudotii			Recorded from Corozal
Boidae				
Mexican Boa	Boa constrictor	X	X	Sight record
Colubridae				
Middle American Earth Snake	Adelphicos quadrivirgatus			Recorded from Gallon Jug
Mexican Snake eater	Clelia scytalina		X	Sight Record (Clelia sp)
Two-spotted Snake	Coniophanes bipunctatus		X	Sight Record
Yellow-bellied Snake	Coniophanes fissidens			Probably occurs in Orange Walk District
Black-striped Snake	Coniophanes imperialis			Recorded from Gallon Jug
Faded Black-striped Snake	Coniophanes schmidti			Recorded from Lamanai (Platt & Rainwater)
Many-lined Snake	Conophis lineatus			Possibly in northern Orange Walk District
Snail-eating Thirst Snake	Dipsas brevifacies			
Lizard Eater	Dryadophis melanolomus			Recorded from Orange Walk Town
Black-tailed Indigo Snake	Drymarchon corais		X	
Speckled Racer	Drymobius margaritiferus		X	
Tropical Rat Snake	Elaphe flavirufa			Recorded from Orange Walk Town
Blotched Hook-nosed Snake	Ficimia publia			Recorded from Gallon Jug
Blunt-headed Tree Snake	Imantodes cenchoa			Recorded from Gallon Jug
Tropical Kingsnake	Lampropeltis triangulum		X	
Rain Forest Cat-eyed Snake	Leptodeira frenata		X	
Central merican Cat-eyed Snake	Leptodeira septentrionalis			Recorded from Gallon Jug

Green Parrot Snake	Leptophis ahaetulla			Recorded from Gallon Jug
Mexican Parrot Snake	Leptophis mexicanus		X	Sight record
Tropical Whipsnake	Masticophis mentovarius		X	Sight record
Red Coffee Snake	Ninia sebae			Recorded from Gallon Jug
Neotropical Vine Snake	Oxybelis aeneus		X	
Green Vine Snake	Oxybelis fulgidus		X	Sight record
Puffing Snake	Pseustes poecilonatus			Recorded from Gallon Jug
Shovel-toothed Snake	Scaphiodontophis annulatus			Recorded from Orange Walk
Green Rat Snake	Senticolis triaspis			
Cloudy Snail Sucker	Sibon nebulata			Recorded from Gallon Jug
Pygmy Snail Sucker	Sibon sanniola			Recorded from Gallon Jug
Terrestrial Snail Sucker	Sibon sartorii		X	
Tiger Ratsnake	Spilotes pullatus		X	
Blood Snake	Stenorrhina freminvillii			Recorded from Orange Walk District
Yucatan White-lipped Snake	Symphimus mayae		X	
Yucatan Centipede Snake	Tantilla cuniculator			Recorded from Orange Walk Town
Yucatan Dwarf Short-tailed Snake	Tantilla canula			Recorded from Lamanai
Checkered Garter Snake	Thamnophis marcianus			Recorded from Lamanai
Gulf Coast Ribbon Snake	Thamnophis proximus			Recorded from Orange Walk Town
False Coral Snake	Urotheca elapoides			More southern
False Fer-de-Lance	Xenodon rabdocephalus			Recorded from Gallon Jug
Elapidae				
Variable Coral Snake	Micrurus diastemata			Recorded from Orange Walk Town
Central American Coral Snake	Micrurus nigrocinctus			Recorded from Gallon Jug
Viperidae				
Tropical Moccasin	Agkistrodon bilineatus			Recorded from Orange Walk town
Eyelash Palm Pitviper	Bothriechis schlegelii			Recorded from Gallon Jug
Fer-de-lance	Bothrops asper		X	
Yucatan Rattlesnake	Crotalus durissimus	X	X	Sight records

APPENDIX 7: RBCMA-ATNP INVERTEBRATES –

Please go to page 117

APPENDIX 8: CONSERVATION PLANNING ANALYSIS

The assessment follows the Conservation Action Planning (CAP) process developed by The Nature Conservancy and adopted by the National Protected Areas Policy and System Plan.

1. Conservation Targets

Conservation Targets

These are specific species and natural systems that the protected area will focus on as being representative of its overall biodiversity. These conservation targets will be the basis for setting goals, carrying out conservation actions, and measuring conservation effectiveness. In theory – conservation of these targets will ensure the conservation of all the native biodiversity within the RBCMA.

	Conservation Target
1	Savannah
2	Broad-leaved Lowland Forest
3	Aquatic Ecosystem
4	Yellow-headed Parrot
5	Hicatee
6	Jaguar
7	Bay Snook

2. Viability Assessment:

The conservation targets are carefully looked at to determine how to measure their "health" over time.

Key Ecological Attributes

Certain characteristics that are critical aspects of the conservation target's biology or ecology, that if missing or altered, would lead to the loss of the target over time.

Categories:

- *Size*: A measure of the area or abundance of the conservation target's occurrence.

- *Condition*: A measure of the biological composition, structure and biotic interactions that characterize the occurrence of a conservation target
- *Landscape context*: An integrated measure assessing the degree to which the large-scale processes maintaining the target are operational:
    - Ecological processes: natural disturbance regimes; hydrological and water chemistry regimes; weather regime (seasonality, intensity…); fire regime
    - Connectivity: access to habitats and resources; connectivity among communities and ecosystems; ability to respond to environmental change through dispersal or migration

Indicators

These are specific, measurable characteristics of the key ecological attributes.

Indicator Rating:

- *Very Good*: Ecologically desirable status; requires little intervention for maintenance
- *Good*: Indicator within acceptable range of variation; some intervention required for maintenance
- *Fair:* Outside acceptable range of variation; requires human intervention
- *Poor*: Restoration increasingly difficult; may result in local extinction of target

Acceptable Range of Variation

This is the range of variation for each attribute (or technically its indicators) that would allow the conservation target to persist over time – a range in which the attribute has good or very good status.

Current and Desired Status of each Ecological Attribute

The current status of each target is determined by identifying how the target is doing today, and the desired status of each target is determined by considering what a “healthy state” might look like.

Assessment of Conservation Target Viability

#	Conservation Targets	Category	Key Attribute	Indicator	Indicator ratings				Current Indicator Measurement	Comments	Current Rating	Source	Desired Rating
					Poor	Fair	Good	Very Good					
1	Savannah	Landscape Context	Fire regime	Frequency of fires	Every 2 years and less	Every 2 - 3 years	Every 3 - 4 years	Every 5 years	Fires occur annually in San Felipe; every 2 - 3 years in Rancho		Fair	Expert Knowledge	Good
		Condition	Community architecture	Caribbean Pine population structure	More than 200 trees per ha	150 – 200 trees per ha	101 – 149 trees per ha	75 – 100 trees per ha	Fair in Rancho, Poor in San Felipe	Dense stands can exclude native vegetation and alter fire regimes	Fair	Expert Knowledge	Good
		Size	Extent of savannah	Size of savannah	Less than 2000 ha per area	2000 – 2,900 ha per area	3000 – 3,900 ha per area	4000 - 5000 ha per area	5000 ha each per Rancho and San Felipe		Very Good	Expert Knowledge	Very Good
2	Broad-leaved Lowland Forest	Landscape Context	Connectivity of systems	Presence of physical barriers (fences, open areas)	More than 5 physical barriers present	3 – 5 physical barriers present	No more than 2 physical barriers present	No physical barriers present	Some physical barriers present		Fair	Expert Knowledge	Good

#	Conservation Targets	Category	Key Attribute	Indicator	Indicator ratings				Current Indicator Measurement	Comments	Current Rating	Source	Desired Rating
					Poor	Fair	Good	Very Good					
		Condition	Tree/plants composition and structure	Composition of tree species	Less than 500 tree species per km^2	500 – 749 tree species per km^2	750 – 1000 tree species per km^2	1000+ tree species per km^2	750 – 1000 tree species per km^2	Need more sample plots, linked with satellite imagery. Southern broad-leaved forest affected by hurricane in 2010 and fires in 2011	Good	Rough Guess	Very Good
			Wildlife composition and structure	Populations of targeted (predator) species	Populations over-abundant	Populations slightly less than acceptable	Populations within acceptable range	Populations are at optimum		Need more sample plots, linked with satellite imagery	Very Good	Expert Knowledge	Very Good
		Size	Extent of forest	Acreage of broad-leaved forest	Less than 25,000 ha	25,000 – 49,000 ha	50,000 – 75,000 ha	More than 75,000 ha			Very Good	Rough Guess	Very Good

#	Conservation Targets	Category	Key Attribute	Indicator	Indicator ratings				Current Indicator Measurement	Comments	Current Rating	Source	Desired Rating
					Poor	Fair	Good	Very Good					
3	Aquatic Ecosystem	Landscape Context	Connectivity of systems	Presence of physical barriers (dams, BOD, contamination, gill nets)	More than 5 physical barriers present	3 – 5 physical barriers present	No more than 2 physical barriers present	No physical barriers present	Some physical barriers present		Fair	Expert Knowledge	Good
			Water quality	Normal levels of parameters	Few parameters at normal levels	Some parameters at normal levels	Most parameters at normal levels	All parameters at normal levels	All parameters at normal levels		Very Good	Expert Knowledge	Very Good
		Size	Population structure and composition of fish species	Population structure and composition of fish species	Population structure and composition above acceptable range	Population structure and composition slightly below acceptable range	Population structure and composition within acceptable range	Population structure and composition at desired status	Population structures and composition are fair		Fair	Rough Guess	Good
4	Yellow-headed Parrot	Size	Population size & dynamics	Number of active nests	Less than 150	151 - 300	301 - 450	451 – 600+	250 breeding pairs in Rancho; less than 150 in San Felipe		Fair	Expert Knowledge	Good

#	Conservation Targets	Category	Key Attribute	Indicator	Indicator ratings				Current Indicator Measurement	Comments	Current Rating	Source	Desired Rating
					Poor	Fair	Good	Very Good					
			Population size & dynamics	Population size of Yellow-headed parrot	Less than 300 individuals	300 – 599 individuals	600 – 899 individuals	More than 900 individuals			Fair	Rough Guess	Good
5	Hicatee	Size	Population size	Population size of Hicatee	Less than 100 individuals	100 – 299 individuals	300 – 499 individuals	More than 500 individuals		Based on frequent sightings by rangers. More research and information needed	Good	Expert Knowledge	Very Good
6	Jaguar	Size	Population size	Population size of Jaguar	Less than 15 individuals	15 – 29 individuals	30 – 44 individuals	45 – 65 individuals	1.5 - 6 individuals per 100 km^2 (equals at least 65 Jaguars)	Based on Marcella Kelly's research. Killings occur outside of PA	Very Good	Expert Knowledge	Very Good
7	Bay Snook	Size	Population size and age structure	Population size of Bay Snook	Less than 500 individuals	500 – 1,999 individuals	2,000 – 5,000 individuals	More than 5,000 individuals	Good	More research and monitoring needed	Good	Rough Guess	Good

Viability Summary

	Conservation Targets	Landscape Context	Condition	Size	Viability Rank
	Current Rating				
1	Savannah	Fair	Fair	Very Good	Good
2	Broad-leaved Lowland Forest	Fair	Good	Very Good	Good
3	Aquatic Ecosystem	Fair	-	Fair	Fair
4	Yellow-headed Parrot	-	-	Fair	Fair
5	Hicatee	-	-	Good	Good
6	Jaguar	-	-	Very Good	Very Good
7	Bay Snook	-	-	Good	Good
	Project Biodiversity Health Rank				**Good**

3. Threats to Conservation Targets

The factors that immediately affect the conservation targets are identified and ranked in order to concentrate conservation actions where they are most needed.

Stresses

These are degraded key ecological attributes (or attributes that are out of their acceptable range of variation) that result directly or indirectly from human sources, and are likely to destroy or seriously reduce the health of the conservation targets.

- *Scope*: The level of damage to the conservation target that can reasonably be expected within 10 years under current circumstances (i.e., given the continuation of the existing situation)
    - *Very High* - The threat is likely to be widespread or pervasive in its scope and affect the conservation target throughout the target's occurrences at the site
    - *High* - The threat is likely to be widespread in its scope and affect the conservation target at many of its locations at the site
    - *Medium* - The threat is likely to be localized in its scope and affect the conservation target at some of the target's locations at the site
    - *Low* - The threat is likely to be very localized in its scope and affect the conservation target at a limited portion of the target's location at the site

- *Severity*: The area of conservation target that can reasonably be expected to be damaged within 10 years under current circumstances (i.e., given the continuation of the existing situation)
    - *Very High* - The threat is likely to destroy or eliminate the conservation target over some portion of the target's occurrence at the site
    - *High* - The threat is likely to seriously degrade the conservation target over some portion of the target's occurrence at the site
    - *Medium* - The threat is likely to moderately degrade the conservation target over some portion of the target's occurrence at the site
    - *Low:* The threat is likely to only slightly impair the conservation target over some portion of the target's occurrence at the site

Target #1 -- Savannah

	Stresses	Severity	Scope	Stress Rank	User Override
1	Reduced extent of savannah	Low	Low	Low	
2	Altered fire regime	High	High	High	
3	Degraded community architecture	Medium	Medium	Medium	

Target #2 -- Broad-leaved Lowland Forest

	Stresses	Severity	Scope	Stress Rank	User Override
1	Reduced extent of forest	Low	Low	Low	
2	Altered wildlife composition and population structure	Low	Medium	Low	
3	Altered plant composition and structure	Low	Medium	Low	

Target #3 -- Aquatic Ecosystem

	Stresses	Severity	Scope	Stress Rank	User Override
1	Degraded water quality	Low	Medium	Low	
2	Presence of some barriers to connectivity	High	Medium	Medium	
3	Altered population structure and composition of fish species	Medium	High	Medium	

Target #4 -- Yellow-headed Parrot

	Stresses	Severity	Scope	Stress Rank	User Override
1	Reduction of population	Medium	Very High	Medium	

Target #5 -- Hicatee

	Stresses	Severity	Scope	Stress Rank	User Override
1	Reduction of population size	Low	Very High	Low	

Target #6 -- Jaguar

	Stresses	Severity	Scope	Stress Rank	User Override
1	Reduction of population size	Low	Low	Low	

Target #7 -- Bay Snook

	Stresses	Severity	Scope	Stress Rank	User Override
1	Reduction of population size	Low	Low	Low	
2	Altered age structure	Medium	Medium	Medium	

Sources of Stress (Direct Threats)

The proximate activities or processes that directly have caused, are causing or may cause stresses and thus the destruction, degradation and/or impairment of conservation targets.

