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*Environmental, Social and
Cultural Data Gathering for
Catchment Areas In or Adjacent
to the Eastern Region of the
Panama Canal Watershed.
Contract No. CDO-119450-FDP
Final report - Annex*

*Prepared for
Panama Canal Authority*

*Prepared by:
URS Holdings, Inc.*

Panama - March, 2004

UNAUTHORIZED USE OR DUPLICATION IS PROHIBITED
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ANNEX - 1

Table A4.1-1 Species of Flora for Type of Habitat

TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
ACANTHACEAE	X							
<i>Aphelandra campanensis</i>	X				X	X		
<i>Blechum pyramidatum</i>		X	X	X				
ACTINIDACEAE								
<i>Saurauia yasicae</i>	X				X	X		
ANACARDIACEAE								
<i>Anacardium occidentale</i>	X	X	X	X	X		X	X
<i>Astronium graveolens</i>		X	X	X				
ANNONACEAE								
<i>Anaxagorea sp.</i>	X				X	X		
<i>Annona montana</i>	X	X			X	X		
<i>Annona pittieri</i>	X				X	X		
<i>Annona spraguei</i>		X	X	X			X	X
<i>Rollinia mucosa</i>	X				X	X		
APOCYNACEAE								
<i>Aspidosperma spruceanum</i>	X	X	X	X	X			
<i>Lacmellea speciosa</i>	X	X	X	X		X		
<i>Stemmadenia alfari</i>	X				X	X		
ARALIACEAE								
<i>Dendropanax arboreus</i>	X	X	X	X	X	X		
<i>Dendropanax sessiliflorus</i>	X				X	X		
ARECACEAE								
<i>Aiphanes hirsuta</i>	X				X	X		
<i>Attalea butyracea</i>		X	X	X				
<i>Chamaedorea tepejilote</i>	X				X	X		
<i>Cryosophila warscewiczii</i>	X	X			X	X		
<i>Euterpe precatoria</i>	X				X	X		
<i>Geonoma cuneata</i>	X	X			X	X		
<i>Socratea exorrhiza</i>	X	X	X		X	X		
<i>Welfia regia</i>	X	X	X	X				
ASCLEPIADACEAE								
<i>Asclepias curassavica</i>	X	X	X		X	X	X	
ASTERACEAE								
<i>Verbesina lanata</i>	X				X	X		
BIGNONIACEAE								
<i>Amphitecna isthmica</i>	X				X	X		
<i>Amphitecna spathicalyx</i>	X				X	X		
<i>Tabebuia rosea</i>		X	X	X		X	X	
<i>Tabebuia guayacan</i>		X	X			X	X	
BOMBACACEAE								
<i>Matisia exaltata</i>	X				X	X		
<i>Matisia sanblasensis</i>	X							
<i>Pachira aquatica</i>	X	X	X	X	X			
<i>Pachira sessilis</i>		X	X	X	X			
<i>Quararibea asterolepis</i>	X	X	X		X			
<i>Quararibea obliquifolia</i>	X				X			
BORAGINACEAE								
<i>Cordia alliodora</i>	X	X	X	X			X	
<i>Cordia cymosa</i>	X				X	X		
<i>Cordia lucidula</i>	X	X			X	X		
BURSERACEAE								
<i>Protium aff. guianense</i>	X	X		X				
<i>Protium tenuifolium</i>	X			X				
<i>Tetragastris panamensis</i>	X	X	X	X				
CAPARIDACEAE								
<i>Capparis antonensis</i>	X				X	X		
<i>Capparis discolor</i>					X	X		
<i>Capparis pittieri</i>	X				X	X	X	

TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
CECROPIACEAE								
<i>Cecropia garciae</i>	X			X				
<i>Cecropia insignis</i>	X	X	X		X	X		
<i>Cecropia obtusifolia</i>	X	X	X	X	X	X	X	X
CELASTRACEAE								
<i>Maytenus schippii</i>	X	X	X	X				
CHLORANTHACEAE								
<i>Hedyosmum bonplandianum</i>	X				X	X		
<i>Hedyosmum scaberrimum</i>	X				X	X		
CHRYSOBALANACEAE								
<i>Hirtella latifolia</i>	X	X	X	X		X	X	
<i>Hirtella triandra</i>	X	X	X		X	X		
<i>Hirtella tubiflora</i>	X			X				
<i>Licania macrocarpa</i>	X			X				
CLETHRACEAE								
<i>Clethra lanata</i>	X				X	X		
CLUSIACEAE								
<i>Calophyllum brasiliense</i>	X	X	X	X	X	X		
<i>Calophyllum longifolium</i>	X				X			
<i>Chrysochlamys grandifolia</i>	X	X			X			
<i>Clusia divaricata</i>	X				X	X		
<i>Dystovomita paniculata</i>	X			X	X	X		
<i>Marila laxiflora</i>	X	X	X	X	X			
<i>Marila pluricostata</i>	X			X				
<i>Symphonia globulifera</i>	X	X	X		X	X		
<i>Tovomita longifolia</i>	X			X				
<i>Vismia baccifera</i>	X			X				
<i>Vismia billbergiana</i>	X	X	X	X	X	X		
<i>Vismia macrophylla</i>	X			X	X	X		
COMBRETACEAE								
<i>Terminalia amazonia</i>	X	X	X	X	X	X	X	
CYATHEACEAE								
<i>Cyathea petiolata</i>	X				X	X		
ELAEOCARPACEAE								
<i>Sloanea aff.meianthera</i>	X							
ERYTHROXYLACEAE								
<i>Erythroxylum macrophyllum</i>	X				X	X		
EUPHORBIACEAE								
<i>Acalypha diversifolia</i>	X				X	X		
<i>Alchornea costaricensis</i>				X	X			
<i>Alchornea latifolia</i>	X			X	X			
<i>Cc. eveiba pleiostemona</i>	X	X		X				
<i>Croton draco</i>	X	X	X	X	X			
<i>Croton lanjouwensis</i>	X			X	X			
<i>Drypetes sp.aff.amazonica</i>	X	X		X	X			
<i>Hieronyma oblonga</i>	X			X	X			
<i>Maprounea guianensis</i>	X	X		X				
<i>Pera arborea</i>	X	X	X	X		X	X	
<i>Sapium glandulosum</i>	X			X	X			
<i>Tetrorchidium gorgonae</i>	X			X	X			
FABACEAE								
<i>Dussia macroprophyllata</i>	X			X	X			
<i>Dussia munda</i>	X	X		X	X			
<i>Dussia tessmannii</i>	X							
<i>Erythrina costaricensis</i>	X	X			X			
<i>Inga ciliata ss:subcapitata</i>	X			X	X			
<i>Inga laurina</i>	X	X	X		X			
<i>Inga filiformis</i>	X				X			
<i>Inga marginata</i>	X	X		X	X			

TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
<i>Inga oerstediana</i>	X			X	X			
<i>Inga punctata</i>		X	X	X				
<i>Inga sapindoides</i>	X	X	X					
<i>Inga sertulifera</i>	X				X	X		
<i>Inga sierrae</i>	X			X	X	X		
<i>Inga urceolata</i>	X			X	X	X		
<i>Iriartea deltoidea</i>	X	X						
<i>Lonchocarpus oliganthus</i>	X			X				
<i>Ormosia amazonica</i>	X	X	X	X	X			
<i>Platymiscium pinnatum</i>	X		X	X				
<i>Sclerolobium costaricense</i>	X			X				
<i>Senna dariensis</i>	X		X	X				
<i>Swartzia simplex var. ochracea</i>	X	X	X	X	X			
<i>Tachigali versicolor</i>	X	X	X		X			
FLACOURTIACEAE								
<i>Casearia arborea</i>	X			X				
<i>Casearia commersoniana</i>	X	X	X		X			
<i>Casearia sylvestris</i>	X			X	X			
<i>Laetia thamnia</i>	X	X	X	X	X			
<i>Lunania piperoides</i>	X			X	X			
<i>Mayna odorata</i>	X	X		X	X			
<i>Ryania speciosa</i>	X			X				
<i>Xylosma oligandra</i>	X				X			
GESNERIACEAE								
<i>Besleria formicaria</i>	X				X	X		
HERNANDIACEAE								
<i>Hernandia stenura</i>	X				X	X		
HIPPOCRATEACEAE								
<i>Salacia petenensis</i>	X				X			
HUMIRIACEAE								
<i>Humiriastrum diguense</i>	X			X	X	X		
ICACINACEAE								
<i>Calatola costaricensis</i>	X			X	X	X		
LACISTEMATAACEAE								
<i>Lacistema aggregatum</i>	X	X	X	X				
<i>Lozania pittieri</i>	X			X				
LAURACEAE								
<i>Cinnamomum paratriplinerve</i>	X				X	X		
<i>Licaria excelsa</i>	X				X	X		
<i>Ocotea dendrodaphne</i>	X			X	X			
<i>Ocotea meziana</i>	X	X			X	X		
<i>Ocotea tonduzii</i>	X				X	X		
<i>Pleurothyrium aff. hexaglandulos</i>	X				X	X		
LECYTHIDACEAE								
<i>Eschweilera sp. aff. angustifolia</i>	X	X		X				
<i>Eschweilera calyculata</i>	X	X		X				
<i>Gustavia dubia</i>	X	X		X				
<i>Gustavia superba</i>	X	X	X	X		X	X	
MALPIGHIACEAE								
<i>Bunchosia dwyeri</i>	X				X			
MALVACEAE								
<i>Hampea albipetala</i>		X		X				
<i>Hampea appendiculata</i>	X			X	X			
MELASTOMATAACEAE								
<i>Aciotis indecora</i>	X				X			
<i>Clidemia octona</i>	X				X			

TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
<i>Conostegia rufescens</i>	X				X			
<i>Conostegia xalapensis</i>	X				X			
<i>Graffenrieda galeottii</i>	X	X			X			
<i>Henriettella tuberculosa</i>		X	X	X				
<i>Miconia argentea</i>	X	X			X		X	
<i>Miconia minutiflora</i>	X	X	X		X			
<i>Miconia dorsiloba</i>	X				X	X		
<i>Miconia elata</i>	X				X			
<i>Miconia ligulata</i>	X				X			
<i>Miconia simplex</i>	X			X	X			
<i>Miconia sp.aff.umbriensis</i>	X						X	
<i>Mouriri sp.aff.exilis</i>		X	X	X				
MELIACEAE								
<i>Carapa guianensis</i>	X			X	X			
<i>Guarea kunthiana</i>	X	X		X	X			
MONIMIACEAE								
<i>Mollinedia pinchotiana</i>	X				X	X		
<i>Siparuna conica</i>	X				X	X		
<i>Siparuna pauciflora</i>	X	X	X	X	X			
MORACEAE								
<i>Brosimum guianense</i>	X				X	X		
<i>Clarisia biflora</i>	X	X		X				
<i>Ficus colubrinae</i>	X	X	X	X	X			
<i>Ficus petenensis</i>	X				X			
<i>Ficus tonduzii</i>	X	X	X		X			
<i>Ficus yoponensis</i>	X	X	X		X			
<i>Helicostylis towarensis</i>	X	X			X	X		
<i>Maquira guianensis</i>	X		X		X	X		
<i>Naucleopsis capirensis</i>	X				X	X		
<i>Naucleopsis naga</i>	X			X	X			
<i>Perebea xanthochyma</i>	X			X	X	X		
<i>Poulsenia armata</i>	X	X	X	X	X	X		
<i>Pourouma bicolor</i>	X	X			X			
<i>Pourouma minor</i>	X				X	X		
<i>Sorocea affinis</i>	X	X	X		X	X		
<i>Sorocea pubivena</i>	X			X	X			
MYRICACEAE								
<i>Myrica mexicana</i>	X	X			X			
MYRISTICACEAE								
<i>Otoba acuminata</i>	X				X	X		
<i>Otoba novogranatensis</i>	X				X	X		
<i>Virola sebifera</i>	X	X		X	X	X		
MYRSINACEAE								
<i>Myrsine coriacea</i>	X			X	X			
<i>Parathesis amplifolia</i>	X				X			
MYRTACEAE								
<i>Eugenia galalonensis</i>	X	X	X	X	X			
<i>Eugenia octopleura</i>	X			X	X			
<i>Eugenia oerstediana</i>	X			X	X			
<i>Myrcia gatunensis</i>	X	X	X	X	X		X	
<i>Plinia povedae</i>	X			X	X			
OCHNACEAE								
<i>Cespedesia macrophylla</i>	X	X		X	X	X		
OLACACEAE								
<i>Heisteria acuminata</i>	X	X	X		X			
<i>Chionanthus panamensis</i>	X	X		X	X			
PIPERACEAE								
<i>Piper arboreum</i>	X	X	X	X	X		X	
<i>Piper augustum</i>	X				X			

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Pachira aquatica</i>						X	
	<i>Pachira quinata</i>		VU			X		
	<i>Pachira sessilis</i>	VU	LRnT			X	X	
	<i>Pseudobombax septenatum</i>					X		
	<i>Quararibea asterolepis</i>					X		
	<i>Quararibea obliquifolia</i>						X	X
	<i>Quararibea platyphylla</i>	VU				X		
	<i>Quararibea pterocalyx</i>					X		
BORAGINACEAE								
	<i>Cordia alliodora</i>		LRnT			X		
	<i>Cordia bicolor</i>					X		
	<i>Cordia dwyeri</i>	VU					X	
	<i>Cordia lasiocalyx</i>	VU				X		X
	<i>Cordia lucidula</i>		LRnT				X	X
	<i>Cordia panamensis</i>					X		
	<i>Cordia porcata</i>	VU						X
BURSERACEAE								
	<i>Bursera simaruba</i>					X		X
	<i>Protium costaricense</i>					X		
	<i>Protium glabrum</i>					X		
	<i>Protium inconforme</i>	VU	END				X	
	<i>Protium panamense</i>		LRnT			X	X	X
	<i>Protium correae</i>					X		
	<i>Protium tenuifolium</i>					X		
	<i>Tetragastris panamensis</i>					X	X	X
	<i>Trattinnickia aspera</i>		LRnT			X	X	
CACTACEAE								
	<i>Pereskia bleo</i>		VU					X
CAPPARIDACEAE								
	<i>Capparis frondosa</i>					X		
	<i>Capparis pittieri</i>						X	X
	<i>Capparis antonensis</i>							X
CARICACEAE								
	<i>Carica cauliflora</i>					X		
	<i>Jacaratia spinosa</i>					X		X
	<i>Jacaratia dolichaula</i>							X
CECROPIACEAE								
	<i>Cecropia garciae</i>							X
	<i>Cecropia insignis</i>					X		X
	<i>Cecropia longipes</i>		END			X	X	
	<i>Cecropia obtusifolia</i>					X	X	X
	<i>Cecropia peltata</i>					X		
	<i>Pourouma bicolor</i>					X	X	X
CELASTRACEAE								
	<i>Crossopetalum parviflorum</i>		LRnT			X		
	<i>Maytenus schippii</i>					X		X
	<i>Quetzalia occidentalis</i>						X	
CHLORANTHACEAE								
	<i>Hedyosmum scaberrimum</i>							X

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
CHRYSOBALANACEAE								
	<i>Hirtella americana</i>						X	X
	<i>Hirtella latifolia</i>						X	X
	<i>Hirtella racemosa</i>		LRnT			X		
	<i>Hirtella triandra</i>					X		X
	<i>Licania affinis</i>	VU					X	
	<i>Licania cruegeriana</i>						X	
	<i>Licania fassiculata</i>		END, EN					
	<i>Licania hypoleuca</i>					X		
	<i>Licania morii</i>		END, EN				X	
	<i>Licania platypus</i>					X		
	<i>Licania arborea</i>							X
	<i>Maranthes panamensis</i>	VU				X	X	
CLETHRACEAE								
	<i>Clethra lanata</i>							X
CLUSIACEAE								
	<i>Calophyllum brasiliensis</i>						X	X
	<i>Calophyllum longifolium</i>		VU			X	X	X
	<i>Chrysochlamys eclipes</i>		END		EN	X	X	
	<i>Clusia divaricata</i>							X
	<i>Dystovomita paniculata</i>						X	X
	<i>Garcinia intermedia</i>		LRnT			X	X	
	<i>Garcinia madruno</i>		LRnT			X	X	X
	<i>Mammea immansueta</i>		EN,END			X	X	
	<i>Marila domingensis</i>						X	
	<i>Marila lactogena</i>		VU				X	
	<i>Marila laxiflora</i>					X	X	X
	<i>Marila pluricostata</i>		VU				X	
	<i>Symphonia globulifera</i>		VU			X	X	X
	<i>Tovomita longifolia</i>					X	X	X
	<i>Tovomita stylosa</i>					X		
	<i>Tovomita weddelliana</i>						X	
	<i>Tovomitopsis myrcioides</i>							X
	<i>Vismia baccifera</i>					X		
	<i>Vismia hillbergiana</i>					X		
	<i>Vismia jefensis</i>	VU					X	
	<i>Vismia macrophylla</i>					X		X
COCHLOSPERMACEAE								
	<i>Cochlospermum vitifolium</i>				CU	X		
COMBRETACEAE								
	<i>Terminalia amazonia</i>	VU				X		
	<i>Terminalia oblonga</i>						X	
CYATHEACEAE								
	<i>Cyathea petiolata</i>	VU				X	X	X
CYCADACEAE								
	<i>Zamia skinnerii</i>					X	X	
CYCLANTHACEAE								
	<i>Cyclanthus bipartitus</i>		VU			X	X	X
	<i>Carludovica drudei</i>					X		X
DICHAPETALACEAE								
	<i>Tapura cubensis</i>		VU				X	
DILLENACEAE								
	<i>Curatella americana</i>							X
EBENACEAE								
	<i>Diospyros artanthifolia</i>		LRnT			X		X
ELAEOCARPACEAE								