- *Contribution*: The expected contribution of the source, acting alone, to the full expression of a stress under current circumstances (i.e., given the continuation of the existing situation)
    - *Very High* - The source is a very large contributor of the particular stress
    - *High* - The source is a large contributor of the particular stress
    - *Medium* - The source is a moderate contributor of the particular stress
    - *Low* - The source is a low contributor of the particular stress
- *Irreversibility*: The degree to which the effects of a source can be restored
    - *Very High* - The source produces a stress that is not reversible (e.g. wetlands converted to a shopping center)
    - *High* - The source produces a stress that is reversible, but not practically affordable (e.g. wetland converted to agriculture)
    - *Medium* - The source produces a stress that is reversible with a reasonable commitment of resources (e.g. ditching and draining of wetland)
    - *Low* - The source produces a stress that is easily reversible at relatively low cost (e.g. off-road vehicles trespassing in wetland)

Critical Threats

Combining the ratings of the stresses and sources of stress (direct threats) produces the critical threats affecting the conservation targets. The direct threats that are highest ranked (often the “very high” and “high” rated threats) are the critical threats.

Target #1 -- Savannah

Threats - Sources of Stress		Reduced extent of savannah	Altered fire regime	Degraded community architecture	-	-	-	-	-	Threat to Target Rank
Stresses #..		1	2	3	4	5	6	7	8	
Rank..		*Low*	*High*	*Medium*	-	-	-	-	-	
1	Threat	Uncontrolled / unmanaged fires								Medium
	Contribution	High	High	High						
	Irreversibility	Medium	Medium	High						
	Threat Rank (override)									
	Threat Rank	Low	Medium	Medium	-	-	-	-	-	
2	Threat	Illegal logging								Low
	Contribution	Low		Medium						
	Irreversibility	Low		Medium						
	Threat Rank (override)									
	Threat Rank	Low	-	Low	-	-	-	-	-	
3	Threat	Poaching of wildlife								Medium
	Contribution		High							
	Irreversibility		Medium							
	Threat Rank (override)									
	Threat Rank	-	Medium	-	-	-	-	-	-	

Target #2 -- Broad-leaved Lowland Forest

Threats - Sources of Stress		Reduced extent of forest	Altered wildlife composition and population structure	Altered plant composition and structure	-	-	-	-	-	Threat to Target Rank
Stresses #..		1	2	3	4	5	6	7	8	
Rank..		*Low*	*Low*	*Low*	-	-	-	-	-	
1	Threat	Illegal logging								High
	Contribution	Low		High						
	Irreversibility	Low		Medium						
	Threat Rank (override)	High		High						
	Threat Rank	High	-	High	-	-	-	-	-	
2	Threat	Poaching of wildlife								Low
	Contribution		Low							
	Irreversibility		Medium							
	Threat Rank (override)									
	Threat Rank	-	Low	-	-	-	-	-	-	
3	Threat	Illegal agriculture (drugs)								Low
	Contribution	Low		Low						
	Irreversibility	Medium		Medium						
	Threat Rank (override)									
	Threat Rank	Low	-	Low	-	-	-	-	-	
4	Threat	Uncontrolled burning								Low
	Contribution	Low		Low						

	Irreversibility	Medium		Medium						
	Threat Rank (override)									
	Threat Rank	Low	-	Low	-	-	-	-	-	
5	Threat	Road infrastructure development								
	Contribution	Low	Low	Low						
	Irreversibility	Low	Low	Low						Low
	Threat Rank (override)									
	Threat Rank	Low	Low	Low	-	-	-	-	-	
6	Threat	Oil development								
	Contribution	Medium	High	Low						
	Irreversibility	High	High	Low						Low
	Threat Rank (override)									
	Threat Rank	Low	Low	Low	-	-	-	-	-	

Target #3 -- Aquatic Ecosystem

Threats - Sources of Stress		Degraded water quality	Presence of some barriers to connectivity	Altered population structure and composition of fish species	-	-	-	-	-	Threat to Target Rank
Stresses #..		1	2	3	4	5	6	7	8	
Rank..		*Low*	*Medium*	*Medium*	-	-	-	-	-	
1	Threat	Pesticides and fertilizers								
	Contribution	High	Medium	High						
	Irreversibility	High	Medium	High						Medium
	Threat Rank (override)									
	Threat Rank	Low	Low	Medium	-	-	-	-	-	
2	Threat	Unregulated fishing								
	Contribution			High						
	Irreversibility			Medium						Low
	Threat Rank (override)									
	Threat Rank	-	-	Low	-	-	-	-	-	
3	Threat	Invasive species								
	Contribution			Very High						
	Irreversibility			Very High						Medium
	Threat Rank (override)									
	Threat Rank	-	-	Medium	-	-	-	-	-	

Target #4 -- Yellow-headed Parrot

Threats - Sources of Stress		Reduction of population	-	-	-	-	-	-	-	Threat to Target Rank
Stresses #..		1	2	3	4	5	6	7	8	
Rank..		*Medium*	-	-	-	-	-	-	-	
1	Threat	Poaching of wildlife								Low
	Contribution	High								
	Irreversibility	Medium								
	Threat Rank (override)									
	Threat Rank	Low	-	-	-	-	-	-	-	
2	Threat	Uncontrolled / unmanaged fires								Medium
	Contribution	Very High								
	Irreversibility	Medium								
	Threat Rank (override)									
	Threat Rank	Medium	-	-	-	-	-	-	-	
3	Threat	Felling of nest trees								Medium
	Contribution	Very High								
	Irreversibility	Medium								
	Threat Rank (override)									
	Threat Rank	Medium	-	-	-	-	-	-	-	

Target #5 -- Hicatee

Threats - Sources of Stress		Reduction of population size	-	-	-	-	-	-	-	Threat to Target Rank
Stresses #..		1	2	3	4	5	6	7	8	
Rank..		*Low*	-	-	-	-	-	-	-	
1	Threat	Poaching of wildlife								Low
	Contribution	Low								
	Irreversibility	Medium								
	Threat Rank (override)									
	Threat Rank	Low	-	-	-	-	-	-	-	
2	Threat	Unregulated fishing								Low
	Contribution	Low								
	Irreversibility	Medium								
	Threat Rank (override)									
	Threat Rank	Low	-	-	-	-	-	-	-	
3	Threat	Pesticides and fertilizers								Low
	Contribution	High								
	Irreversibility	Medium								
	Threat Rank (override)									
	Threat Rank	Low	-	-	-	-	-	-	-	

Target #6 -- Jaguar

Threats - Sources of Stress		Reduction of population size	-	-	-	-	-	-	-	Threat to Target Rank
Stresses #..		1	2	3	4	5	6	7	8	
Rank..		*Low*	-	-	-	-	-	-	-	
1	Threat	Poaching of prey species								Low
	Contribution	Low								
	Irreversibility	Medium								
	Threat Rank (override)									
	Threat Rank	Low	-	-	-	-	-	-	-	
2	Threat	Killing of Jaguars								Low
	Contribution	High								
	Irreversibility	Medium								
	Threat Rank (override)									
	Threat Rank	Low	-	-	-	-	-	-	-	

Target #7 -- Bay Snook

Threats - Sources of Stress		Reduction of population size	Altered age structure	-	-	-	-	-	-	Threat to Target Rank
Stresses #..		1	2	3	4	5	6	7	8	
Rank..		*Low*	*Medium*	-	-	-	-	-	-	
1	Threat	Poaching								Low
	Contribution	Low	High							
	Irreversibility	Medium	Medium							
	Threat Rank (override)									
	Threat Rank	Low	Low	-	-	-	-	-	-	
2	Threat	Unregulated fishing								Low
	Contribution	Low	High							
	Irreversibility	Medium	Medium							
	Threat Rank (override)									
	Threat Rank	Low	Low	-	-	-	-	-	-	
3	Threat	Pesticides and fertilizers								Medium
	Contribution	High	High							
	Irreversibility	Medium	High							
	Threat Rank (override)									
	Threat Rank	Low	Medium	-	-	-	-	-	-	

Summary of Threats

	Threats Across Targets	Savannah	Broad-leaved Lowland Forest	Aquatic Ecosystem	Yellow-headed Parrot	Hicatee	Jaguar	Bay Snook	Overall Threat Rank
	Project-specific threats	1	2	3	4	5	6	7	
1	Pesticides and fertilizers			Medium		Low		Medium	Medium
2	Uncontrolled / unmanaged fires	Medium	Medium		Medium				Medium
3	Poaching of wildlife	Medium	Low		Low	Low			Low
4	Felling of nest trees				Medium				Medium
5	Invasive species			Medium					Medium
6	Unregulated fishing			Low		Low		Low	Low
7	Illegal logging	Low	High						Medium
8	Illegal agriculture (drugs)		Low						Low
9	Killing of Jaguars						Low		Low
10	Oil development		Medium						Medium
11	Poaching							Low	Low
12	Poaching of prey species						Low		Low
13	Road infrastructure development		Medium						Medium
14	Uncontrolled burning		Low						Low
	Threat Status for Targets and Project	Medium	Medium	Medium	Medium	Low	Low	Low	Medium

APPENDIX 9: SELF-ASSESSMENT OF MANAGEMENT EFFECTIVENESS (2014)

This method used for the self-assessment is adopted from procedures set out by the World Bank, and is a rapid assessment that utilizes a scorecard questionnaire that includes the six elements of management (context, planning, inputs, process, outputs and outcomes). The method provides a mechanism to identify needs, constraints and priority actions, and for monitoring progress towards more effective management of protected areas over time.

The assessment form has 30 questions that can be answered by assigning a score of 0 (poor) to 3 (excellent). A comments section allows for qualitative judgments to be explained -- this provides a reference point and information for local staff in the future. The next steps section allows for inclusion of any intended actions that will improve management performance. The total score is calculated as a percentage of the scores from the relevant questions.

Issue	Criteria	Score		Comments	Next Steps
1. Legal status Does the protected area have legal status (or in the case of private reserves is covered by a covenant or similar)? *Context*	The protected area is not gazetted/covenanted	0		There is a Trust Agreement (in perpetuity) approved by the National Assembly. Tax exemption expires in 2018 and terms of the agreement can be negotiated then.	Prepare for negotiations on an extension for tax exemption.
	There is agreement that the protected area should be gazetted/covenanted but the process has not yet begun	1			
	The protected area is in the process of being gazetted/covenanted but the process is still incomplete (includes sites designated under international conventions, such as Ramsar, or local/traditional law such as community conserved areas, which do not yet have national legal status or covenant)	2			
	The protected area has been formally gazetted/covenanted	3	**3**		
2. Protected area regulations Are appropriate regulations in place to control land use and activities (e.g. hunting)? *Planning*	There are no regulations for controlling land use and activities in the protected area	0		Regulations for seismic activities do not exist.	
	Some regulations for controlling land use and activities in the protected area exist but these are major weaknesses	1			
	Regulations for controlling land use and activities in the protected area exist but there are some weaknesses or gaps	2	**2**		
	Regulations for controlling inappropriate land use and activities in the protected area exist and provide an excellent basis for management	3			

Issue	Criteria	Score		Comments	Next Steps
3. Law enforcement Can staff (i.e. those with responsibility for managing the site) enforce protected area rules well enough? *Input*	The staff have no effective capacity/resources to enforce protected area legislation and regulations	0		Currently there is a process to replace vehicle, re-hire staff, and provide more training and equip the staff. There is a need for more financial resources to build another ranger station, increase patrol budget, etc.	Fundraising specific for law enforcement.
	There are major deficiencies in staff capacity/resources to enforce protected area legislation and regulations (e.g. lack of skills, no patrol budget, lack of institutional support)	1	**1**		
	The staff have acceptable capacity/resources to enforce protected area legislation and regulations but some deficiencies remain	2			
	The staff have excellent capacity/resources to enforce protected area legislation and regulations	3			
4. Protected area objectives Is management undertaken according to agreed objectives? *Planning*	No firm objectives have been agreed for the protected area	0		There needs to be improvement in the socio-economic betterment of RBCMA stakeholders (communities). This is as a result of financial constraints to implement programs.	Identify opportunities for livelihood programs/project jointly with the communities.
	The protected area has agreed objectives, but is not managed according to these objectives	1			
	The protected area has agreed objectives, but is only partially managed according to these objectives	2	**2**		
	The protected area has agreed objectives and is managed to meet these objectives	3			
5. Protected area design Is the protected area the right size and shape to protect species, habitats, ecological processes and water catchments of key conservation concern? *Planning*	Inadequacies in protected area design mean achieving the major objectives of the protected area is very difficult	0			
	Inadequacies in protected area design mean that achievement of major objectives is difficult but some mitigating actions are being taken (e.g. agreements with adjacent land owners for wildlife corridors or introduction of appropriate catchment management)	1			
	Protected area design is not significantly constraining achievement of objectives, but could be improved (e.g. with respect to larger scale ecological processes)	2			
	Protected area design helps achievement of objectives; it is appropriate for species and habitat conservation; and maintains ecological processes such as surface and groundwater flows at a catchment scale, natural disturbance patterns etc.	3	**3**		

Issue	Criteria	Score		Comments	Next Steps
6. PROTECTED AREA BOUNDARY DEMARCATION Is the boundary known and demarcated? *Process*	The boundary of the protected area is not known by the management authority or local residents/neighbouring land users	0		There are some areas that are un-cleared without markers/signs but most strategic locations do have signs. (The boundary is 125 miles along the north-north-eastern flank).	Clear survey lines and post signs at strategic locations.
	The boundary of the protected area is known by the management authority but is not known by local residents/neighbouring land users	1	**1.5**		
	The boundary of the protected area is known by both the management authority and local residents/neighbouring land users but is not appropriately demarcated	2			
	The boundary of the protected area is known by the management authority and local residents/neighbouring land users and is appropriately demarcated	3			
7. Management plan Is there a management plan and is it being implemented? *Planning*	There is no management plan for the protected area	0		There are some components of the Plan not being implemented as a result of financial constraints.	
	A management plan is being prepared or has been prepared but is not being implemented	1			
	A management plan exists but it is only being partially implemented because of funding constraints or other problems	2	**2**		
	A management plan exists and is being implemented	3			
Additional points: *Planning*					
7a. Planning process	The planning process allows adequate opportunity for key stakeholders to influence the management plan	+1		Starting with this version, the process is providing that opportunity.	
7b. Planning process	There is an established schedule and process for periodic review and updating of the management plan	+1			