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Sloanea meianthera</i>					X		X
	<i>Sloanea megaphylla</i>	VU					X	
	<i>Sloanea terniflora</i>					X		
	<i>Sloanea zuliaensis</i>					X	X	X
ERYTHROXYLACEAE								
	<i>Erythroxylum citrifolium</i>					X		
	<i>Erythroxylum macrophyllum</i>					X		
	<i>Erythroxylum panamense</i>					X		X
EUPHORBIACEAE								
	<i>Acalypha diversifolia</i>					X	X	X
	<i>Acalypha macrostachya</i>						X	
	<i>Adelia triloba</i>					X		X
	<i>Alchornea costaricensis</i>					X	X	X
	<i>Alchornea latifolia</i>					X		X
	<i>Conceveiba pleiostemona</i>							X
	<i>Croton billbergianus</i>		LRnT			X		
	<i>Croton pachypodus</i>				EN			X
	<i>Croton draco</i>							X
	<i>Croton schiedeanus</i>		LRnT			X		
	<i>Drypetes standleyi</i>	END	LRnT			X		
	<i>Euphorbia elata</i>						X	
	<i>Garcia nutans</i>					X		
	<i>Hevea brasiliensis</i>				CU	X		
	<i>Hura crepitans</i>					X		
	<i>Hyeronima alchorneoides</i>					X		
	<i>Hyeronima oblonga</i>						X	X
	<i>Mabea occidentalis</i>						X	
	<i>Maprounea guianensis</i>						X	
	<i>Margaritaria nobilis</i>					X		X
	<i>Pera arborea</i>					X		
	<i>Phyllanthus acuminatus</i>					X		
	<i>Sapium glandulosum</i>					X		
	<i>Tetrorchidium euryphyllum</i>							X
	<i>Tetrorchidium gorgonae</i>					X		
FABACEAE:CAESALPINOIDE								
	<i>Cassia moschata</i>		LRnT				X	
	<i>Copaifera aromatica</i>	VU					X	
	<i>Cynometra bauhiniaefolia</i>					X		
	<i>Dialium guianense</i>					X		
FABACEAE:CAESALPINOIDE								
	<i>Hymenaea courbaril</i>					X	X	X
	<i>Prioria copaifera</i>		END			X		
	<i>Schizolobium parahybum</i>					X		
	<i>Senna dariensis</i>						X	
	<i>Swartzia panamensis</i>	VU				X		
	<i>Swartzia simplex v. grandiflora</i>					X		
	<i>Swartzia simplex var. ochracea</i>					X	X	X
	<i>Tachigali versicolor</i>	VU				X		
FABACEAE:FABOIDEAE								
	<i>Andira inermis</i>					X	X	X
	<i>Dalbergia retusa</i>		LRnT			X	X	
	<i>Diphysa robinoides</i>					X	X	X
	<i>Dipteryx panamensis</i>	VU				X	X	
	<i>Dussia macrophyllata</i>							X
	<i>Dussia munda</i>							X
	<i>Eritrina costaricensis</i>					X		X
	<i>Eritrina fusca</i>					X		X

TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
<i>Allophylus gentryi</i>	X				X			
<i>Allophylus psilospermus</i>	X			X	X			
<i>Cupania cinerea</i>	X	X		X	X			
SAPOTACEAE								
<i>Chrysophyllum brenesii</i>	X				X			
<i>Chrysophyllum venezuelanense</i>	X	X		X	X			
<i>Pouteria calistophylla</i>	X				X			
<i>Pouteria congestifolia</i>	X				X			
<i>Pouteria silvestris</i>	X				X			
<i>Sarcaulus brasiliensis</i>	X			X	X			
SIMAROUBACEAE								
<i>Simarouba amara</i>	X			X	X			
SOLANACEAE								
<i>Solanum hayesii</i>	X	X		X	X			
STAPHILIACEAE								
<i>Turpinia occidentalis</i>	X			X	X			
STERCULIACEAE								
<i>Sterculia recordiana</i>	X	X		X	X			
<i>Theobroma simiarum</i>	X			X				
TEOPHRASTACEAE								
<i>Clavija mezii</i>	X	X		X	X			
THEACEAE								
<i>Gordonia brandegeei</i>	X			X	X			
<i>Laplacea fruticosa</i>	X							
THYMELACEAE								
<i>Daphnopsis americana</i>	X			X				
TILIACEAE								
<i>Apeiba membranacea</i>	X	X	X	X	X			
<i>Heliocarpus americanus</i>	X	X	X	X	X			
ULMACEAE								
<i>Celtis schippii</i>	X	X		X	X			
VERBENACEAE								
<i>Aegiphila anomala</i>	X				X			
<i>Aegiphila panamensis</i>				X	X			
<i>Vitex cooperi</i>	X			X	X			
VIOLACEAE								
<i>Gloeospermum blakeanum</i>	X	X	X	X	X			
<i>Hybanthus denticulatus</i>	X			X	X			
<i>Rinorea dasyadena</i>	X			X	X			
VOCHYSIACEAE								
<i>Vochysia ferruginea</i>	X			X	X			
<i>Vochysia hondurensis</i>	X				X	X		
Total of Families 71	Total of species: 256							

UCA=Upper Catchment Area ;MCA=Middle Catchment Area;LCA=Lower Catchment Area

bpot= Tropical Evergreen Ombrophilous Lowlands Forests <500m

bpots=Tropical Evergreen Ombrophilous Submontane Forest

bpotm=Tropical Evergreen Ombrophilous Montane Forest

rast=Shrublands or Productive System with Significant Natural Woody or Spontaneous Vegetation (10-50%)

past=Pasture land or Productive System with Significant Natural Woody or Spontaneous Vegetation (<10%)

Table A4.1-2
List of Species and According to Categories of Conservation

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM*	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
ACANTHACEAE								
	<i>Aphelandra deppeana</i>							X
	<i>Aphelandra B456panamensis</i>		LRnT					X
	<i>Aphelandra sinclairiana</i>					X		
	<i>Aphelandra campanensis</i>				EN			X
	<i>Trichanthera gigantea</i>					X		
ACTINIDIACEAE								
	<i>Saurauia yasicae</i>	VU	LRnT			X		
ANACARDIACEAE								
	<i>Anacardium excelsum</i>					X	X	X
	<i>Astronium graveolens</i>	VU				X		
	<i>Mangifera indica</i>				CU	X		
	<i>Mosquitoxylum jamaicense</i>							X
	<i>Spondias cytherea</i>				CU			X
	<i>Spondias mombin</i>				CU	X		
	<i>Spondias radlkoferi</i>					X		
	<i>Tapirira guianensis</i>					X	X	
ANNONACEAE								
	<i>Anaxagorea panamensis</i>	VU				X	X	
	<i>Anaxagorea alleni</i>						X	
	<i>Annona acuminata</i>		VU			X		
	<i>Annona hayesii</i>		VU			X	X	
	<i>Annona purpurea</i>							
	<i>Annona spraguei</i>	VU	END			X	X	X
	<i>Annona glabra</i>					X		
	<i>Crematosperma panamense</i>	VU				X		
	<i>Cymbopetalum lanugipetalum</i>					X		
	<i>Desmopsis panamensis</i>		LRnT			X		
	<i>Duguetia panamensis</i>	VU	LRnT				X	
	<i>Guatteria amplifolia</i>					X		
	<i>Guatteria dumetorum</i>					X		
	<i>Guatteria sessilicarpa</i>		EN				X	
	<i>Malmea garwood</i>					X		
	<i>Oxandra longipetala</i>		VU			X		
	<i>Oxandra panamensis</i>		VU				X	
	<i>Rollinia pittieri</i>						X	
	<i>Unonopsis floribunda</i>						X	
	<i>Unonopsis panamensis</i>		END			X		X
	<i>Unonopsis pittieri</i>					X		X
	<i>Unonopsis theobromifolia</i>						X	
	<i>Xylopia bocatorena</i>					X		
	<i>Xylopia frutescens</i>						X	X
	<i>Xylopia macrantha</i>					X		
	<i>Xylopia aromatica</i>		LRnT					X
APOCYNACEAE								
	<i>Aspidosperma cruenta</i>		LRnT			X	X	
	<i>Aspidosperma megalocarpon</i>					X		
	<i>Lacmellea panamensis</i>					X		
	<i>Macoubea sprucei</i>						X	X
	<i>Malouetia guatemalensis</i>						X	
	<i>Plumeria acutifolia</i>						X	
	<i>Rauvolfia littoralis</i>					X		X
	<i>Stemmadenia alfari</i>					X		X
	<i>Stemmadenia grandiflora</i>							X
	<i>Tabernaemontana arborea</i>					X	X	

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Tabernaemontana sananho</i>							X
	<i>Tabernaemontana undulata</i>						X	
	<i>Theveti ahouai</i>					X		
ARALIACEAE								
	<i>Dendropanax arboreus</i>					X	X	X
	<i>Dendropanax sessiliflorus</i>		VU				X	
	<i>Dendropanax arboreus</i>					X	X	X
	<i>Oreopanax capitatus</i>		VU			X		
	<i>Schefflera morototoni</i>					X		
	<i>Sciadodendron excelsum</i>							X
ARECACEAE								
	<i>Astrocaryum alatum</i>	VU	LRnT					X
	<i>Astrocaryum standleyanum</i>		VU			X	X	X
	<i>Attalea butyraceae</i>		LRnT			X		
	<i>Bactris barronis</i>		END		EN	X	X	X
	<i>Bactris coloniata</i>					X		
	<i>Bactris coloradonis</i>		LRnT			X		X
	<i>Bactris major</i>					X	X	
	<i>Bactris panamensis</i>				EN	X		
	<i>Calypstrogyne costatifrons</i>	VU	VU					X
	<i>Chamaedorea tepejilote</i>		LRnT			X		
	<i>Cryosophila warscewiczii</i>					X	X	X
	<i>Elaeis oleifera</i>		LRnT			X		
	<i>Euterpe precatoria</i>					X		X
	<i>Geonoma congesta</i>					X		
	<i>Geonoma cuneata</i>	VU				X		X
	<i>Geonoma interrupta</i>		LRnT			X		
	<i>Geonoma deversa</i>					X		X
	<i>Iriartea deltoidea</i>						X	X
	<i>Oenocarpus mapora</i>	VU	VU			X	X	
	<i>Phytelephas seemannii</i>	END	END			X		
	<i>Socratea exorrhiza</i>	VU				X	X	X
	<i>Synechanthus warscewiczianus</i>	VU				X		
	<i>Welfia regia</i>		LRnT				X	X
	<i>Wettinia panamensis</i>	VU					X	
ASTERACEAE								
	<i>Koanophyllon wetmorei</i>		VU			X		X
	<i>Verbesina lanata</i>						X	X
BIGNONIACEAE								
	<i>Amphitecna isthmica</i>		R					X
	<i>Amphitecna latifolia</i>						X	
	<i>Amphitecna spathicalyx</i>		END		EN			X
	<i>Bourreria costaricensis</i>						X	
	<i>Godmania aesculifolia</i>		LRnT					X
	<i>Jacaranda caucana</i>		VU				X	
	<i>Jacaranda copaia</i>					X		X
	<i>Parmentiera cereifera</i>		END, EN			X		
	<i>Tabebuia guayacan</i>	VU	VU			X	X	
	<i>Tabebuia rosea</i>	VU	VU			X		X
	<i>Tabebuia ochracea</i>					X		
BOMBACACEAE								
	<i>Cavanillesia platanifolia</i>		LRnT			X		
	<i>Ceiba pentandra</i>					X		X
	<i>Gyranthera darienensis</i>		EN				X	
	<i>Matisia exalata</i>		EN				X	
	<i>Matisia jefensis</i>		EN				X	X
	<i>Ochroma pyramidale</i>					X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Fissicalyx fendleri</i>		LRnT			X		X
	<i>Gliricidia sepium</i>		LRnT		CU	X		
	<i>Lonchocarpus latifolius</i>					X	X	
	<i>Lonchocarpus velutinus</i>					X		X
	<i>Myrospermum frutescens</i>					X		
	<i>Ormosia amazonica</i>		VU			X		X
	<i>Ormosia croatii</i>					X		
	<i>Ormosia macrocalyx</i>					X		
	<i>Ormosia panamensis</i>		LRnT			X		
	<i>Platymiscium pinnatum</i>	VU	VU			X		
	<i>Platypodium elegans</i>		LRnT			X		
	<i>Pterocarpus belizensis</i>		LRnT			X		
	<i>Pterocarpus rohrii</i>					X		
	<i>Pterocarpus officinalis</i>					X		X
	<i>Vatairea lundellii</i>						X	
FABACEAE:MIMOSOIDEAE.								
	<i>Abarema barbouriana</i>		EN			X	X	X
	<i>Abarema macradenium</i>		LRnT			X	X	
	<i>Acacia melanoceras</i>					X	X	X
	<i>Acacia riparia</i>					X		
	<i>Albizia adinocephala</i>				CU	X		X
	<i>Albizia procera</i>				CU		X	
	<i>Cojoba rufescens</i>					X		X
	<i>Enterolobium cyclocarpum</i>					X	X	X
	<i>Enterolobium schomburgkii</i>							X
	<i>Inga cocleensis</i>		LRnT			X		
	<i>Inga laurina</i>						X	X
	<i>Inga goldmanii</i>					X		
	<i>Inga hayesii</i>	VU					X	
	<i>Inga mucuna</i>	VU				X		
	<i>Inga marginata</i>					X		
	<i>Inga oerstediana</i>					X		
	<i>Inga pauciflora</i>	VU	END					X
	<i>Inga pezizifera</i>					X	X	
	<i>Inga portobellensis</i>		END				X	
	<i>Inga punctata</i>					X		
	<i>Inga nobilis</i>					X		
	<i>Inga ruiziana</i>					X		
	<i>Inga acuminata</i>					X		
	<i>Inga sapindoides</i>					X		
	<i>Inga sertulifera</i>							X
	<i>Inga spectabilis</i>					X		
	<i>Inga thibaudiana</i>						X	
	<i>Inga umbellifera</i>					X		
	<i>Inga vera</i>					X		
	<i>Inga multijuga</i>					X		
	<i>Leucaena multicapitula</i>				CU	X		
	<i>Marmaroxylon dinizii</i>					X		
	<i>Pithecellobium hymeneaifolium</i>							X
	<i>Pseudosamanea guachapele</i>					X		X
	<i>Samanea saman</i>		LRnt				X	X
FLACOURTIACEAE								
	<i>Banara guianensis</i>					X		X
	<i>Casearia aculeata</i>					X		
	<i>Casearia arborea</i>					X	X	X
	<i>Casearia commersoniana</i>					X	X	X
	<i>Casearia guianensis</i>					X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ^a	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Casearia sylvestris</i>					X		X
	<i>Casearia coronata</i>					X		
	<i>Hasseltia floribunda</i>					X		X
	<i>Lacistema aggregatum</i>					X		
	<i>Laetia procera</i>					X		
	<i>Laetia hamnia</i>					X	X	X
	<i>Lindackeria laurina</i>					X		
	<i>Lozania pittieri</i>					X		
	<i>Mayna grandifolia</i>						X	X
	<i>Prockia crucis</i>							X
	<i>Ryania speciosa</i>							X
	<i>Tetrathylacium johansenii</i>					X	X	
	<i>Xylosma oligandrum</i>					X		
	<i>Xylosma chloranthum</i>					X		
	<i>Zuelania guidonia</i>					X		
HERNANDIACEAE								
	<i>Hernandia didymantha</i>							X
	<i>Hernandia stenura</i>		LRnt				X	X
HIPPOCASTANACEAE								
	<i>Billia columbianum</i>						X	X
HIPPOCRATEACEAE								
	<i>Cheiloclinium cognatum</i>						X	X
	<i>Salacia gigantea</i>						X	
HUMIRIACEAE								
	<i>Humiriastrum diguense</i>	VU				X	X	X
	<i>Sacoglottis ovicearpa</i>	VU					X	
	<i>Sacoglottis trichogyna</i>	VU					X	
	<i>Vantanea depleta</i>	VU				X	X	
ICACINACEAE								
	<i>Calatola costaricensis</i>							X
	<i>Discophora guianensis</i>					X		
LAURACEAE								
	<i>Beilschmiedia pendula</i>					X		X
	<i>Caryodaphnopsis burgeri</i>					X		
	<i>Nectandra cissiflora</i>					X		
	<i>Nectandra lineata</i>					X		
	<i>Nectandra martinicensis</i>							X
	<i>Nectandra purpurea</i>					X		
	<i>Nectandra cuspidata</i>					X		
	<i>Ocotea cernua</i>					X		X
	<i>Ocotea dendrodaphne</i>					X		X
	<i>Ocotea endresiana</i>						X	
	<i>Ocotea ira</i>		LRnT			X	X	
	<i>Ocotea oblonga</i>					X		
	<i>Ocotea paulii</i>							X
	<i>Ocotea puberula</i>					X		
	<i>Ocotea rubrinervis</i>						X	
	<i>Ocotea veraguensis</i>						X	
	<i>Ocotea whitei</i>					X		X
	<i>Phoebe cinnamomifolia</i>		LRnT			X		X
LECYTHIDACEAE								
	<i>Couratari guianensis</i>						X	
	<i>Eschweilera amplexifolia</i>		END				X	
	<i>Eschweilera calyculata</i>						X	X
	<i>Eschweilera jacquelyniae</i>	VU					X	
	<i>Eschweilera panamensis</i>						X	
	<i>Eschweilera pittieri</i>						X	