Issue	Criteria	Score		Comments	Next Steps
7c. Planning process	The results of monitoring, research and evaluation are routinely incorporated into planning	+1		There is only sectorial research activities carried out in collaboration with Universities. Information is used for management but the research is not led by PfB. There is no comprehensive research program.	
8. Regular work plan Is there a regular work plan and is it being implemented *Planning/Outputs*	No regular work plan exists	0		Constraints to implementation include sectorial focus and financing availability.	Create an integrated, comprehensive work plan that includes all sectors.
	A regular work plan exists but few of the activities are implemented	1	**1.5**		
	A regular work plan exists and many activities are implemented	2			
	A regular work plan exists and all activities are implemented	3			
9. Resource inventory Do you have enough information to manage the area? *Input*	There is little or no information available on the critical habitats, species and cultural values of the protected area	0		Information exists but is absorbed and utilized sectorally. It is sufficient for general management of the RBCMA.	Inclusive and integrated planning needs to occur (cross sectorial) and implemented, specifically, quarterly meetings, etc.
	Information on the critical habitats, species, ecological processes and cultural values of the protected area is not sufficient to support planning and decision making	1			
	Information on the critical habitats, species, ecological processes and cultural values of the protected area is sufficient for most key areas of planning and decision making	2			
	Information on the critical habitats, species, ecological processes and cultural values of the protected area is sufficient to support all areas of planning and decision making	3	**3**		
10. Protection systems Are systems in place to control access/resource use in the protected area?	Protection systems (patrols, permits etc.) do not exist or are not effective in controlling access/resource use	0		Illegal logging activity has escalated recently and deforestation from seismic lines has increased access. Perpetrators have become more sophisticated in their	Identify hot spots and adapt enforcement to address the illegal activities.
	Protection systems are only partially effective in controlling access/resource use	1	**1.5**		
	Protection systems are moderately effective in controlling access/resource use	2			

Issue	Criteria	Score		Comments	Next Steps
Process/Outcome	Protection systems are largely or wholly effective in controlling access/ resource use	3		activity/operations. PfB has not been able to catch up with these developments.	
11. Research Is there a programme of management-orientated survey and research work? *Process*	There is no survey or research work taking place in the protected area	0		The current Management Plan did not call for a comprehensive research program but there is research taking place and used for management.	
	There is a small amount of survey and research work but it is not directed towards the needs of protected area management	1	**1.5**		
	There is considerable survey and research work but it is not directed towards the needs of protected area management	2			
	There is a comprehensive, integrated programme of survey and research work, which is relevant to management needs	3			
12. Resource management Is active resource management being undertaken? *Process*	Active resource management is not being undertaken	0		Resource management is not integrated.	
	Very few of the requirements for active management of critical habitats, species, ecological processes and cultural values are being implemented	1			
	Many of the requirements for active management of critical habitats, species, ecological processes and, cultural values are being implemented but some key issues are not being addressed	2	**2**		
	Requirements for active management of critical habitats, species, ecological processes and, cultural values are being substantially or fully implemented	3			
13. Staff numbers Are there enough people employed to manage the protected area? *Inputs*	There are no staff	0			Carry out a staff needs assessment and secure financial resources to address needs.
	Staff numbers are inadequate for critical management activities	1			
	Staff numbers are below optimum level for critical management activities	2	**2**		
	Staff numbers are adequate for the management needs of the protected area	3			
14. Staff training	Staff lack the skills needed for protected area management	0		Training and skills vary among sectors. Training needs to be consistent.	Carry out comprehensive
	Staff training and skills are low relative to the needs of the protected area	1			

Issue	Criteria	Score		Comments	Next Steps
Are staff adequately trained to fulfil management objectives? *Inputs/Process*	Staff training and skills are adequate, but could be further improved to fully achieve the objectives of management	2	**2**		staff training needs assessment.
	Staff training and skills are aligned with the management needs of the protected area	3			
15. Current budget Is the current budget sufficient? *Inputs*	There is no budget for management of the protected area	0			
	The available budget is inadequate for basic management needs and presents a serious constraint to the capacity to manage	1			
	The available budget is acceptable but could be further improved to fully achieve effective management	2	**2**		
	The available budget is sufficient and meets the full management needs of the protected area	3			
16. Security of budget Is the budget secure? *Inputs*	There is no secure budget for the protected area and management is wholly reliant on outside or highly variable funding	0			
	There is very little secure budget and the protected area could not function adequately without outside funding	1			
	There is a reasonably secure core budget for regular operation of the protected area but many innovations and initiatives are reliant on outside funding	2	**2**		
	There is a secure budget for the protected area and its management needs	3			
17. Management of budget Is the budget managed to meet critical management needs? *Process*	Budget management is very poor and significantly undermines effectiveness (e.g. late release of budget in financial year)	0		All critical management needs are met.	
	Budget management is poor and constrains effectiveness	1			
	Budget management is adequate but could be improved	2	**2.5**		
	Budget management is excellent and meets management needs	3			

Issue	Criteria	Score		Comments	Next Steps
18. Equipment Is equipment sufficient for management needs? *Input*	There are little or no equipment and facilities for management needs	0			Equipment needs assessment and fundraising for implementation.
	There are some equipment and facilities but these are inadequate for most management needs	1			
	There are equipment and facilities, but still some gaps that constrain management	2	**2**		
	There are adequate equipment and facilities	3			
19. Maintenance of equipment Is equipment adequately maintained? *Process*	There is little or no maintenance of equipment and facilities	0		Some facilities like upgrading at Hill Bank are necessary.	Funding needs to be identified for this.
	There is some *ad hoc* maintenance of equipment and facilities	1			
	There is basic maintenance of equipment and facilities	2	**2.5**		
	Equipment and facilities are well maintained	3			
20. Education and awareness Is there a planned education programme linked to the objectives and needs? *Process*	There is no education and awareness programme	0		Develop an education and awareness program.	
	There is a limited and *ad hoc* education and awareness programme	1	**1**		
	There is an education and awareness programme but it only partly meets needs and could be improved	2			
	There is an appropriate and fully implemented education and awareness programme	3			
21. Planning for land and water use Does land and water use planning recognise the protected area and aid the achievement of objectives?	Adjacent land and water use planning does not take into account the needs of the protected area and activities/policies are detrimental to the survival of the area	0		N/A	
	Adjacent land and water use planning does not takes into account the long term needs of the protected area, but activities are not detrimental the area	1			
	Adjacent land and water use planning partially takes into account the long term needs of the protected area	2			

Issue	Criteria	Score		Comments	Next Steps
Planning	Adjacent land and water use planning fully takes into account the long term needs of the protected area	3			
Additional points: Land and water planning					
21a: Land and water planning for habitat conservation	Planning and management in the catchment or landscape containing the protected area incorporates provision for adequate environmental conditions (e.g. volume, quality and timing of water flow, air pollution levels etc) to sustain relevant habitats.	+1			
21b: Land and water planning for connectivity	Management of corridors linking the protected area provides for wildlife passage to key habitats outside the protected area (e.g. to allow migratory fish to travel between freshwater spawning sites and the sea, or to allow animal migration).	+1			
21c: Land and water planning for ecosystem services & species conservation	"Planning addresses ecosystem-specific needs and/or the needs of particular species of concern at an ecosystem scale (e.g. volume, quality and timing of freshwater flow to sustain particular species, fire management to maintain savannah habitats etc.)"	+1			
22. State and commercial neighbours Is there co-operation with adjacent land and water users? *Process*	There is no contact between managers and neighbouring official or corporate land and water users	0		Regular meetings with officials and informal but regular contact with others. More contact with neighbouring communities may be necessary.	Conduct bi-annual neighbour meetings to share work programs, best practices/lessons learned and identify potential areas for cooperation.
	There is contact between managers and neighbouring official or corporate land and water users but little or no cooperation	1			
	There is contact between managers and neighbouring official or corporate land and water users, but only some co-operation	2	**2**		
	There is regular contact between managers and neighbouring official or corporate land and water users, and substantial co-operation on management	3			
23. Indigenous people Do indigenous and traditional peoples resident or regularly using the protected area have input to management decisions?	Indigenous and traditional peoples have no input into decisions relating to the management of the protected area	0		N/A	
	Indigenous and traditional peoples have some input into discussions relating to management but no direct role in management	1			
	Indigenous and traditional peoples directly contribute to some relevant decisions relating to management but their involvement could be improved	2			

Issue	Criteria	Score		Comments	Next Steps
Process	Indigenous and traditional peoples directly participate in all relevant decisions relating to management, e.g. co-management	3			
24. Local communities Do local communities resident or near the protected area have input to management decisions? *Process*	Local communities have no input into decisions relating to the management of the protected area	0		There needs to be more community involvement in decision making for the protected area.	
	Local communities have some input into discussions relating to management but no direct role in management	1	**1**		
	Local communities directly contribute to some relevant decisions relating to management but their involvement could be improved	2			
	Local communities directly participate in all relevant decisions relating to management, e.g. co-management	3			
Additional points *Local communities/indigenous people*					
24 a. Impact on communities	There is open communication and trust between local and/or indigenous people, stakeholders and protected area managers	+1	**1**		
24b. Impact on communities	Programmes to enhance community welfare, while conserving protected area resources, are being implemented	+1		There have been past programs in some communities but due to financing constraints these have not been sustained.	Community livelihood programs should be developed and implemented once financing is secured.
24c. Impact on communities	Local and/or indigenous people actively support the protected area	+1	**1**		
25. Economic benefit Is the protected area providing economic benefits to local communities, e.g. income, employment, payment for environmental services?	The protected area does not deliver any economic benefits to local communities	0		Community livelihood programs/opportunities need to be identified for implementation.	
	Potential economic benefits are recognised and plans to realise these are being developed	1			
	There is some flow of economic benefits to local communities	2	**2.5**		
	There is a major flow of economic benefits to local communities from activities associated with the protected area	3			

Issue	Criteria	Score		Comments	Next Steps
Outcomes					
26. Monitoring and evaluation Are management activities monitored against performance? *Planning/Process*	There is no monitoring and evaluation in the protected area	0		Sectorial M&E takes place but there is no integrated M&E system in place.	Develop M&E system.
	There is some *ad hoc* monitoring and evaluation, but no overall strategy and/or no regular collection of results	1	**1.5**		
	There is an agreed and implemented monitoring and evaluation system but results do not feed back into management	2			
	A good monitoring and evaluation system exists, is well implemented and used in adaptive management	3			
27. Visitor facilities Are visitor facilities adequate? *Outputs*	There are no visitor facilities and services despite an identified need	0		La Milpa is excellent but Hill Bank can be improved (restaurant exists but is rustic and has potential if upgrades are done). BTB standards need to be made.	
	Visitor facilities and services are inappropriate for current levels of visitation	1			
	Visitor facilities and services are adequate for current levels of visitation but could be improved	2	**2.25**		
	Visitor facilities and services are excellent for current levels of visitation	3			
28. Commercial tourism operators Do commercial tour operators contribute to protected area management? *Process*	There is little or no contact between managers and tourism operators using the protected area	0		Cooperation between PfB is excellent and tour operators are supportive of PfB activities. PfB's TDU is in constant communication with tour operators.	
	There is contact between managers and tourism operators but this is largely confined to administrative or regulatory matters	1			
	There is limited co-operation between managers and tourism operators to enhance visitor experiences and maintain protected area values	2			
	There is good co-operation between managers and tourism operators to enhance visitor experiences, and maintain protected area values	3	**3**		
29. Fees If fees (i.e. entry fees or fines) are applied, do they help	Although fees are theoretically applied, they are not collected	0		Some user fees (tourism services) are being collected and re-invested into the PA but there is also some subsidization taking place.	A Financial Sustainability Strategy needs to be developed.
	Fees are collected, but make no contribution to the protected area or its environs	1			
	Fees are collected, and make some contribution to the protected area and its environs	2	**2.5**		

Issue	Criteria	Score		Comments	Next Steps
protected area management? *Inputs/Process*	Fees are collected and make a substantial contribution to the protected area and its environs	3			
30. Condition of values What is the condition of the important values of the protected area as compared to when it was first designated? *Outcomes*	Many important biodiversity, ecological or cultural values are being severely degraded	0		Illegal logging activity is increasing and needs to be properly assessed and addressed.	
	Some biodiversity, ecological or cultural values are being severely degraded	1			
	Some biodiversity, ecological and cultural values are being partially degraded but the most important values have not been significantly impacted	2	**2**		
	Biodiversity, ecological and cultural values are predominantly intact	3			
Additional Points: Condition of values					
30a: Condition of values	The assessment of the condition of values is based on research and/or monitoring	+1			
30b: Condition of values	Specific management programmes are being implemented to address threats to biodiversity, ecological and cultural values	+1	**1**		
30c: Condition of values	Activities to maintain key biodiversity, ecological and cultural values are a routine part of park management	+1	**1**		
TOTAL SCORE (% of total 84)			**72**		

APPENDIX 10: REVIEW OF MANAGEMENT SUCCESS (REVIEW OF 2006-2010 PROGRAMMES)

The review takes the management actions set out in the 2006-2010 management plan and assesses the degree to which they have been implemented and to what effect. This methodology is set out for the National Protected Area System Plan (Wildtracks 2005) and is used to guide management actions for the upcoming period.

Ratings are awarded as follows:

Scale	Rating	Criteria
A	Succeeded	Objectives successfully met
B	Improved	Objectives not completely met but situation improved
C	No change	Objectives not met, no change in status
D	Worse	Objectives not met, situation worsened

+ and – are assigned where it is judged that actions are more or less effective within a given rating.

The 2006-2010 plan identified primary revenue-generating programmes (those that demonstrate appropriate use of RBCMA resources and underpinning annual operational budgets), conservation programmes (i.e. those addressing threats to conservation targets) and cross-cutting programmes (those targeting training, public awareness and deepening and disseminating information).