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Grias cauliflora</i>					X		
	<i>Gustavia dubia</i>						X	X
	<i>Gustavia fosteri</i>		VU,END			X		
	<i>Gustavia superba</i>					X		X
	<i>Lecythis ampla</i>						X	
LEPIDOBOTRYACEAE								
	<i>Ruptilocarpon caracolito</i>		VU				X	
LYTHRACEAE								
	<i>Lafoensia puniceifolia</i>					X		
MAGNOLIACEAE								
	<i>Talauma gloriensis</i>						X	
	<i>Talauma sambuensis</i>		EN, END				X	
MALPHIGIACEAE								
	<i>Byrsonima nemoralis</i>		EN				X	
	<i>Bunchosia odorata</i>		LRnT					
	<i>Bunchosia cornifolia</i>					X		
	<i>Byrsonima crassifolia</i>				CU	X		X
	<i>Byrsonima spicata</i>					X		X
	<i>Malpighia romeroana</i>					X		
	<i>Spachea membranacea</i>		END			X		
	<i>Spachea correae</i>		VU			X		
MALVACEAE								
	<i>Hampea appendiculata</i>		VU			X		X
	<i>Lopimia dasypetala</i>							X
MELASTOMATACEAE								
	<i>Bellucia pentamera</i>							X
	<i>Clidemia densiflora</i>					X		X
	<i>Clidemia dentata</i>					X		X
	<i>Clidemia octona</i>					X		X
	<i>Clidemia septuplinerva</i>					X		X
	<i>Conostegia bracteata</i>		LRnT			X		X
	<i>Conostegia cinnamomea</i>		LRnT			X		
	<i>Conostegia rufescens</i>							X
	<i>Conostegia xalapensis</i>						X	X
	<i>Henriettella fascicularis</i>							X
	<i>Henriettella succosa</i>					X		
	<i>Henriettella trachyphylla</i>						X	
	<i>Leandra dichotoma</i>					X		
	<i>Leandra granatensis</i>					X		
	<i>Miconia affinis</i>					X		X
	<i>Miconia argentea</i>					X		X
	<i>Miconia centronioides</i>						X	
	<i>Miconia curvipetiolata</i>		VU					X
	<i>Miconia dorsiloba</i>		LRnT					X
	<i>Miconia elata</i>					X		X
	<i>Miconia holosericea</i>							X
	<i>Miconia hondurensis</i>					X		
	<i>Miconia impetolaris</i>					X		X
	<i>Miconia lacera</i>					X		X
	<i>Miconia ligulata</i>					X		
	<i>Miconia lonchophylla</i>					X		
	<i>Miconia minutiflora</i>		VU			X		X
	<i>Miconia nervosa</i>					X		X
	<i>Miconia prasina</i>					X		X
	<i>Miconia reducens</i>						X	
	<i>Miconia serrulata</i>					X		
	<i>Miconia shattuckii</i>		LRnT			X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Miconia simplex</i>					X		
	<i>Mouriri completens</i>						X	
	<i>Mouriri myrtilloides</i>					X		
	<i>Mouriri panamensis</i>		VU				X	
	<i>Tococa acuminata</i>		VU				X	
MELIACEAE								
	<i>Carapa guianensis</i>	VU	LRnT			X	X	X
	<i>Cederla odorata</i>	VU				X		
	<i>Guarea glabra</i>					X		
	<i>Guarea grandifolia</i>					X		X
	<i>Guarea guidonia</i>					X		
	<i>Guarea kunthiana</i>						X	
	<i>Guarea pterorhachis</i>					X		
	<i>Guarea rhopalocarpa</i>						X	
	<i>Swietenia macrophylla</i>	VU	VU				X	X
	<i>Trichilia hirta</i>					X		
	<i>Trichilia pallida</i>					X		
MELIACEAE								
	<i>Trichilia pleeana</i>					X		
	<i>Trichilia quadrijuga</i>						X	
	<i>Trichilia martiana</i>	VU					X	
	<i>Trichilia tuberculata</i>	VU				X		X
MONIMIACEAE								
	<i>Mollinedia darienensis</i>	VU	END			X		
	<i>Mollinedia pinchotiana</i>							X
	<i>Siparuna guianensis</i>	VU				X		
	<i>Siparuna pauciflora</i>	VU				X		
	<i>Siparuna tonduzii</i>							X
MORACEAE								
	<i>Artocarpus altilis</i>				CU	X		
	<i>Brosimum alicastrum</i>					X		
	<i>Brosimum costaricanum</i>	VU				X		
	<i>Brosimum guianense</i>	VU				X	X	X
	<i>Brosimum lactescens</i>						X	
	<i>Brosimum utile</i>	VU				X	X	
	<i>Castilla elastica</i>					X		X
	<i>Chlorophora tinctoria</i>	VU				X		
	<i>Ficus brevibracteata</i>						X	
	<i>Ficus bullenei</i>	VU				X		
	<i>Ficus colubrinae</i>					X		
	<i>Ficus costaricana</i>					X		
	<i>Ficus citrifolia</i>					X		
	<i>Ficus insipida</i>					X		
	<i>Ficus maxima</i>					X		
	<i>Ficus nymphaeifolia</i>					X		X
	<i>Ficus obtusifolia</i>					X		
	<i>Ficus pertusa</i>					X		
	<i>Ficus petenesis</i>							X
	<i>Ficus popenoei</i>					X		
	<i>Ficus tonduzii</i>					X		
	<i>Ficus trigonata</i>					X		
	<i>Ficus yoponensis</i>					X		
	<i>Ficus dugandii</i>		LRnT			X		
	<i>Ficus perforata</i>					X		
	<i>Ficus paraensis</i>					X		
	<i>Helicostylis towarensis</i>							X
	<i>Maquira costaricana</i>					X		X

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Minuartia guianensis</i>						X	
	<i>Chionanthus panamensis</i>							X
PICRAMNIACEAE								
	<i>Picramnia latifolia</i>					X	X	X
PIPERACEAE								
	<i>Piper arboreum</i>					X		X
	<i>Piper augustum</i>					X		
	<i>Piper aequale</i>					X		
	<i>Piper auritum</i>					X		
	<i>Piper colonense</i>					X		X
	<i>Piper schiedeana</i>						X	
	<i>Piper cordulatum</i>		LRnT					X
	<i>Piper culebranum</i>	VU						X
	<i>Piper grande</i>		LRnT					X
	<i>Piper hispidum</i>		LRnT					X
	<i>Piper imperiale</i>		LRnT			X		
	<i>Piper aequale</i>	VU				X		
	<i>Piper reticulatum</i>					X		
POLYGONACEAE								
	<i>Coccoloba acapulcensis</i>					X		
	<i>Coccoloba ascendens</i>					X		X
	<i>Coccoloba coronata</i>					X		
	<i>Coccoloba manzanillensis</i>	VU	END			X		X
	<i>Coccoloba obovata</i>					X		
	<i>Coccoloba acuminata</i>					X		
	<i>Triplaris umingiana</i>					X		X
PROTEACEAE								
	<i>Panopsis suaveolens</i>							X
	<i>Roupala montana</i>					X		X
QUIINACEAE								
	<i>Lacunaria panamensis</i>		END				X	
	<i>Quiina schippii</i>					X	X	X
RHAMNACEAE								
	<i>Colubrina glandulosa</i>					X		
	<i>Colubrina heteroneura</i>					X		
RHIZOPHORACEAE								
	<i>Cassipourea elliptica</i>					X	X	X
RUBIACEAE								
	<i>Alibertia edulis</i>					X	X	X
	<i>Alseis blackiana</i>		R			X	X	X
	<i>Amaioua corymbosa</i>		END			X	X	X
	<i>Amaioua magnicarpa</i>		VU		EN		X	
	<i>Antirrhoea trichantha</i>	VU	END			X		X
	<i>Appunia seibertii</i>	VU				X		
	<i>Bertiera guianensis</i>					X		
	<i>Borojoa panamensis</i>		LRnT			X		
	<i>Calycophyllum candidissimum</i>					X		
	<i>Chimarrhis parviflora</i>					X		X
	<i>Chomelia spinosa</i>							X
	<i>Coutarea hexandra</i>							X
	<i>Elaeagia nitidifolia</i>						X	
	<i>Faramea luteovirens</i>					X		X
	<i>Faramea multiflora</i>	VU				X		
	<i>Faramea occidentalis</i>					X		
	<i>Genipa americana</i>		LRnT			X		
	<i>Genipa williamsii</i>							X

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Gonzalagunia rosea</i>					X		
	<i>Guettarda foliacea</i>					X		X
	<i>Hamelia axillaris</i>					X		
	<i>Hamelia patens</i>					X		X
	<i>Isertia haenkeana</i>					X		
	<i>Isertia laevis</i>					X	X	
	<i>Ixora floribunda</i>					X		X
	<i>Macrocnemum roseum</i>					X	X	X
	<i>Palicourea guianensis</i>		LRnT			X		X
	<i>Palicourea triphylla</i>	VU						X
	<i>Pentagonia macrophylla</i>					X	X	X
	<i>Pentagonia parvifolia</i>						X	
	<i>Pogonopus speciosus</i>					X		
	<i>Posoqueria latifolia</i>					X		
	<i>Psychotria acuminata</i>							X
	<i>Psychotria allenii</i>						X	X
	<i>Psychotria brachiata</i>					X		X
	<i>Psychotria capitata</i>					X		X
	<i>Psychotria chagensis</i>					X		X
	<i>Psychotria deflexa</i>					X		X
	<i>Psychotria elata</i>					X		X
	<i>Psychotria erecta</i>					X		
	<i>Psychotria graciliflora</i>					X		
	<i>Psychotria tenuifolia</i>					X		
	<i>Psychotria grandis</i>					X		
	<i>Psychotria horizontalis</i>					X		X
	<i>Psychotria limonensis</i>					X		
	<i>Psychotria luxurians</i>						X	X
	<i>Psychotria marginata</i>					X		X
	<i>Psychotria micrantha</i>							X
	<i>Psychotria pittieri</i>					X		
	<i>Psychotria poeppigiana</i>					X		X
	<i>Psychotria pubescens</i>							X
	<i>Psychotria racemosa</i>							X
	<i>Psychotria suerrensii</i>					X		X
	<i>Psychotria brachybotrya</i>							X
	<i>Psychotria carthagenensis</i>					X		X
	<i>Randia armata</i>					X		
	<i>Randia grandifolia</i>	VU				X		
	<i>Rosenbergiodendron formosum</i>					X		
	<i>Rudgea cornifolia</i>					X		
	<i>Rudgea pittieri</i>	VU					X	
	<i>Tocoyena pittieri</i>					X		
	<i>Warszewiczia coccinea</i>							X
RUTACEAE								
	<i>Citrus sinensis</i>				CU			X
	<i>Hortia colombiana</i>	VU					X	
	<i>Zanthoxylum ekmanii</i>	VU				X		
	<i>Zanthoxylum panamense</i>		LRnT			X		
	<i>Zanthoxylum juniperinum</i>					X		
	<i>Zanthoxylum setulosum</i>		LRnT			X		
SABIACEAE								
	<i>Meliosma glabrata</i>		LRnT			X		
SABIACEAE								
	<i>Meliosma idiopoda</i>						X	
	<i>Meliosma occidentalis</i>							X

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Meliosma subcordata</i>						X	
SAPINDACEAE								
	<i>Allophyllus psilospermus</i>					X		X
	<i>Cupania cinerea</i>							X
	<i>Cupania hirsuta</i>						X	
	<i>Cupania latifolia</i>					X		
	<i>Cupania rufescens</i>							X
	<i>Cupania scrobiculata</i>					X		
	<i>Cupania sylvatica</i>					X	X	X
	<i>Cupania latifolia</i>					X		
	<i>Matayba apetala</i>	END				X	X	
	<i>Matayba glaberrima</i>							
	<i>Matayba scrobiculata</i>					X		
	<i>Sapindus saponaria</i>						X	
	<i>Talisia nervosa</i>					X		
	<i>Talisia princeps</i>					X		
SAPOTACEAE								
	<i>Chrysophyllum argenteum</i>					X		
	<i>Chrysophyllum cainito</i>				CU	X		
	<i>Manilkara bidentata</i>					X	X	
	<i>Manilkara zapota</i>				CU	X		
	<i>Pouteria buenaventurensis</i>		LRnT					X
	<i>Pouteria campechiana</i>						X	
	<i>Pouteria cuspidata</i>						X	
	<i>Pouteria fossicola</i>					X		
	<i>Pouteria leptopedicellata</i>	END					X	
	<i>Pouteria multiflora</i>							X
	<i>Pouteria reticulata</i>					X		
	<i>Pouteria stipitata</i>					X		X
	<i>Pouteria torta</i>		LRnT				X	
	<i>Pouteria sapota</i>				CU	X		
	<i>Pouteria austin-smithii</i>						X	
	<i>Pouteria calistophylla</i>	END					X	
	<i>Pouteria foveolata</i>						X	
SIMAROUBACEAE								
	<i>Quassia amara</i>					X		
	<i>Simarouba amara</i>					X		X
SOLANACEAE								
	<i>Cestrum megalophyllum</i>					X		X
	<i>Cyphomandra hartwegii</i>							X
	<i>Solanum arboreum</i>					X		X
	<i>Solanum asperum</i>						X	
	<i>Solanum hayesii</i>							X
	<i>Solanum steyemarkii</i>					X	X	
	<i>Solanum nudum</i>					X		
	<i>Solanum rudepannum</i>					X		
STAPHYLEACEAE								
	<i>Turpinia occidentalis</i>					X		X
STERCULIACEAE								
	<i>Guazuma ulmifolia</i>					X		
	<i>Herrania purpurea</i>					X		
	<i>Sterculia apetala</i>					X	X	X
	<i>Sterculia costaricana</i>						X	
	<i>Sterculia glauca</i>						X	X
	<i>Sterculia recordiana</i>					X		X
	<i>Theobroma bernoullii</i>		LRnT			X	X	
	<i>Theobroma cacao</i>				CU	X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
THEACEAE	<i>Ternstroemia tepezapote</i>					X	X	
THEOPHRASTACEAE	<i>Clavija costaricana</i>		LRnT			X		
	<i>Clavija mezii</i>						X	
THYMELEACEAE	<i>Daphnopsis correae</i>				EN		X	X
TILIACEAE	<i>Apeiba aspera</i>					X	X	X
	<i>Apeiba tibourbou</i>					X	X	
	<i>Heliocarpus popayanensis</i>					X		X
	<i>Luehea seemanii</i>					X		
	<i>Luehea speciosa</i>					X		X
	<i>Mortoniadendron anisophyllum</i>		VU			X		X
	<i>Trichospermum galeottii</i>					X		X
TURNERACEAE	<i>Turnera panamensis</i>		VU			X		
ULMACEAE	<i>Celtis schippii</i>	VU				X		X
	<i>Trema micrantha</i>					X		
URTICACEAE	<i>Myriocarpa longipes</i>					X		
	<i>Urera baccifera</i>					X		
	<i>Urera caracasana</i>							X
VERBENACEAE	<i>Aegiphila anomala</i>							X
	<i>Aegiphila panamensis</i>	VU				X	X	X
	<i>Vitex cooperi</i>		EN					X
	<i>Vitex cymosa</i>						X	
VIOLACEAE	<i>Gloespermum sphaerocarpum</i>						X	
	<i>Hybanthus prunifolius</i>					X		X
	<i>Leonia glycyarpa</i>						X	
	<i>Rinorea brachythrix</i>	END			EN			
	<i>Rinorea dasyadena</i>						X	
	<i>Rinorea lindeniana</i>						X	
	<i>Rinorea squamata</i>					X		X
	<i>Rinorea sylvatica</i>					X		
VOCHYSIACEAE	<i>Erismia blancoa</i>	VU					X	
	<i>Qualea polychroma</i>	VU					X	
	<i>Vochysia hondurensis</i>						X	X
	<i>Vochysia ferruginea</i>					X		
Total of Families: 82								
Total of species: 681						0	0	0
ANAM: 6 species endangered; 77 Vulnerable.								
UICN: 19 species endangered; 89 near threatened; 32 Vulnerables; 2 Rare species								

VU= Vulnerable; LRnt= near threatened (UICN); CU= Cultivated ; EN=Endemic; END= Endangered; R: Rare

CHECKLIST: Flora of Panamá Check List.

ANAM: Environmental National Authority

Source : Panama Canal Watershed Monitoring Project e (1999); Center for Tropical Forest Science (2003)

Louis Berger (1999).

Tabla A4.1-3
Aquatic Macrophytes for Catchment Areas

Family/Specie	CATCHMENT AREAS			HABIT			
	Ciri	Lagarto	Alhajuela				
ALISMATACEAE							
<i>Sagittaria platyphylla</i>		M, L					Sum
ARACEAE							
<i>Montrichardia arborescens</i>	M, L	M, L				Mar	
<i>Pistia stratiotes</i>		M, L			Fl		
<i>Spatiphyllum friedrichsthalii</i>		U, M, L				Mar	
<i>Spatiphyllum quindiuense</i>		U, M				Mar	
ASTERACEAE							
<i>Ambrosia cumanensis</i>			Li			Mar	
AZOLLACEAE							
<i>Azolla sp.</i>	M, L	M, L	Li		Fl		
CABOMBACEAE							
<i>Cabomba piauhyensis</i>	M, L	U, M					Sum
CERATOPHYLLACEAE							
<i>Ceratophyllum demersum</i>	M, L	M, L					Sum
CHARACEAE							
<i>Chara sp.</i>	M, L	M, L	Li				Sum
COMMELINACEAE							
<i>Commelina elegans</i>	M, L	U, M, L	Li			Mar	
CYCLANTHACEAE							
<i>Dicranopigyum crinitum</i>		U, M					Mar
CYPERACEAE							
<i>Cyperus giganteus</i>	M, L	U, M, L				Mar	
<i>Eleocharis elegans</i>	M, L	U, M			Em		
<i>Fuirena umbellata</i>	M, L	U, M, L				Mar	
FABACEAE							
<i>Mimosa pigra</i>			Li			Mar	
<i>Senna alata</i>	M, L		Li			Mar	
<i>Sesbania emerus</i>	M, L		Li			Mar	
HYDROCHARITACEAE							
<i>Hydrilla verticillata</i>	M, L	M, L	Li				Sum
JUNCACEAE							
<i>Juncus sr</i>	M, L	U, M, L			Em		
LEMNACEAE							
<i>Lemna minor</i>	M, L	M	Li		Fl		
LENTIBULARIACEAE							
<i>Utricularia sp.</i>	M, L	U, M			Fl		Sum
LIMNOCAHARITACEAE							
<i>Limnocharis flava</i>	M, L	U, M, L			Em		
MARSILEACEAE							
<i>Marsilea policarpa</i>	M, L	U, M			Em		
MAYACACEAE							
<i>Mayaca sp.</i>	M, L	U, M					Sum
MENYANTHACEAE							
<i>Nymphoides indica</i>	M, L	U, M			Em		

Familia/Especie	CATCHMENT AREAS			HABIT			
	Ciri	Lagarto	AIUajuela				
NYMPHAEACEAE							
<i>Nymphaea ampla</i>		U, M		Em			
<i>Nymphaea</i> sp.	M, L	U, M		Em			
ONAGRACEAE							
<i>Jussiaea natans</i>	M, L	U, M, L	Li			Mar	
<i>Ludwigia helminthorrhiza</i>		U, M, L				Mar	
POACEAE							
<i>Gynerium sagittatum</i>	M, L	U, M, L	Li			Mar	
<i>Hymenachne amplexicaulis</i>	M, L	U, M, L	Li			Mar	
<i>Luziola subintegra</i>	M, L	U, M, L				Mar	
<i>Panicum grande</i>	M, L	U, M, L				Mar	
<i>Panicum maximum</i>	M, L	U, M, L				Mar	
<i>Panicum purpurascens</i>	M, L	U, M, L	Li			Mar	
<i>Paspalidium geminatum</i>	M, L	U, M, L				Mar	
<i>Paspalum repens</i>	M, L	U, M, L	Li			Mar	
PODOSTEMACEAE							
<i>Maratrum</i> sp.							
POLYGONACEAE							
<i>Polygonum acuminatum</i>	M, L	U, M, L	Li			Mar	
<i>Polygonum hypsidum</i>	M, L	U, M, L	Li			Mar	
<i>Polygonum punctatum</i>	M, L	U, M, L				Mar	
PONTEDERIACEAE							
<i>Eichhornia azurea</i>	M, L	U, M, L		Em			
<i>Eichhornia crassipes</i>	M, L	U, M, L			Fl		
<i>Pontederia rotundifolia</i>	M, L	U, M, L				Mar	
PTERIDACEAE							
<i>Acrostichum aureum</i>	M, L	U, M, L				Mar	
<i>Ceratopteris pteridioides</i>			Li		Fl		
SALVINEACEAE							
<i>Salvinia</i> sp.	M, L	U, M, L			Fl		
TYPHACEAE							
<i>Typha</i> sp.	M, L	U, M, L		Em		Mar	

Source: Lois Berger (1999); Biological Inventory of the Panama Canal Watershed (1994)

U=Upper catchment area ;M=Middle catchment area; L=Lower catchment area
Li=littoral band; Em=Emergent; Fl=Floating; Mar=Marginal;Sum=Sumerged

TableA4.1-4. Richness of Species of Mammals and his Distribution in Three Sections (Upper, Middle and lower) of the Catchment Area of the Ciri Grande River. Compared with the species of Indio River.