REVENUE-GENERATING PROGRAMMES			
Programme	**ECO-TOURISM DEVELOPMENT**		
Sub-programme/action	***Score***	***Notes***	***Action***
• Marketing drive, based on the TDU (Belize City Office) Present status: La Milpa – occupancy level maintained at 40% Desired Status: Hill Bank - occupancy from 7% to 35% by yr 5	B+	Occupancy level maintained at La Milpa. Occupancy level at Hill Bank not attained but improved. (Score of A for La Milpa and B for Hill Bank)	Maintain marketing drive with greater focus on Hill Bank

• Annual reinvestment in tourism-related infrastructure and capital items to maintain quality of offerings Present status: Current reinvestment low and irregular Desired status: Reliable annual budget for maintenance and replacement of capital items	A	Major reinvestment at la Milpa. Little reinvestment at Hill Bank. (Score of A+ for La Milpa and B for Hill Bank)	Improve reinvestment for Hill Bank
Diversification/specialization in offerings (ornithology, water-based activities, etc.) with appropriate staffing and equipment Present status: Basic offerings (including ornithology) well established Desired status: Additional speciality at Hill Bank --- water-based	C	No change. Basic offerings maintained but not improved	
Hill Bank infrastructure – cabanas and catering arrangements Present status: La Milpa – dorm, cabanas, catering, Hill Bank – dorm, 1 cabana, inadequate catering Desired status: La Milpa – unaltered; Hill Bank – 2 extra cabanas, catering upgrade	A	Infrastructure and catering arrangements maintained at La Milpa. Some upgrade at Hill Bank. (Score of A+ for La Milpa and B for Hill Bank)	Carryout upgrades at Hill Bank
	HARDWOOD TIMBER MANAGEMENT		
• Expand annual area coverage to optimal level Present status: 450 ha covered p.a. --- surveyed < 12 months prior to operations Desired status: 800 ha covered p.a. --- surveyed > 12 months prior to operations	B	About 4 months ahead with stock surveys right now, but desire to be 2 or 3 years ahead	Have survey team in place. Solve financial implications

• Extend reconnaissance inventory to entire forest management zone Present status: Inventory covers 15,500 ha [Punta Gorda, West Botes, East Botes, West Marimba, East Marimba Desired status: Inventory covers 40,000 ha [entire zone] by year 3	C+	This kind of inventory not conducted before	Ideal y, have entire forest inventoried
• Re-measurement of permanent sample plots (PSPs) and early compartments Present status: Plots established, one re-measurement for PSPs, none for early compartments Desired status: All PSPs measured, 3 100 ha areas resurveyed after 10 years – undertaken by year 2	B	50% (2 out of 4) of PSPs done. One new one established	
• Introduction of silvicultural techniques (with participation of local communities) Present status: Silvicultural techniques experimental Desired status: Silvicultural techniques in routine operations	A	In the beginning were not subcontracting for cutting of lines and lianas (liberation). Extraction of branches and small parts of the trees being done with neighboring communities (Indian Creek)	Work crews to implement these techniques during stock surveys
CONSERVATION PROGRAMMES			
Programme	**SAVANNAH MANAGEMENT**		
Sub-programme/action	***Score***	***Notes***	***Action***
Sub-programme 1: Control and suppression of wildfire - Objective: capacity to detect and control wildfire throughout the RBCMA			
• Maintain training programme Present status: Regular training programmes undertaken at Hill Bank	B	Being done but at 3-year intervals. Comprehensive constables and green laws training	Need to do more, specifically for savannah related activities

Desired status: One training programme for PfB and other forest management personnel at 2-year intervals			
• Organisation and equipping for fire management/control Present status: Fire control plan produced (1998) and applied. Fires successfully controlled since that date. Equipment purchased but now requiring overhaul /replacement. Some essential needs not met Desired status: Reviewed / revised fire control organisational and recording plan. Necessary equipment supplied	A	Recently overhauled water bowser; bought water pump a couple years ago. Heavy use of equipment necessitates replacement	Institute replacement plan for equipment
Sub-programme 2: Development of savannah management plans for two demonstration areas – Rancho and San Felipe savannahs			
• Stratification of total savannah area under management-related system Present status: Vegetation mapped. Videographic survey undertaken Desired status: Year 2: All savannah area mapped at 1:25000 scale according to vegetation type (classified according to management need) and fire risk/fuel characteristics	C	Have adopted the national vegetation map but have not stratified RBCMA savannah to sub-units to indicate those needing intervention. Total savannah area not done for carbon biomass. Fire occurrence too frequent in the San Felipe savannah – some areas may need active re-planting	Establish a prescribed burn plan to help reduce fire risk and fire load. Conduct active re-planting in burned-out areas

• 5% forest inventory of the Rancho and San Felipe demonstration areas Present status: No inventory Desired status: Standing pine stock of pine assessed for the two demonstration areas by year 3	C	This was not done. Because of low pine prices, doesn't make sense to invest here	
• Savannah management plans covering the two demonstration areas Present status: No comprehensive plans Desired status: Areas sub-divided into management units with individual management prescriptions (Year 3, after inventory). Prescriptions implemented (from start of year 4)	C	This is related to the previous action	
Sub-programme 3: Biodiversity and other management issues			
• Experimental nest-boxing for Y-H Parrot Present status: Untested Desired status: Experimental nest-box array	C	This has not been done and cannot be done as an isolated activity. Needs active management presence and education/awareness program	
• Cogon (Imperata) grass control Present status: No control in place	C	No control was instituted. Advised to best leave untouched or it may spread faster and get out of control unless herbicides applied. Totally	

Desired status: Patches located and under regular treatment		uprooting everything manually is ideal but very expensive	
• Pine Bark Beetle monitoring and control Present status: No regular scheme in place Desired status: Regular monitoring, control as needed	A	No outbreak or dying trees reported (except due to fires). Rangers have not reported any such event. No control needed	
	PROTECTION		
• Maintain clean boundary lines and signage Present status: Not cleaned for c. 10 years Desired status: Boundaries cleaned with signs at all access points, including foot-trails	B	Some signs made and installed but more needed. Maintenance of signs also needed. Not enough manpower and resources to put in lines and do patrols	Install more signs and adequately maintain them
• Regular patrols and overflights Present status: 2 overflights p.a., 1 patrol p.m. Desired status: Maintained overflights, 1 patrol p.m. wet season, 2 patrols p.m. dry season (1 in savannah) Standardised reporting /monitoring system	B	Over-flights were maintained (at least 2 or 3 per annum). More than 1 patrol per month conducted but it's recognized that this is not enough. Recent deterioration of protection requires that more rangers be hired. Damaged vehicle to be replaced. Monthly reporting ongoing but not standardized	Give rangers more resources needed to improve RBCMA protection. Hire 2 more rangers. Institute standardized reporting system
	FRESHWATER		
Maintain monitoring programme including parameters indicating human impacts	C	Only have one university (Defiance College) doing water quality testing in the lagoon. High level of nitrogen found in the lagoon, and e-coli	

Present status: Monitoring programme for main physico-chemical parameters Desired status: Monitoring programme capable of detecting levels of human impact on system		bacteria found in wells in the San Carlos area. Water quality testing is not a PfB-led activity	
CROSS-CUTTING PROGRAMMES			
Programme	**OUTREACH**		
Sub-programme/action	***Score***	***Notes***	***Action***
Promotion as venue for training and working seminars for national /regional conservation managers Present status: Occasional use – most regularly for fire management Desired status: Routine use of area for three training/workshop sessions per year including one aimed at community-managed areas	C	No change	Promote La Milpa as a training and retreat center
Facilitation of awareness/ involvement of local community groups in RBCMA management Present status: Occasional organisation of community visits, no specific programme Desired status: Routine organisation of community visits with target of three 'open days' per year – Hill Bank, La Milpa, participation in forestry silvicultural work	C	No change. This is a higher level action than communication – this is facilitation of communities. Funding constraints exist	
	RESEARCH		
Selective promotion of research projects and programmes	A	Researchers given a discounted rate. Research included: bats, jaguar, ocellated turkey, micro-climate,	

		logging transects, mist-netting, swallows, and pine savannah	
Initiation of regular monitoring programmes by PfB staff	B	This have been improving – forestry programme post-harvest assessment and adding additional monitoring layers. Some other programmes need monitoring	

APPENDIX 11: STAKEHOLDER ANALYSIS

RIO BRAVO CONSERVATION MANAGEMENT AREA

The Rio Bravo Conservation and Management Area (RBCMA) was established in 1989 as a private reserve to conserve forested land in north-western Belize threatened with fragmentation and clearance following the break-up of the Belize Estate and Produce (BEC) holdings in the area. The RBCMA (or Rio Bravo) covers 247,000 acres (100,400 ha) in the Orange Walk District of north-western Belize. It is one of the largest protected areas in the country. The RBCMA lies in the international frontier, linking directly onto the Rio Azul National Park (a part of the Maya Biosphere Reserve) to the east in Guatemala as well as Aguas Turbias National Park (which adjoins the international frontier with Quintana Roo, Mexico). To the north is the Blue Creek Mennonite Community, and to the northeast the village of San Felipe and the Mennonite communities of New Hope and Indian Creek. The RBCMA shares property boundaries with Gallon Jug and Yalbac in the south and with the Spanish Creek Wildlife Sanctuary to the southeast. To the west and southwest are the nearby Belize River Valley communities of Lemonal and Rancho Dolores respectively.

The RBCMA is owned and managed by Programme for Belize (PfB), a local NGO, under the terms of a formal Memorandum of Understanding with the Government of Belize. PfB was established in 1988 by the Massachusetts Audubon Society as a Belizean non-profit organization to promote the conservation of the natural heritage of Belize and to promote wise use of its natural resources.

STAKEHOLDER TYPOLOGICAL MAPPING

The identification and typological mapping of stakeholders within the protected area management framework was done primarily in relation to the target protected area. Essentially, the stakeholder identification and mapping exercise was done for the management purposes of the protected area and is not necessarily an identification of all stakeholders in the mission of PfB as the management entity.

For the purpose of this analysis, a stakeholder is defined as a person or entity that has something to gain or lose through the outcomes of the planning and management process or project. It is understood that in all development processes including in natural resource management interventions, there is a need to understand the reality and the complexity of interests and relations, and evaluate and assess potential impacts on local communities. This stakeholder analysis firstly identifies the stakeholders by assessing their interests in the target protected area. In order to ensure that there is broad consideration for all potential stakeholders, it was necessary to initially establish the ecological functionality of the protected area, including its socio-economic uses, and then have this matched with the corresponding stakeholders. This is especially critical given that the basis of the protected area is directly connected to standing forests and the ecological goods and services it provides in its entirety.

A typology proposed by de Groot et al[1] was adapted to construct a framework to represent the ecosystem goods and services provided by the RBCMA. The four primary functions of forest ecosystems based on this framework are: *1.) Regulation Function; 2.) Habitat Function; 3.) Production Function; and 4.) Recreational/Cultural Function*

According to this typology, the *Regulation Function* relates to the capacity of natural and semi-natural ecosystems to regulate essential ecological processes and life support systems through bio-geochemical cycles and other biospheric processes. In addition to maintaining the ecosystem (and biosphere health), these regulatory functions provide many services that have direct and indirect benefits to humans (i.e., clean air, water and soil, and biological control services). *Habitat Function* is where natural ecosystems provide refuge and a reproduction habitat to wild plants and animals and thereby contribute to the (*in situ*) conservation of biological and genetic diversity and the evolutionary process. *Production Function* is related to ecosystem goods for human consumption, ranging from food and raw materials to energy resources and genetic material. Lastly, the *Recreational/Cultural Function* has to do with its contribution to the maintenance of human health by providing opportunities for reflection, spiritual enrichment, cognitive development, recreation and aesthetic experience.

To create the linkage between these functions and local stakeholders, the following guiding questions were used to facilitate the identification process:

1. *Who uses the resource(s)?*
2. *Who benefits from the use of the resource(s)? Who wishes to benefit but is unable to do so?*
3. *Who impacts on the resource(s), whether positively or negatively?*
4. *Who has rights and responsibilities over the use of the resource(s)?*
5. *Who would be affected by a change in the status, regime or outputs of management?*
6. *Who makes decisions that affect the use and status of the resource(s), and who does not?*

It is assumed here that the concept of ecosystem goods and services is inherently anthropocentric and this it is asserted, needs to be the premise given that the RBCMA was established "for the benefit of the Government and People of Belize." Considering the fact that RBCMA covers a major portion of the northwestern part of the country, the stakeholders are representative of a wide cross-section of parties from government, private sector, civil society including local communities. Some stakeholders may appear more than once given their interests in multiple functions of the area. Table 11 below outlines the main stakeholders of the RBCMA based on this approach.

[1] de Groot et al (2002). A Typology for the Classification, Description and Valuation of Ecosystem Functions, Goods and Services. Ecological Economics 41 (pg. 393 – 408)

Table 1: RBCMA Stakeholder Mapping

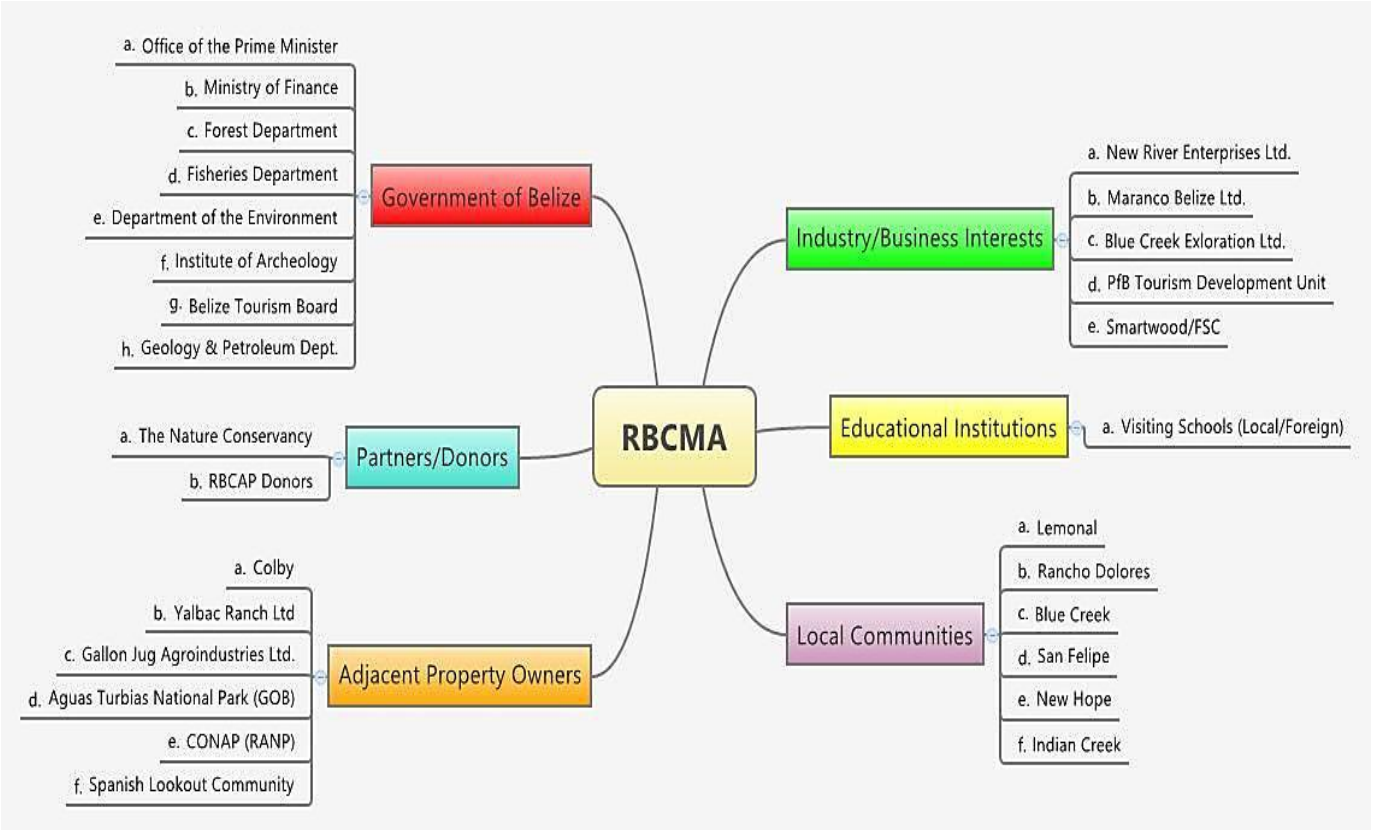
NATURAL RESOURCE	FUNCTION	SUB-FUNCTION CATEGORIES OF GOODS AND SERVICES	STAKEHOLDERS
RBCMA (Forests)	1. Regulation Function	▪ Gas regulation ▪ Climate regulation ▪ Disturbance prevention ▪ Water regulation ▪ Water supply ▪ Soil retention ▪ Soil formation ▪ Nutrient cycling ▪ Waste treatment ▪ Pollination ▪ Biological control	1. Office of the Prime Minister 2. Ministry of Finance 3. Forest Department 4. Department of the Environment 5. Ministry of Finance 6. CONAP (Maya Biosphere Reserve) 7. The Nature Conservancy 8. RBCAP Donors
	2. Habitat Function	▪ Refugium function ▪ Nursery function	1. Forest Department 2. Fisheries Department 3. The Nature Conservancy 4. RBCAP Donors 5. Office of the Prime Minister 6. CONAP
	3. Production Function	▪ Food ▪ Raw materials ▪ Mineral resources ▪ Genetic resources ▪ Medicinal resources ▪ Ornamental resources	1. Lemonal 2. Rancho Dolores 3. Blue Creek 4. San Felipe 5. New Hope 6. Spanish Lookout 7. New River Enterprises 8. Forest Department 9. Maranco Belize Ltd. 10. Blue Creek Exploration Ltd. 11. Smartwood/FSC 12. Geology and Petroleum Department 13. Fisheries Department 14. Colby 15. Yalbac Ranch Ltd. 16. Gallon Jug Agroindustries Ltd. 17. Office of the Prime Minister
	4. Recreational /Cultural Function	▪ Aesthetic information ▪ Recreation and (Eco)tourism ▪ Cultural and artistic information ▪ Spiritual and historic information ▪ Scientific and educational information	1. Visiting schools 2. Institute of Archaeology 3. Belize Tourism Board 4. PfB Tourism Development Unit

CLASSIFICATION OF RBCMA STAKEHOLDERS

In assessing the ecological services and benefits of and the socio-economic relationships with the RBCMA the following key stakeholders were identified and classified according to organizational interests and characteristics. This is shown in the Figure 3 below and described thereafter.

Figure 1: Classification of RBCMA Stakeholders

GOVERNMENT OF BELIZE



The sheer number of government ministries and agencies that have an interest in the RBCMA makes the Government of Belize a significant stakeholder of the protected area. This is primarily due to the unique relationship that Programme for Belize has with the government in terms of the ownership and management of the RBCMA and characteristic of the RBMCA itself as a protected area. The RBMCA is entrusted to PfB for management with certain rights and privileges in the interest of ecological conservation and the society. There are several important Ministries that sit directly on the Board of the PfB in addition to other key departments such as the Forest Department having a direct regulatory and oversight role in relation to the protected area and forest management.

Beyond the conservation consideration, the RBCMA has been assigned as an oil prospecting block to petroleum companies. This is an extremely important consideration for the management of the RBCMA given that all terrestrial protected areas are being licensed for oil exploration. The Government of Belize has had a history of support to the RBCMA however its current oil exploration policy in protected areas

may be incongruent with the vision of the RBCMA. This is a key issue that will need serious attention and dialogue.

PARTNERS AND DONORS

While funders in general are important to the continued management of the RBCMA, the partners are donors being reflected here are longstanding partners who have invested heavily in establishing the RBCMA including the purchasing of land. The Rio Bravo Climate Action Project (RBCAP) has continuous support from The Nature Conservancy and donors who now have vested interests in the carbon sequestration project and its related rights and privileges. The land on which the RBCAP is being implemented is part and parcel of the RBCMA and as such these stakeholders have an interest in the overall management of the RBCMA.

ADJACENT PROPERTY OWNERS

There are several large private land-holdings adjacent to the RBCMA that effectively act as buffers and allow for there to be a large contiguous area that has no significant permanent human settlements. There are some areas of the private landholdings that are under use and cultivation. In general these properties have or potentially have significant level of influence over the RBCMA mainly through on-going protection and control of access to the area. These are positive for the most part as they help to safeguard ecosystems across the region. While the land owners do not have significant interests in the RBCMA itself future land use regimes instituted on these adjacent properties can have negative repercussions on the RBCMA. A new comer to the area is the Spanish Lookout Mennonite community that has purchased 18,000 acres of land from Yalbac. While the said property is not abutting the RBCMA, the Mennonites' use of the land acquired from Yalbac could have long term effects on the RBCMA.

Even though it is across an international border, the Rio Azul National Park in Guatemala managed by CONAP is an important connection to the RBCMA as it is held as a conservation area with World Heritage and Biosphere Reserve core zone status. This park is the main point of connectivity between RBCMA and the greater Peten Department of Guatemala both of which are complementary to each other in terms of biodiversity conservation.

INDUSTRY/BUSINESS INTERESTS

The two main categories of private sector enterprises that have a direct interest in the RBMCA are the timber-related enterprises and petroleum companies. PfB operates a sustainable forestry program from which timber is harvested and sold. Local timber product manufacturers benefit directly from raw timber extracted from the RBCMA which are then processed into furniture. Most of these local enterprises are from the Orange Walk Districts, the main one being New River Enterprises Ltd. The sustainable forestry program is certified by Smartwood under the Forestry Stewardship Council (FSC) and as such they are important stakeholders as it relates to timber extraction for business purposes.

The interests of two petroleum companies with exploration licenses covering significant portions of the RBMCA are obviously in subsurface minerals. While the licensees are currently active in the area, there is yet to be a commercially viable find. This threat to the integrity of the RBCMA as a conservation area is an ongoing and persistent one. A commercial oil find would transform the use and management of the RBCMA.

PfB independently operates an eco-tourism enterprise at La Milpa within the RBCMA and it is run as an income generating arm by providing tourism services. This operation generates significant financial resources that it warrants classification under the business interest category.

LOCAL COMMUNITIES

Given that the RBCMA has historically been privately held, it has never really been used and occupied by local communities as compared to other protected areas in Belize. Local communities that are adjacent to the area such as Lemonal, Rancho Dolores and San Felipe have always been aware of this and as such there is limited interaction between them and the RBCMA. Nonetheless, being adjacent to the area still means that there is some degree of engagement and this occurs mostly through limited employment and illicit extraction activities within the protected area such as the sourcing of timber, non-timber materials and game hunting for commercial and subsistence purposes.

Local communities in the area are generally economically depressed with high dependence on subsistence agriculture and limited employment opportunities. Other communities in the area include Mennonite communities who are generally commercial farmers. While they do not necessarily encroach on the RBCMA there is much concern for agricultural run-offs from their activities that may negatively affect the protected area.

The communities in the area also benefit indirectly from the ecosystem services such as clean air and freshwater provided by the RBCMA but this generally goes unrecognized. Being a historically private protected area, the stake or interests of local communities in its management is currently very limited.

EDUCATIONAL INSTITUTIONS

There are several local schools and international universities who organize trips to the RBMCA and generally benefit from its information function. These educational institutions use the area mainly for its educational, scientific and research benefit. US based universities especially come to the RBCMA, especially at La Milpa, to conduct biodiversity and archeological research. Some of these relationships are longstanding and need to be considered in overall management of the protected area.

STAKEHOLDER POSITION AND RELATIONSHIP

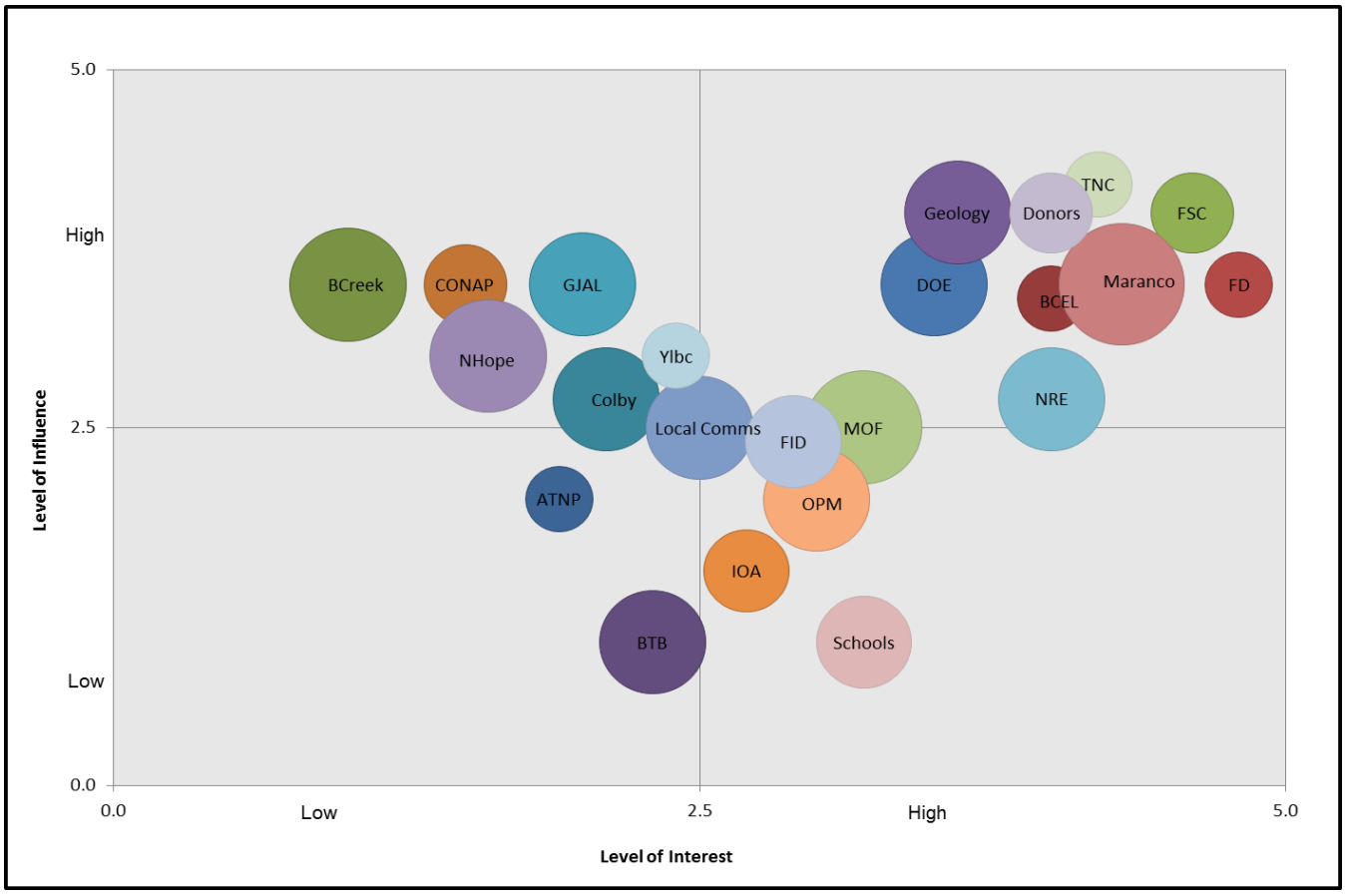
A stakeholder analysis generally assists in identifying stakeholders and their interests, clarifying stakeholders' views about conservation management, in this case the RBCMA, identifying some key strategic issues and beginning the process of establishing a system of stakeholder engagement.

To analyze the roles, relationships and attitudinal perspectives of the various stakeholder groups with regard to the RBCMA, the influence and interest grid tool was used to strategically assess the position of each stakeholder. This entailed ranking stakeholder groups within the four quadrants of the grid based on where they were ascertained to fall in terms of their combined interest and influence ranking in this particular analytical context.

The actual analysis of stakeholders was done in MS Excel using a ranking method. Specifically, each stakeholder was rated on a scale of 1 to 5 for both their level of influence on the RBCMA (negative or positive) and their level of interest (their stake) along two axes (X,Y) and then ranked as a singular point at the confluence of the two scores within the relevant quadrant. For this exercise a value of 1 meant low and 5 meant high for both level of interest and influence. A third dimension (Z) was also been included to represent the degree of support or opposition to the RBCMA along a similar scale of 1 to 5, with 1 being the highest support and 5, highest opposition. The third dimension is visually presented as the size of the bubble for each point on the matrix shown in Figure 2 below.

While all efforts were made to assess the stakeholders position currently using current information, some information from a previous analysis done for the last management plan was utilized where appropriate to determine a final rating. It should be noted while the positions are quantitatively represented, determining stakeholder positions is an informed but subjective process.