TAXON		Catchment Area of Ciri Grande River			Indio River
		Upper	Middle	Lower	
CLASS MAMMALIA					
DIDELPHIMORPHIA					
DIDELPHIDAE	<i>Didelphis marsupialis</i>	X	X	X	X
	<i>Metachirus nudicaudatus</i>	X			
	<i>Philander opossum</i>	X			
VERMILINGUA					
MYRMECOPHAGIDAE	<i>Cyclopes didactylus</i>	X			
	<i>Tamandua mexicana</i>	X		X	X
PHYLLOPHAGA					
BRADYPODIDAE	<i>Bradypus variegatus</i>	X	X	X	X
MEGALONYCHIDAE	<i>Choloepus hoffmanni</i>	X			
CINGULATA					
DASYPODIDAE	<i>Dasybus novemcinctus</i>	X	X	X	X
CHIROPTERA					
EMBALLONURIDAE	<i>Rynchonycteris naso</i>			X	
NOCTILIONIDAE	<i>Noctilio albiventris</i>			X	
	<i>Noctilio leporinus</i>			X	
MORMOOPIDAE	<i>Pteronotus gymnotus</i>	X			
	<i>Pteronotus parnellii</i>		X	X	X
PHYLLOSTOMIDAE	<i>Micronycteris minuta</i>			X	
	<i>Micronycteris microtis</i>	X			
	<i>Lampronnycteris branchyotis</i>	X			
	<i>Phyllostomus hastatus</i>	X	X	X	X
	<i>Phyllostomus discolor</i>	X	X		X
	<i>Tonatia silvicola</i>	X	X	X	X
	<i>Tonatia brasiliense</i>	X			X
	<i>Trachops cirrhosus</i>	X			
	<i>Glossophaga comissarisi</i>	X	X	X	X
	<i>Glossophaga soricina</i>	X	X	X	X
	<i>Lonchophylla robusta</i>	X	X	X	X
	<i>Linchonycteris obscura</i>	X			
	<i>Carollia castanea</i>	X	X	X	X
	<i>Carollia perspicillata</i>	X	X	X	X
	<i>Carollia brevicauda</i>	X			X
	<i>Sturnira lilium</i>	X			X
	<i>Uroderma bilobatum</i>		X	X	X
	<i>Platyrrhinus helleri</i>	X	X	X	X
	<i>Vampyressa pusilla</i>	X	X	X	X
	<i>Chiroderma salvini</i>	X			X
	<i>Artibeus jamaicensis</i>	X	X	X	X
	<i>Artibeus intermedius</i>		X	X	X
	<i>Artibeus lituratus</i>	X	X	X	X
	<i>Artibeus phaeotis</i>	X	X	X	X
	<i>Artibeus watsoni</i>	X	X	X	X
	<i>Enchisthenes hartii</i>	X			X
	<i>Desmodus rotundus</i>	X	X	X	X
VESPERTILIONIDAE	<i>Myotis riparius</i>	X			
MOLOSSIDAE	<i>Promops centralis</i>		X		X

TAXON		Catchment Area of Ciri Grande River			Indio River
		Upper	Middle	Lower	
PRIMATES					
CEBIDAE	<i>Aotus lemurinus</i>		X		X
	<i>Saguinus geoffroyi</i>	X	X	X	X
CARNIVORA					
PROCYONIDAE	<i>Bassaricyon gabbii</i>	X			
	<i>Nasua narica</i>	X			
	<i>Potos flavus</i>	X			
	<i>Procyon lotor</i>	X			X
MUSTELIDAE					
	<i>Conepatus semistriatus</i>	X	X		X
	<i>Eira barbara</i>	X			
	<i>Galictis vittata</i>	X			
	<i>Lontra longicaudis</i>	X	X	X	X
FELIDAE					
	<i>Herpailurus yaguaroundi</i>	X			
	<i>Leopardus pardalis</i>	X	X		X
	<i>Leopardus wiedii</i>	X			
	<i>Puma concolor</i>				X
CANIDAE	<i>Urocyon cinereoargenteus</i>			X	
ARTIODACTYLA					
TAYASSUIDAE	<i>Tayassu tajacu</i>	X			X
CERVIDAE					
	<i>Mazama americana</i>	X			
	<i>Odocoileus virginianus</i>	X	X	X	X
RODENTIA					
SCIURIDAE	<i>Microsciurus mimulus</i>	X			X
	<i>Sciurus granatensis</i>	X	X		X
	<i>Sciurus variegatoides</i>	X	X	X	X
AGOUTIDAE	<i>Agouti paca</i>	X	X		X
DASYPROCTIDAE	<i>Dasyprocta punctata</i>	X			X
HYDROCHAERIDAE	<i>Hydrochaeris isthmus</i>		X	X	X
ECHIMYIDAE					
	<i>Haplomys gymnurus</i>	X			
	<i>Proechimys semispinosus</i>	X	X	X	X
ERETHIZONTIDAE	<i>Coendou rothschildi</i>	X			X
HETEROMYIDAE	<i>Heteromys desmarestianus</i>	X			X
MURIDAE					
	<i>Melanomys caliginosus</i>	X			X
	<i>Rattus rattus</i>	X			X
	<i>Sigmodontomys alfari</i>	X			X
	<i>Tylomys watsoni</i>	X			
LAGOMORPHA					
LEPORIDAE	<i>Sylvilagus brasiliensis</i>	X			X
Total	Species for Ciri Grande = 74	63	33	32	50

Source: Tejera et al. 1995; TLBG, UP y STRI 1999; Handley 1966; Moreno y Gallardo 1997a; Tomblin 1997a; Araúz 2003; Samudio et al. 1999.

Table A4.1-5. Ecological characteristics and State of Conservation of the Species of Mammals of the Catchment Area of the Ciri Grande River. **KEY:** State of conservation: EN=endemic native; A=Treated; EX=Exotic; I, II=CITES; AU=Threatened according to the IUCN. **Period of activity:** D=diurnal; N=nocturnal. Nourishing habit: Fru=frugivore; Car=carnivore; Ins=insectivore; Fo=folivore; Nec=nectarivore; Pis=piscivore; Her=herbivore; Hem=hematofague; Gra=granivore; Om=omnivore. **Behavior:** T=terrestrial; SA=semiaquatic; F=flying; Ar=arboreal or shrubby; Aq=aquatic..

TAXON	Nourishing Habit	Activity	Behavior	ANAM	IUCN	CITES
CLASS MAMMALIA						
ORDER DIDELPHIMORPHIA						
Family DIDELPHIDAE						
	<i>Didelphis marsupialis</i>	N	T/Ar			
	<i>Metachirus nudicaudatus</i>	N	T			
	<i>Philander opossum</i>	N	Ar			
Family CALUROMYIDAE						
	<i>Caluromys derbianus</i>	N	Ar			
Family MARMOSIDAE						
	<i>Marmosa robinsoni</i>	N	Ar			
ORDER VERMILINGUA						
Family MYRMECOPHAGIDAE						
	<i>Cyclopes didactylus</i>	N	Ar	T		
	<i>Tamandua mexicana</i>	D/N	T/Ar	T		
ORDER PHYLLOPHAGA						
Family BRADYPODIDAE						
	<i>Bradypus variegatus</i>	D	Ar			II
Family MEGALONYCHIDAE						
	<i>Choloepus hoffmanni</i>	D	Ar			
ORDER CINGULATA						
Family DASYPODIDAE						
	<i>Dasybus novemcinctus</i>	N	SF	T		
ORDER CHIROPTERA						
Family EMBALLONURIDAE						
	<i>Rynchonycteris naso</i>	N	F			
Family NOCTILIONIDAE						
	<i>Noctilio albigentris</i>	N	F			
	<i>Noctilio leporinus</i>	N	F			
Family MORMOOPIIDAE						
	<i>Pteronotus gymnotus</i>	N	F			
	<i>Pteronotus parnellii</i>	N	F			
Family PHYLLOSTOMIDAE						
	<i>Micronycteris minuta</i>	N	F			
	<i>Micronycteris microtis</i>	N	F			
	<i>Lampronnycteris branchyotis</i>	N	F			
	<i>Phyllostomus hastatus</i>	N	F			
	<i>Phyllostomus discolor</i>	N	F			

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
		<i>Lonchorhina aurita</i>	Fru/Ins	N	F			
		<i>Tonatia silvicola</i>	Ins	N	F			
		<i>Tonatia brasiliense</i>	Ins	N	F			
		<i>Trachops cirrhosus</i>	Car	N	F			
		<i>Glossophaga comissaris</i>	Nec	N	F			
		<i>Glossophaga soricina</i>	Nec	N	F			
		<i>Lonchophylla robusta</i>	Nec	N	F			
		<i>Linchonycteris obscura</i>	Nec	N	F			
		<i>Carollia castanea</i>	Fru	N	F			
		<i>Carollia perspicillata</i>	Fru	N	F			
		<i>Carollia brevicauda</i>	Fru	N	F			
		<i>Sturnira lilium</i>	Fru	N	F			
		<i>Uroderma bilobatum</i>	Fru	N	F			
		<i>Platyrrhinus helleri</i>	Fru	N	F			
		<i>Vampyressa pusilla</i>	Fru	N	F			
		<i>Chiroderma salvini</i>	Fru	N	F			
		<i>Artibeus jamaicensis</i>	Fru	N	F			
		<i>Artibeus intermedius</i>	Fru	N	F			
		<i>Artibeus lituratus</i>	Fru	N	F			
		<i>Artibeus phaeotis</i>	Fru	N	F			
		<i>Artibeus watsoni</i>	Fru	N	F			
		<i>Enchisthenes hartii</i>	Fru	N	F			
		<i>Desmodus rotundus</i>	Hem	N	F			
		Family VESPERTILIONIDAE						
		<i>Myotis riparius</i>	Ins	N	F			
		Family MOLOSSIDAE						
		<i>Promops centralis</i>	Ins	N	F			
		Family FURIPTERIDAE						
		<i>Furipterus horrens</i>	Ins	N	F			
		ORDER PRIMATES						
		Family CEBIDAE						
		<i>Aotus lemurinus</i>	Fru/Fo	N	Ar	T	TUU	II
		<i>Saguinus Geoffroyi</i>	Ins/Fru	D	Ar	T		I
		ORDER CARNIVORA						
		Family PROCYONIDAE						
		<i>Bassaricyon gabbii</i>	Fru	N	Ar		TUU	
		<i>Nasua narica</i>	Fru/Car	D	T/Ar	T		
		<i>Potos flavus</i>	Fru	N	Ar			
		<i>Procyon lotor</i>	Om	N	T	T		
		Family MUSTELIDAE						
		<i>Conepatus semistriatus</i>	Ins	D	T			
		<i>Eira barbara</i>	Om	D	T			
		<i>Galictis vittata</i>	Om	D/N	T/Ar			