Figure 2: Influence/Interest Stakeholder Matrix



HIGH INFLUENCE/HIGH INTEREST STAKEHOLDERS – MANAGE CLOSELY

Based on results of the assessment of key stakeholders it can be inferred that majority of the stakeholders of the RBCMA fall in the medium to high interest/influence category. This is especially true for stakeholders with extractive and economic interests in the RBCMA. Incidentally, the petroleum interests and the responsible government agency, namely the Geology and Petroleum Department are high in this category. In line with the economic characteristics of this group, the timber extraction and tourism activities of the PfB itself fall in this category as well. This is complemented by those private sector and civil society organizations that participate directly in the extraction and processing of sustainable timber and carbon sequestration represented mainly by The Nature Conservancy and the RBCAP donors. As expected, the Government of Belize is an important stakeholder and is represented by a subset of government of regulatory agencies including the Department of the Environment and the Forest Department who have a direct interest in the management of the RBCMA. As is the case with high interest/high influence stakeholders, it is important for the organization to monitor and manage these stakeholders very closely.

HIGH INFLUENCE/LOW INTEREST STAKEHOLDERS – KEEP SATISFIED

Stakeholders with high influence but low interest are mainly nearby Mennonite communities of Blue Creek and New Hope, CONAP (Rio Azul National Park) and private adjacent properties. This mainly has to do with the potential impact they present to the ecological integrity of the RBMCA. The Rio Azul National Park acts as a buffer while the Mennonite communities though maintaining their farming activities on their private lands poses risks to the RBCMA through agricultural run-offs and the pushing of the agriculture frontier towards it. It is important for PfB to maintain good relationships with these stakeholders in order to enhance the positive benefits of their presence and minimize potential negative impacts wherever they appear. PfB should also monitor the activities on the adjacent lands in terms of the management regimes that are being pursued and implemented there.

HIGH INTEREST/LOW INFLUENCE STAKEHOLDERS – KEEP INFORMED

Local communities adjacent to the RBCMA can be considered to be a part of this group of stakeholders even though they can at times presents a moderate degree of influence and interest on the RBCMA especially through illicit activities. Local communities see the natural resources abundant in the RBCMA as a source of livelihoods. The management measures in place currently limit their ability to access and utilize those resources. Their capacity to challenge and influence the management measures are limited as well and as such they are likely to continue to resort to illicit means to access the resources. Given this dynamic it should be expected that they will continue to put pressure on the resources within the protected area.

Considering the size and location of the RBCMA, it is unsurprising that sixty archeological sites from the Mayan civilization have been documented within the area. The Institute of Archeology is primarily responsible for the excavation and management of these sites. The current activities of the IOA have been limited. Although the IOA are officially the custodians of these important national patrimony PfB monitors these sites regularly and informs the IOA of any signs of illegal activities or unauthorized disturbances. Consequently, IOA does not exert much influence over the overall management of the RBCMA. The Office of the Prime Minister and the Ministry of Finance falls within this category given the government's continuous support for the RBCMA. The Office of the Prime Minister (OPM) is the main signatory to the custodial agreement with PfB, and officially supported the carbon sequestration project, how it maintains a hands-off approach leaving the management of the protected area up to PfB. This low level of influence however could change very quickly given the level of power the State wields through its various agencies that engaged directly with the PfB. Other stakeholders that fall in this category include educational institutions that utilize the area for their interest but do not have significant influence.

It is important for PfB to continuously communicate with local communities to make them aware of the management measures in place. It should also engage other stakeholders in this group by regularly updating on activities in the RBCMA related to their interests especially its government partners.

LOW INTEREST/LOW INFLUENCE STAKEHOLDERS – MONITOR CASUALLY

The Aguas Turbias National Park (owned by GOB) fall within this category. While an officially declared protected area, the Aguas Turbias National Park (ATNP) has no effective management. It does provide some level of connectivity between the RBCMA and the Calakmul buffer zone towards Mexico. Enhancing the management of the ATNP or its de-reservation would have significant effect on the RBCMA given its proximity. This however is not the case at this time. Nonetheless, it is important for PfB to monitor the activities in these areas but this exercise should not require any significant expenditure of resources and efforts.

The Belize Tourism Board has an interest in the ecotourism activities at La Milpa given its oversight role in the industry. This however does not necessarily translate into significant influence or interest in the overall management of the RBCMA given its own sectoral mandate.

CONCLUSION

Several analytical conclusions can be drawn from the stakeholders analysis exercise conducted. Firstly, the relationship between PfB and the Government of Belize is very important and this relationship continues to be maintained especially with government agencies that play an important role in the management of the RBCMA even though it is technically considered a private protected area. Secondly, since the advent of oil production in Belize, there are now more oil companies prospecting for oil deposits throughout the country and the RBCMA has not escaped this reinvigoration of oil exploration in Belize. Just one oil company alone has a license to explore for oil in essentially the entire RBCMA block. Oil companies and the Geology and Petroleum Department are now important stakeholders in the RBCMA. Thirdly, the historical evolution of the RBCMA continues to inform the dynamic of the relationship between the RBCMA and the local adjacent communities. It appears that the communities, aside from the intangible ecosystem services, have a very limited stake in the management of the RBCMA. Maintaining this de-facto arms-length approach could have negative repercussions for the RBCMA in the future considering increasing population growth and the concomitant increased demands for raw materials and resources for livelihoods. Fourthly, there is considerable economic benefit gained from the extraction and use of the natural resources within the RBCMA and these revenues contribute to sustaining the operational and management activities on the ground. These sustainable production activities can be enhanced to further contribute to the management of the RBCMA and expand socio-economic benefits to local communities.

The insights gained from this stakeholder analysis can be used to inform the development of the next RBCMA management plan to ensure that it effectively engages with its stakeholders to advance its conservation objectives. In doing so, however, there should be greater emphasis on deeper community inclusion in both the management and distribution of benefits gained from the protected area.

ANNEX 1 – RANKING VALUES BY STAKEHOLDER

Key:

- **Level of Influence or Interest – 1 (Low) - 5 (High)**
- **Support/Resistance – 1 (High Support) - 5 (High Opposition)**

	Level of Influence	Level of Interest	Support / Resistance
Stakeholder	**Y Axis Score**	**X Axis Score**	**Z Axis**
ATNP	2.0	1.9	2.0
BCEL	3.4	4.0	3.0
BCreek	3.5	1.0	3.0
BTB	1.0	2.3	2.5
Colby	2.7	2.1	2.5
CONAP	3.5	1.5	1.5
DOE	3.5	3.5	2.5
FD	3.5	4.8	1.0
FSC	4.0	4.6	1.5
Geology	4.0	3.6	2.5
GJAL	3.5	2.0	2.5
IOA	1.5	2.7	1.6
Local Comms	2.5	2.5	2.5
Maranco	3.5	4.3	3.5
MOF	2.5	3.2	3.0
NHope	3.0	1.6	3.0
NRE	2.7	4.0	2.5
OPM	2.0	3.0	2.5
FID	2.4	2.9	2.0
Schools	1.0	3.2	2.0
TNC	4.2	4.2	1.0
SLookout	2.5	2.0	2.0
Donors	4.0	4.0	1.5
Ylbc	3.0	2.4	2.5

APPENDIX 12: COMMUNITY CONSULTATIONS REPORT

INTRODUCTION

APPROACH TO COMMUNITY CONSULTATION

Although the RBCMA is technically and historically private lands now managed as a protected area with no history of occupation by local communities, there is certain degree of relationship between the communities and the RBCMA whether based on their extraction, albeit unauthorized, of the RBCMA resources or the continuity their lands provide to the protected area. Their use of their own lands, mostly for agricultural purposes, affect or has the potential to affect the integrity of the forest and biodiversity of the RBCMA.

This report summarizes the approach, activities and conclusions of the engagement of stakeholder communities of the Rio Bravo Management Area (RBCMA). There are several Belize Creole, Mestizo and Mennonite communities that are adjacent and buffer the protected area in the northern and southern portions.

These communities were approached from three different groupings namely, a) northern Mennonite communities, b) northern Mestizo communities, and c) southern Creole communities. It was decided to group and approach the communities in this fashion based on their cultural and geographic backgrounds and on the nature of their relationship with the RBCMA and also their activities on their own adjacent lands.

The formal and official leadership of the various communities were invited to attend. At least 2 persons from the village council of each community were invited. Though there were some communities that were not represented, most of those invited did attend and participate.

CONSULTATION ACTIVITIES

The overall objective of the community consultations was: to get the views and concerns of the communities, advice and input on the development and implementation of the management plan, and to understand the socio-economic context. Each of the sessions were guided by three broad topics that sought to establish the relationship of the respective communities with the RBCMA. The broad topics are:

- **Familiarity & Relationship with RBCMA** (Awareness, Benefits and Concerns)
- **Socio-Economic Context of Local Communities** (Importance of the Forests and Conservation)
- **Opportunities for Future Collaboration** (Community Understanding and Awareness of RBCMA)

Consultation activities were carried out through a workshop with southern Creole communities and focus group meetings with northern Mestizo and northern Mennonite communities. It should be noted that Spanish Lookout Mennonites were invited to the northern meeting as they now own land that abuts the RBCMA in the southern region. The sessions were carried out as follows:

Area	Venue	Date	Attendance[2]
Southern Creole Villages (Rancho Dolores, Lemonal, St. Paul's Bank, Bermudian Landing)	CBS Conference Room, Bermudian Landing Village	October 31st, 2014	**10**
Northern Mestizo Villages (Trinidad, San Carlos, San Lazaro, August Pine Ridge)	August Pine Ridge Primary School	November 1st, 2014	6
Northern Mennonite Villages (Indian Creek, Blue Creek, Shipyard, Spanish Lookout)	August Pine Ridge Primary School	November 1st, 2014	14

RESULTS OF CONSULTATIONS

FAMILIARITY & RELATIONSHIP WITH RBCMA (AWARENESS, BENEFITS AND CONCERNS)

IMPACTS OF COMMUNITIES ON THE RBCMA

Participants were asked to identify in what ways the communities are impacting on the RBCMA. The results from both southern creole communities and northern communities were rather similar. The following is a summary of the ongoing activities they felt that community members were engaged in:

a) Illegal logging
b) Extraction of forest materials
c) Hunting and fishing
d) Poaching of iguanas, hicatee and other birds
e) Forest fire – sometimes set by villagers
f) Poaching of Yellow-Headed Parrot for sale
g) Natural disasters (hurricanes)
h) Some destruction of PfB camera equipment

Participants in the consultation from all communities all pointed to illegal logging activities within the RBCMA claiming that is was significantly at a high rate. According to the participants there are plenty of logs coming from RBCMA through San Carlos Village. They felt that the underlying cause of this may be linked to political corruption and insufficient fines by the regulating authorities. Most of the time the movement of logs by illegal loggers takes place under the cover of darkness. The southern communities corroborated this experience from their side. They recommended that PfB continue to work closely with the Forest Department to address this issue. Other forms of extraction were also highlighted. According to participants from northern communities, hunters do not have forests within their communities to hunt

[2] See detailed list of participants in annex.

in so now they want to go inside RBCMA to hunt game meat. They felt that the level of impact of this particular activity on the RBCMA is high. Similarly the extraction of forest materials such as thatch (bay leaf), bush sticks, and fence posts among others is also high with people from outside the buffer communities coming to extract from the RBCMA. This is also very similar to those experiences shared by southern communities.

Participants noted that the poaching of the Yellow-headed Parrot continues though it seems to be slowing down. They felt nonetheless that this parrot population continues to decline. Aside from the poaching, northern communities felt that the ongoing deforestation in the area destroys habitat for animals including birds –they said that Mealy Parrots and Tinamous, for example, are not being seen in the local area like before.

Northern communities pointed to the high rate of deforestation in northern Belize. They felt that Mennonite farmers were the primary the cause of this especially through their practice of clearing riparian forests right up to the creeks and river. They encouraged PfB to work out a plan with the Government of Belize to abate this problem. There should be a law, they said, that compels anyone who cuts a tree to re-plant one. It was pointed out to them that the current Forest Policy under development has a reforestation component that may begin to address some of these issues.

IMPACT OF RBCMA ON COMMUNITIES:

The socio-economic impact of the RBCMA according to the communities is sparse. Conservation activities provides limited job opportunities. They felt that they experience greater loss of income generating opportunities from being prohibited from using the RBMCA for extraction. They pointed out that the RBCMA brings in some tourism and some environmental education and outreach. PfB according to the communities provides some scholarships to support student education from some of the communities. They encouraged PfB to consider diversity when hiring personnel to work at the RBCMA. Southern communities felt strongly about this and do not feel well represented on the staff of PfB.

For northern communities the RBCMA is helping to protect what has been destroyed on the outside. Spill overs of wildlife from the RBCMA they say, benefit the communities. On the other hand, the RBCMA being off-limits for hunting creates a negative impact on the livelihoods of communities. Nonetheless, the RBCMA is recognized as a source of seeds, medicinal plants, and other NTFPs for communities. Though low, tourism allows local communities to sell crafts, souvenirs, and food to tourists. They suggested that communities need to make products that are unique to the area and are inexpensive. They noted that PfB in the past funded an arts and craft building for August Pine Ridge but the volume of tourists is low and lasted only for a short time. A suggestion was that bird-watching activities could be promoted as a product in the area. The improved roads and accessibility should increase tourism in the area.

Other ways the communities have benefitted from PfB includes scholarships for students, solar electrification in one of the communities, and by the students who visit the RBCMA.

Mennonite communities on the other hand mentioned that jaguars and coyotes are showing up in their communities and killing their cattle. In general, they felt that farming is necessary in order for them and Belizeans to survive and that all farmlands should be made available for farming. Some did point out that Mennonite communities believe in the importance of forests more now than did before. They pointed out that not enough timber is being produced in Belize and that enforcement in Belize to replant trees is very weak. One of the Mennonite farmers from Indian Creek acknowledged that areas such as the RBCMA

attracts tourist to the country and this allows Mennonite communities to sell more meat and other farm products.

Like the other communities, they pointed out strongly that there stealing of timber from the RBCMA is taking place and passing through Indian Creek, San Lazaro, etc. Some of the farmers held the view that PfB has too much land to deal with and so is unable to manage it properly and reiterated that a lot of timber is being stolen right under the nose of PfB and crossing private properties in Blue Creek. These property owners do not file formal complaints for fear of retaliation from illegal loggers. Some of the farmers are working on installing fencing and gates to keep out intrusions which in turn benefits the RBCMA by reducing access to the area.

As pointed out by other communities they felt that fines for forestry regulation infractions are too low, and the Forest Department's presence is desperately needed in the area. A participant even suggested that perhaps PfB be fined for the stealing taking place with the argument being that if PfB was so fined, it would ensure more enforcement of the area.

SOCIO-ECONOMIC CONTEXT OF LOCAL COMMUNITIES (IMPORTANCE OF THE FORESTS AND CONSERVATION)

ECONOMIC ACTIVITIES AND FOREST DEPENDENCY

Based on the community consultations, the economy of the region that provides the geographic context of the RBCMA is based on agriculture. Agriculture can be placed in two categories namely, subsistence (small scale) agriculture (green corn, pumpkin seeds) and commercial (industrial scale) agriculture, even though some of the same products may be produced. Some of the products coming out of both northern and southern communities include sugarcane, cattle, grains, vegetables and other cash crops. Mennonite farmers produce significant amounts of cattle and grain including corn, soy beans, kidney beans, sorghum. They also do most of the furniture manufacturing in the area.

Aside from land cultivation for cultivation, communities are forest dependent to varying degrees with communities in the southern region exhibiting greater and direct use of forest resources both inside and outside of the RBCMA. Timber and forest materials are extracted from the area. Items such as lumber, bay leaf, firewood, cohune nuts, and sticks for fence posts are regularly harvested from the area. Non-timber dependence includes hunting for game meat and fishing in the area. In some instances, medicinal plants are extracted as well. Small pole timber regularly harvested from RBCMA (and even from other community members' property) are used for fencing for cattle. The mahogany illegally harvested, some community members claim, are sold to the Mennonites in Shipyard at low prices. Thatch (bay leaf) and pimento sticks are sold to buyers in San Pedro to be used in building tourism facilities. The demand is so high that some villagers are considering growing Sabal Palm for thatch. In the past, the savannah grass was harvested and sold to buyers in Mexico for grass thatch. All materials extracted from community lands or the RBCMA are either sold for income purposes or used by the community members themselves.

It is important to note that participants at the sessions also noted that there is some level of off-farm work as residents often find work outside of communities in manufacturing or in nearby urban areas.

COMMUNITY ENVIRONMENTAL VALUES

Aside from the material aspects of use of the RBCMA and general area, communities in the south mainly find that the forest forms a fundamental aspect of their culture having lived in the area for a very long time. Clean air and water were also cited as benefits from the RBCMA. When asked what a total loss of forest would mean to them, they said it would mean a loss of their culture and history. It was underscored very strongly that their way of life would be significantly impacted.

Northern Mestizo communities similarly expressed dismay at the significant loss of forest and biodiversity in the Orange Walk district over the last 30 years. They said it was no longer possible to have community green areas as all the lands have been parcelled and privatized to community members. Most of the land has either been deforested for sugar cane production or cattle.

Mennonite community representatives said that they have to defend themselves from the impact of the RBCMA especially with jaguars killing off their cattle. When asked if the Mennonite communities saw themselves as impacting the RBCMA in any way, e.g. affecting the biological corridor connectivity, etc., a participant commented that the idea of corridors is bad, and that compensation should be given to Mennonite communities if they have to conserve lands for these purposes. Participants further commented that the hilly and mountainous areas of Belize should be designated for PAs and the nice flat land should be for farming. When asked how much land participants think their communities will need 5-10 years into the future for agriculture, participants acknowledge that future land acquisition will primarily be to suffice export needs. At the moment, the communities have enough land to supply the Belizean market. Participants also pointed out that they need money to buy more land and so they will need to work on this aspect first.

OPPORTUNITIES FOR FUTURE COLLABORATION (COMMUNITY UNDERSTANDING AND AWARENESS OF RBCMA)

Communities expressed that they want to see more PfB presence in their communities. They suggested that PfB should hire a community officer that will engage with the communities on a frequent basis. They provided a long list of potential activities that PfB can promote and pursue in order to strengthen their engagement with the local communities.

LIVELIHOODS DEVELOPMENT:

a) Developing job opportunities – via PfB/RBCMA and community business ventures;
b) Establish quotas for sustainable harvesting of resources – such as non-timber materials (e.g., popta seeds, fence posts, thatch, cohune nuts);
c) Establish farming of game species (e.g., white-tailed deer, gibnut, freshwater fish, hicatee);
d) Build community-based business ventures – e.g., value-added wood products using excess wood from RBCMA timber harvesting operations (namely, mahogany, cabbage bark, bullet tree, billy web, jobillo);
e) Hire local community members in the sustainable economic activities within the RBCMA (i.e., tourism, logging); and
f) Develop fish farming to replenish depleted fish stocks

ENVIRONMENTAL EDUCATION AND AWARENESS:

a) Use RBCMA as a model to spread the message of and expose them to sustainability in the communities – (e.g. via field visits to RBCMA);
b) Build greater environmental awareness – e.g., via environmental summer camps at RBCMA, village environmental days, etc.;
c) Develop an Adopt-a-Parrot initiative;
d) Prepare and distribute promotional materials on the environment;
e) Become more involved with schools, providing education, and fostering nature-oriented competitions such as:
    i. Natural gardens
    ii. Reforest plots of land
    iii. Nature parks (promote native and medicinal plants)
f) Give presentations to communities and schools
g) Arrange overnight school visits to the RBCMA. Schools do not often visit due to lack of funds;
h) Organize bird-watching activities and teach bird identification in schools and communities; and
i) PfB can partner with the Ministry of Education on certain topics (e.g. deforestation) and integrate these into the school curriculum in all communities.

CAPACITY BUILDING

a) Provide educational scholarships (for high school);
b) Provide opportunities for job skills training (vocational);
c) Provide opportunities for entrepreneurship skills training;
d) Provide technical capacity and mentorship to communities – e.g., grant writing, project design.
e) Take community members on field trips to other parts of country (e.g. to the Toledo District) so they can see how other communities are involved with protected areas

COMMUNITY EVENTS AND NETWORKING

a) Organize Open Days at the RBCMA or within communities;
b) Organize field visits to the RBCMA;
c) Establish a sustainable farmer of the year initiative;
d) Establish a seed production and local seed bank to host native species;
e) Provide opportunities for communities to collect and preserve seeds:
    i. To defend against hybridization, natural disasters, etc.
    ii. Countries like Taiwan are buying lots of seeds (shower of gold, mahogany, etc.);
f) Develop a network of the protected areas in the area – Spanish Creek Wildlife Sanctuary, Community Baboon Sanctuary, Labouring Creek, Crooked Tree Wildlife Sanctuary, RBCMA, Lemonal (?) to promote landscape conservation;
g) Hold more meetings and have them more often. Mennonite communities said that a meeting every 5 years with PfB and their communities would be ok.

SUMMARY CONCLUSIONS

The following presents a set of conclusions tentatively arrived at based on the results of the community consultations held. These conclusions can help to determine the right set of strategies to develop in order to advance the mission of the PfB and the overall goal of the RBCMA while considering its socio-economic context.

THREATS AND PRESSURES TO THE RBCMA

Aside from natural hazards and events, most if not all of the threats and pressures to the RBMCA comes from the communities adjacent to it. There is demand for the natural resources that comes from the need to meet the needs of daily survival and to meet needs for cash income. Extraction from the RBMCA is used to meet the material and physical needs of communities to bolster other livelihood strategies in which they are engaged. Small pole timber extracted from the RBCMA are, for example, used to build fences for livestock (mainly cattle). In other instances, illegal harvest of timber and poaching of Yellow-headed Parrots is used to generate cash income to meet other livelihood needs.

The illegal harvesting of timber (especially mahogany) from the RBCMA was highlighted throughout the consultations as one of the most significant pressures on the area. Community representatives cited the constant movement of timber through their communities. PfB's inability to control and manage this high profile illicit activity is undermining its reputation within the communities. There are many aspects to this activity that will need to be addressed, some of which can be immediate while others such as the sanctioning of saw mills receiving illegally harvested timber will take some time.

While not directly involved in illicit extraction in the RBCMA, Mennonite communities are impacting on the RBCMA through their land use practices that affect the biological connectivity of forested areas, as well as through potential agricultural run-offs which up to this time has not yet been studied.

RELATIONSHIP AND DEPENDENCE ON FOREST AND NATURAL RESOURCES

In general, adjacent communities depend on the RBCMA resources (timber and non-timber) to generate financial income, physical assets and food. This is course done through illicit means. While local community members extract various forest materials and hunt and fish in the area, the most damaging activity it seems is the illegal extraction of timber resources.

Communities in the southern region (Belize River Valley) have a very close and direct relationship with the forest and natural resources in the area. In general, they have built their lifestyles and livelihoods on the resources that are available within their local environment through their use and extraction of forest resources, some of which comes from the RBCMA. Their cultural identity is tied to their relationship with the natural environment.

Northern Mestizo communities on the other hand are more into agriculture, and extraction done from the forest and the RBCMA is mostly to generate income relative to consumption. Having all their community lands privatized and those lands being deforested means that their dependence on forest resources is lessened.

Meanwhile Mennonite communities are heavily into large-scale agriculture. Their pattern of land use has contributed to deforestation in the general area of the RBCMA. They are fully dependent on farming rather than on the forest resources. While they do benefit from the timber harvested (legally and illegally) from the RBCMA, the connection between the protected area and their productive activities seems to be under-appreciated.

AWARENESS OF CONSERVATION VALUES OF RBCMA

Few persons consulted were familiar with the RBCMA and its goal. There appears to be limited knowledge of its purpose and national significance in terms of biodiversity conservation. They are aware as to its physical presence in the area (being the historical Belize Estate lands) but an understanding of why it is there and what happens in the protected area is not well understood.

The current limited presence of PfB within the communities does little to change this situation. For large farmers, having a huge tract of land (RBCMA) exempted from cultivation is perceived to be an obstacle to further agricultural production and expansion. As the communities grow in population and forest resources diminish in community lands, the pressure on the RBCMA is likely to increase. The communities will increase their stake in the RBMCA but it will be for the short term gratification of needs rather than for the long term benefits of conservation.

FUTURE COLLABORATION FOR MANAGEMENT OF RBCMA

As a protected area, the RBCMA's primary goals is biodiversity conservation. While this is laudable, if this is the only way it is presented - forest and wildlife – people will generally have little to no reason to come to visit it or be interested. Nonetheless, there is interest within the buffer communities to advance conservation activities in the RBCMA. PfB needs to build a network within the local communities that meets the interests of both the communities and PfB in terms of the conservation of the RBCMA. Efforts by community members to protect the area will need the direct material support of PfB. As some community members pointed out, individuals can only go to a certain extent. People regularly engage in illegal activities in the area and only by having more support can such pressures on the RBCMA be overcome. If there is not engagement and support, things eventually fall through. This situation is further compounded by the fact that the regulating agency, namely the Forest Department, has only 2 officers for the entire northern districts.

According to community representatives, the enforcement of regulations pertaining to parrots seems to be having some effect as the poaching of Yellow-headed Parrots has been slowing down. The market for these birds also seems to be dwindling. This situation presents an opportunity for PfB, the communities and Forest Department to gain more ground in eradicating the poaching of the Yellow-headed Parrot from within the RBCMA.

Community participants suggested that PfB needs to commit to building a strong relationship so communities do not feel that the consultations are a waste of time. While PfB has always had community involvement at heart, since 2002 there has been little focus on community involvement in the management plans. PfB, however, recognizes that the community aspect is very relevant, and so it is expected that the new plan will have a community outreach and education program within it.

Once the new management plan is prepared, PfB should go back to the communities to inform them about the elements of the new plan. It will also need to ensure continuity in the representation of communities as village leaders change from time to time.

ANNEXES

ATTENDANCE

Community Consultation with Southern Creole Communities:

CBS Conference Room

Friday, October 31st, 2014

Meeting started at 9:00am

Present were:

1.	Valentino Shal (VS)	Consultant
2.	Michael Somerville (MS)	Consultant
3.	Edilberto Romero (ER)	PFB Executive Director
4.	Ramon Pacheco (RP)	PFB Senior Technical Coordinator

(Note: Community members' attendance sheet not available.)

Community Consultation with Northern Mestizo Communities:

August Pine Ridge School

Saturday, November 1st, 2014

Meeting started at 10:00 am

Present were:

1.	Valentino Shal (VS)	Consultant
2.	Michael Somerville (MS)	Consultant
3.	Edilberto Romero (ER)	PFB Executive Director
4.	Teodoro Benegrio Cawich	Trinidad Village
5.	Roberto Pott	Trinidad Village
6.	Elias Solis	August Pine Ridge Village
7.	Thomas Reyes	San Carlos Village
8.	Noel Carrillo	San Lazaro Village
9.	Abran Carillo	San Lazaro Village

Community Consultation with the Mennonite Communities:

August Pine Ridge School

Saturday, Nov 1st, 2014

Meeting started at 2:00 pm

Present were:

1	Valentino Shal (VS)	Consultant
2	Michael Somerville (MS)	Consultant
3	Edilberto Romero (ER)	PFB Executive Director
4	Jacob Neufeld	Indian Creek
5	Flunrich Penner	Indian Creek
6	Johan Penner	Shipyard
7	Juan Martinez	Shipyard
8	Johan Penner 2	Shipyard
9	Cornelius Krahn	Shipyard
10	Janal Friesen	Indian Creek
11	Thaman Guenther	Indian Creek
12	Jacob Well	Shipyard
13	Peter Rempel	Blue Creek
14	Abram Friesen	Blue Creek
15	Clarence Dueck	Spanish Lookout
16	Stanley Reamer	Spanish Lookout
17	Francis Reamer	Spanish Lookout

Appendix 7: RBCMA-ATNP species inventory. Lepidoptera.

Derived from Shuey & Giles 1992, incorporating information from Meerman 1991.

		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
Hesperiidae						
Hesperiinae						
	Aides dysoni		X	X		
	Anatrytone mella			X		
	Ancyloxypha arene			X		
	Anthoptus epictetus		X	X		
	Anthoptus insignis		X	X		
	Artines sp.nov.			X		
	Callimormus saturnus		X	X		
	Callimorus alsimo		X			
	Calpodes ethilus		X			
	Cantha roraimae			X		
	Carystoides basoches		X	X		

	Carystus phorcus		X		X	
	Cobalus fidicula			X		
	Conga chydaea		X	X		
	Copaeodes minima		X	X		
	Corticea corticea			X	X	
	Corticea lysias			X		
	Cymaenes alumna			X		
	Cymaenes fraus			X		
	Cymaenes trebius		X	X		
	Cynea corope			X		
	Cynea cynea		X			
	Damas clavus		X	X		
	Dubiella belpa			X		
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Enosis achelous			X		
	Eprius veleda		X	X	X	
	Euphyes peneia			X		

	Flacilla aecas			X		
	Hylephila phyleus		X	X		
	Inglorius mediocris			X		
	Lerema accius		X	X		
	Lerodea eufala			X		
	Methionopsis dolor			X		
	Methionopsis ina		X			
	Metron chrysogastra			X		
	Mnaseas bicolor			X		
	Mnasicles geta		X	X		
	Mnasicles allubita		X	X		
	Mnasitheus nitra			X		
	Monca tyrtaeus		X			
	Morys lyde		X	X		
	Morys micythus		X	X	X	
	Naevolus orius			X		
	Nastra leucone		X	X		
	Niconiades incomptus			X		
	Nyctelius nyctelius		X	X	X	

	Orses cynisca			X		
	Orthis lycortas		X			
	Panoquina evansi		X	X		
	Panoquina hecebolus			X		
	Panoquina leucas			X		
	Panoquina ocola		X	X		
	Panoquina pauper		X	X		
	Paniquina silvicola		X			
	Papias dictys		X	X		
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Parphorus decora		X	X		
	Perichares philetes		X	X		
	Phanes aletes			X		
	Polites vibex		X	X		
	Pompeius dares			X		
	Pompeius pompeius		X	X	X	
	Psoralis sp.?		X			
	Quinta cannae			X		

	Remella remus		X			
	Saliana longirostris			X		
	Synapte pecta		X			
	Synapte silius			X		
	Thargella caura		X	X		
	Thracides thrasea			X		
	Tigasis simplex			X		
	Tirynthia conflua			X		
	Tromba xanthura		X			
	Vacerra litana			X		
	Vehilius illudens		X	X		
	Vehilius inca		X	X		
	Vehilius stictomenes		X			
	Vertica verticalis			X		
	Vettius fantasos		X	X		
	Vettius lafresnayei		X			
	Vettius onoca		X			
	Vettius pica			X		
	Vidius perigenes			X		

	Vinpeius tinga			X		
	Virga virginius		X			
	Wallengrenia otho			X		
	Xeniades orchamus		X			
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Zariaspes mys		X	X		
	Zenis janka			X		
Pyrginae						
	Achalarus albociliatus		X	X		
	Achalarus toxeus			X		
	Achylodes busirus		X	X		
	Aethilla echina			X		
	Aethilla lavochrea		X	X		
	Aguna asander		X	X		
	Aguna aurunce		X	X		
	Aguna claxon			X		
	Antigonus erosus		X	X		
	Anustrus tolimus		X			

	Astraptes alardus		X			
	Astraptes alector		X	X		
	Astraptes anaphus		X	X		
	Astraptes aulestes		X	X		
	Astraptes bifascia			X		
	Astraptes brevicauda			X		
	Astraptes egregius			X		
	Astraptes enotrus			X		
	Astraptes fulgerator		X	X		
	Astraptes sp.nov.		X			
	Astraptes phalaecus			X		
	Astraptes talus		X			
	Autocthon neis			X		
	Autochton zarex		X	X		
	Bungalotis midas		X			
	Bungalotis quadratum			X		
	Cabares potrillo		X	X		
	Calliades zeutus		X	X		
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***

			Western	*Eastern*		
	Camptopleura theramenes		X			
	Carrhenes canescens			X		
	Carrhenes fuscescens		X	X		
	Chioides catillus			X		
	Chioides zilpa		X	X		
	Chiomara asychis			X		
	Codatractus carlos		X		X	
	Cogia calchas		X	X		
	Cyclographa thasibulus			X		
	Drephalys dumeril		X			
	Dyscophellus nicephorus			X		
	Eantis thraso			X		
	Ebriatas anacreon		X	X		
	Epargyreus exadeus		X	X		
	Erynnis tristis			X		
	Gorgythion begga		X	X		
	Grais stigmaticus			X		

	Helias cama			X		
	Heliopetes alana			X		
	Heliopetes arsalte		X	X	X	
	Heliopetes macaira		X	X	X	
	Mylon pelopidas		X	X		
	Narcosius parisi		X			
	Nascus paulliniae		X			
	Nisoniades godma		X	X		
	Nisoniades rubescens		X		X	
	Ouleus fridericus		X			
	Paches loxus		X	X		
	Pachyneuria licisca			X		
	Pellicia dimidiata			X		
	Phocides palemon		X	X		
	Phocides pigmalion		X			
	Polyctor cleta		X	X		
	Polygonus manueli		X	X	X	
	Polythrix asine			X		
	Polythrix octomaculata			X		

	Polythrix procerus		X			
	Proteides mercurius		X	X	X	
	Pyrgus adepta		X	X	X	
	Pyrgus oileus		X	X		
	Pythonides limaea		X			
	Quadrus cerealis		X	X		
	Quadrus lugubris			X		
	Ridens allyni		X			
	Sostrata nordica		X	X		
	Spathilepia clonius		X	X		
	Staphylus ascalaphus			X		
	Staphylus mazans				X	
	Staphylus tenis		X			
	Staphylus vulgata		X	X		
	Typhedanus undulatus		X	X		
	Udranomia kikkawai			X		
	Urbanus albimargo			X		
	Urbanus esmeraldus			X		
	Urbanus procne		X	X		

	Urbanus proteus		X	X		
	Urbanus simplicius		X	X		
	Urbanus teleus		X	X		
	Venada advena			X		
	Xenophanes tryxus		X	X		
Pyrropyginae						
	Elbella scylla		X			
	Myscelus amystis		X			
	Myscelus belti		X	X		
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Ptrrhopyge erythrosticta		X	X		
Lycaenidae						
Polyommatinae						
	Everes comyntas		X	X	X	
	Hemiargus ceraunus			X		Also Blue Creek
	Hemiargus hanno		X	X	X	
	Leptotes cassius				X	
Riodininae						

	Napaea umbra		X	X		
	Juditha molpe		X	X		
	Synargis mycone		X			
	Synargis nymphidioides		X	X		
	Argyrogrammana holosticta			X		
	Calida nr. sinuata				X	
	Calydna sturnula		X	X		
	Emesis lucinda		X			
	Emesis lupina			X		
	Emesis mandana		X			
	Emesis vulpina		X			
	Eusalasia procula			X		
	Leucochimona nr leucogaea			X		
	Mesosemia lamachus		X	X		
	Baeotis zonata			X		
	Calephelis argyrodines				X	
	Calephis browni		X		X	
	Calephis clenchi		X	X		

	Calephis maya		X			
	Calephis stallingsi		X			
	Calephis tikal		X			
	Calephis wellingi		X		X	
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Caria lampeto			X		
	Charis gynaea		X	X		
	Melanis pixe					
	Perophthalma lasius					
	Rhetus arcius					
	Mesene leucopus					
Theclinae						
	Arawacus sito		X		X	
	Arawacus togarna			X		
	Arcas cypria		X			
	Caerofethra carnica		X			
	Calycopsis drusilla			X		
	Calycopsis isobeon			X		

	Calycopsis pistis			X		
	Calycopsis sp.2		X			
	Calycopsis sp.3		X			
	Calycopsis sp 4.		X			
	Calycopsis sp 5		X			
	Calycopsis sp 6		X			
	Calycopsis sp 7		X			
	Calycopsis sp 8		X			
	Calystryma sp?		X			
	Calystryma quitana		X			
	Calystryma trebula		X	X		
	Celmia celmus		X			
	Chalbys janias		X			
	Cyanophrys herodotus		X			
	Cyanophrys miserabilis			X		
	Cycnus phaleros		X			
	Electrostrymon cyphara		X			
	Eumaeus toxea		X	X	X	
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***

			Western	*Eastern*		
	Evenus regalis		X			
	Gigantorubra shueyi		X			
	Janthecla janthodonia		X	X		
	Kisutam hesperitis		X	X		
	Kisutam mexicana		X			
	Kisutam syllis			X		
	Lamprospilus collucia			X		
	Mercedes demonassa			X		
	Michaelus ira		X			
	Ministrymon coronata		X			
	Ministrymon una			X		
	Oenomaus ortogynus		X			
	Panthiades bathildis			X		
	Panthiades bitias		X	X		
	Pseudolycaena damo		X	X	X	
	Rekoa meton			X		
	Rekoa palegon			X		
	Strymon basilides		X			

	Strymon istapa		X	X		
	Strymon ziba			X		
	Thecla conoveria		X	X		
	Thecla nr. falerina		X			
	Thecla sp. nr. tephraeus		X			
	Thecla spurina?				X	
	Thecla vespasianus			X		
	Tmolus cydrara			X		
	Tmolus echion		X	X		
Nymphalidae						
Apaturinae						
	Asterocampa idyja		X			
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Doxocopa laure		X	X	X	
Brassolinae						
	Caligo memnon	X	X	X		
	Caligo uranus		X	X	X	
	Eryphanis aesacus		X	X		

	Opsiphanes cassina		X	X	X	
	Opsiphanes quiteria		X	X	X	
Charaxinae						
	Anaea aidea		X	X		
	Consul electra		X	X		
	Consul fabius			X		
	Memphis artacaena			X	X	
	Memphis forreri		X	X		
	memphis morvus		X			
	Memphis oenomais			X	X	
	Memphis pithyusa		X	X		
	Memphis xenica			X		
	Siderone marthesia			X		
	Zaretis ellops		X	X		
	Zaretis itys			X		
	Archaeoprepona demophon centralis		X	X		
	Archaeoprepona demophon gulina		X	X		

	Archaeoprepona meander			X		
	Archaeoprepona omphale		X	X		
Danainae						
	Danaus eresimus			X		
	Danaus gilippus		X	X	X	
	Danaus plexippus			X		
	Lycorea cleobaea		X		X	
	Aeria eurimedia			X		
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Ithomia patilla		X			
	Mechanitis polymnia			X		
	Napeogenes tolosa		X			
	Oleria paula			X	X	
	Pteronymia cotytto			X		
Eurytelinae						
	Hamadryas amphinome		X	X		
	Hamadryas februa		X	X	X	

	Hamadryas feronia			X	X	
	Hamadryas guatemalena		X	X		
	Hamadryas ipthime			X		
	Biblis hyperia		X	X	X	
	Callicore patelina			X		
	Callicore texa			X		
	Dynamine mylitta		X	X		
	Dynamine theseus		X			
	Catonephele mexicana			X	X	
	Catonephele numilia		X	X	X	
	Eunica alcmena			X		
	Eunica monima		X	X		
	Eunica tatila		X	X		
	Myscelia cyaniris	X	X	X		
	Myscelia ethusa		X	X		
	Nessaea aglaura		X	X	X	
	Nica flavilla		X	X	X	
	Pyrrhogyra neaerea		X	X		
	Pyrrhogyra otolais			X		

	Temenis laothoe			X		
	Mestra amymone		X			
Heliconiinae						
	Actinote guatemalena			X		
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Agraulis vanillae	X		X	X	
	Dione juno		X	X		
	Dryadula phaetusa	X		X		
	Dryas iulia		X	X	X	
	Euides aliphera		X	X		
	Euides isabella				X	
	Euptoieta hegesia		X	X	X	
	Heliconius charithonia	X	X	X	X	
	Heliconius erato	X	X	X	X	
	Philaethria dido		X			
Libytheinae						
	Libytheana carinenta		X		X	
Limenitidae						

	Marpesia chiron	X	X	X	X	
	Marpesia petreus	X	X	X	X	
	Adelpha basiloides		X	X		
	Adelpha celerio			X		
	Adelpha fessonia			X		
	Adelpha iphicla		X	X	X	
	Adelpha massilia			X		
	Adelpha naxia		X			
Morphinae						
	Morpho peleides	X	X	X		
	Morpho polyphemus		X			
Nymphalinae						
	Colobura dirce		X	X		
	Historis acheronta		X	X		
	Historis odius	X	X	X		
	Tigridia acesta		X	X		
	Anartia fatima		X	X	X	
	Anartia jatrophae		X	X	X	
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***

			Western	*Eastern*		
	Junonia genoveva		X	X	X	
	Siproeta stelenes		X	X		
	Anthanassa drusilla		X	X		
	Anthanassa tulcis		X	X		
	Castilia myia			X		
	Chlosyne erodyle		X	X		
	Chlosyne janais		X			
	Chlosyne lacinia fruhstorferi		X	X		
	Chlosyne lacinia lacinia			X		
	Oritilia oritilia?		X			
	Phycioides phaon		X	X		
	Tegosa guatemalena		X	X	X	
	Thessalia theona		X	X	X	
Satyrinae						
	Pierella luna			X		
	Cepheuptychia glaucina		X	X		
	Cissia confusa		X	X	X	

	Cissia pseudoconfusa		X	X	X	
	Cissia renata		X	X	X	
	Hermeuptychia hermes		X	X	X	
	Magneuptychia libye		X	X		
	Pareuptychia metaleuca		X	X	X	
	Pareuptychia ocirrhoe	X	X	X	X	
	Taygetis andromeda		X		X	
	Taygetes lachus			X		
	Taygetes leuctra			X		
	Taygetes mermeria		X	X		
	Taygetes nympha		X	X		
	Taygetes rufomarginata		X	X		
	Taygetes zimri			X		
	Vareuptychia similis		X	X		
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Vareuptychia usitata		X	X	X	
Papilionidae						
Papilioninae						

	Protographium epidaus		X			
	Protographium philolaus		X	X	X	
	Heraclides anchisiades		X			
	Heraclides androgynus			X		
	Heraclides cresphontes			X		
	Heraclides pharnaces		X			
	Heraclides thoas		X		X	
	Mimoides ilus			X		
	Mimoides phaon		X	X		
	Mimoides menatius		X	X		
	Battus laodamas		X	X		
	Battus polydamas		X	X		
	Parides erithalion		X	X		
	Parides eurimedes			X		
	Parides iphidamas		X	X		
	Parides panares			X		
	Parides sesostris		X	X		
Coliadinae						
	Anteos clorinde			X	X	

	Anteos maerula		X	X	X	
	Aphrissa statira		X	X		
	Eurema albula	X	X	X	X	
	Eurema boisduvaliana			X		
	Eurema daira		X	X	X	
	Eurema dina			X		
	Eurema lisa		X	X		
	Eurema nise		X	X	X	
		ATNP	***RBCMA***		***Gallon Jug***	***Notes***
			Western	***Eastern***		
	Eurema proterpia		X	X		
	Phoebis agarithe		X	X		
	Phoebis argante		X	X	X	
	Phoebis philea	X	X	X		
	Phoebis sennae		X	X	X	
Pierinae						
	Appias drusilla	X	X	X	X	
	Ascia monuste	X*	X	X	X	* Ascia josephae

	Itaballia demophile		X			
	Pieriballia viardi		X	X	X	