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
		<i>Lontra longicaudis</i>	Car	D	SA	T		I
	Family FELIDAE							
		<i>Herpailurus yagouaroundi</i>	Car	D	T	T		I
		<i>Leopardus pardalis</i>	Car	N	T	T		I
		<i>Leopardus wiedii</i>	Car	N	T/Ar	T		I
	Family CANIDAE							
		<i>Urocyon cinereoargenteus</i>	Car	N	T	T		
	ORDER ARTIODACTYLA							
	Family TAYASSUIDAE F.							
		<i>Tayassu tajacu</i>	Fru	D	T	T		II
	Family CERVIDAE							
		<i>Mazama americana</i>	Fru	D	T	T		
		<i>Odocoileus virginianus</i>	Fru	D	T	T		
	ORDER RODENTIA							
	Family SCIURIDAE							
		<i>Microsciurus mimulus</i>	Fru	D	Ar			
		<i>Sciurus granatensis</i>	Fru	D	Ar			
		<i>Sciurus variegatoides</i>	Fru	D	Ar			
	Family AGOUTIDAE							
		<i>Agouti paca</i>	Fru	N	T	T		
	Family DASYPROCTIDAE							
		<i>Dasyprocta punctata</i>	Fru	D	T	T		
	Family HYDROCHAERIDAE							
		<i>Hydrochaeris isthmus</i>	Her	N	SA	T		
	Family ECHIMYIDAE							
		<i>Haplomys gymnurus</i>	Fru	N	T			
		<i>Proechimys semispinosus</i>	Fru	N	T			
	Family ERETHIZONIDAE							
		<i>Coendou rothschildi</i>	Fru/Fo	N	Ar	EN		
	Family HETEROMYIDAE							
		<i>Heteromys desmarestianus</i>	Gra/Fru	N	T			
	Family MURIDAE							
		<i>Melanomys caliginosus</i>	Fru	N	T			
		<i>Rattus rattus</i>	Om	N	T	EX		
		<i>Sigmodontomys alfari</i>	Fru	N	T			
		<i>Tylomys watsoni</i>	Fru	N	T			
	ORDER LAGOMORPHA							
	Family LEPORIDAE							
		<i>Sylvilagus brasiliensis</i>	Her	D	T			
					TOTAL	1EN,18T,1EX	2TUU	8

Source: Tejera et al. 1995; Kalko et al. 1996; Samudio 2002; ANAM 2000, CITES 2003.

Table A4.1-6. Richness of Species of Birds and his Distribution in Three Sections (Upper, Middle and lower) of the Catchment Area of the Ciri Grande River, compared with the species of Indio River.

TAXON		Catchment Area of Río Ciri Grande			Indio River
		Upper	Middle	Lower	
CLASS BIRDS					
TINAMIFORMS					
TINAMIDAE	<i>Tinamus major</i>	X	X	X	X
	<i>Crypturellus soui</i>	X	X	X	X
PODICIPEDIFORMS					
PODICIPEDIDAE	<i>Podilymbus podiceps</i>		X	X	
	<i>Tachybaptus dominicus</i>		X	X	
PELECANIFORMS					
PELECANIDAE	<i>Pelecanus occidentalis</i>		X	X	
PHALACROCORACIDAE					
PHALACROCORACIDAE	<i>Phalacrocorax brasilianus</i>		X	X	
ANHINGIDAE					
ANHINGIDAE	<i>Anhinga anhinga</i>		X	X	
FREGATIDAE					
FREGATIDAE	<i>Fregata magnificens</i>		X	X	
CICONIIFORMS					
ARDEIDAE	<i>Ardea alba</i>		X	X	X
	<i>Ardea herodias</i>		X	X	
	<i>Bubulcus ibis</i>	X	X	X	X
	<i>Butorides striatus</i>		X	X	
	<i>Casmerodius albus</i>		X	X	
	<i>Egretta caerulea</i>	X	X	X	X
	<i>Egretta thula</i>		X	X	X
	<i>Ixobrychus exilis</i>		X	X	
CATHARTIDAE					
CATHARTIDAE	<i>Cathartes aura</i>	X	X	X	X
	<i>Cathartes burrovianus</i>	X			
	<i>Coragyps atratus</i>	X	X	X	X
	<i>Sarcoramphus papa</i>	X			
ANSERIFORMS					
ANATIDAE	<i>Cairina moschata</i>		X	X	
	<i>Nomonyx dominicus</i>		X	X	
FALCONIFORMS					
ACCIPITRIDAE	<i>Buteo albicaudatus</i>	X			
	<i>Buteo magnirostris</i>	X	X	X	X
	<i>Buteo nitidus</i>	X	X	X	
	<i>Buteo platypterus</i>	X			
	<i>Buteo swainsoni</i>	X			
	<i>Buteogallus anthracinus</i>	X	X	X	
	<i>Buteogallus meridionalis</i>		X	X	
	<i>Buteogallus urubitinga</i>	X	X	X	
	<i>Chondrohierax uncinatus</i>	X			
	<i>Elanoides forficatus</i>	X	X	X	X
	<i>Elanus leucurus</i>		X	X	
	<i>Harpagus bidentatus</i>	X	X	X	X
	<i>Ictinia plumbea</i>	X	X	X	X
	<i>Leucopternis albicollis</i>	X	X	X	X
	<i>Pandion haliaetus</i>		X	X	
	<i>Spizaetus tyrannus</i>		X	X	X

TAXON		Catchment Area of Río Ciri Grande			Indio River
		Upper	Middle	Lower	
FALCONIDAE	<i>Caracara cheriway</i>		X	X	
	<i>Falco peregrinus</i>	X			
	<i>Falco rufigularis</i>	X			
	<i>Micrastur ruficollis</i>	X	X	X	X
	<i>Micrastur semitorquatus</i>	X			
	<i>Milvago chimachima</i>	X	X	X	X
GALLIFORMS					
CRACIDAE	<i>Chamaepetes unicolor</i>	X			X
	<i>Ortalis cinereiceps</i>	X	X	X	X
ODONTOPHORIDAE	<i>Colinus cristatus</i>		X	X	
	<i>Odontophorus melanotis</i>	X			
	<i>Rhynchortyx cinctus</i>	X			
GRUIFORMS					
RALLIDAE	<i>Aramides cajanea</i>	X	X	X	X
	<i>Gallinula chloropus</i>		X	X	
	<i>Laterallus albigularis</i>		X	X	
	<i>Porphyryla martinica</i>		X	X	
CHARADRIIFORMS					
JACANIDAE	<i>Jacana spinosa</i>		X	X	
	<i>Jacana jacana</i>		X	X	X
SCOLOPACIDAE	<i>Actitis macularia</i>		X	X	
LARIDAE	<i>Larus pipixcan</i>		X	X	
	<i>Sterna maxima</i>		X	X	
COLUMBIFORMS+A390					
COLUMBIDAE	<i>Claravis mondetoura</i>	X			
	<i>Claravis pretiosa</i>	X	X	X	
	<i>Columba cayennensis</i>	X	X	X	
	<i>Columba livia</i>		X	X	X
	<i>Columba nigrirostris</i>	X	X	X	X
	<i>Columba speciosa</i>	X	X	X	X
	<i>Columba subvinacea</i>	X			X
	<i>Columbina minuta</i>		X	X	
	<i>Columbina talpacoti</i>	X	X	X	X
	<i>Geotrygon chiriquensis</i>	X			X
	<i>Geotrygon lawrencii</i>	X			
	<i>Geotrygon montana</i>	X	X	X	X
	<i>Leptotila cassinii</i>	X	X	X	X
	<i>Leptotila verreauxi</i>	X	X	X	X
PSITTACIFORMES					
PSITTACIDAE	<i>Amazona autumnalis</i>		X	X	X
	<i>Amazona farinosa</i>		X	X	
	<i>Amazona onchrocephala</i>	X	X	X	X
	<i>Aratinga pertinax</i>	X			
	<i>Brotogeris jugularis</i>	X	X	X	X
	<i>Pionus menstruus</i>	X	X	X	X
CUCULIFORMES					
CUCULIDAE	<i>Crotophaga ani</i>	X	X	X	X

TAXON		Catchment Area of Río Ciri Grande			Indio River
		Upper	Middle	Lower	
	<i>Crotophaga major</i>		X	X	
	<i>Crotophaga sulcirostris</i>		X	X	
	<i>Piaya cayana</i>	X	X	X	X
	<i>Tapera naevia</i>	X	X	X	X
STRIGIFORMES					
STRIGIDAE	<i>Ciccaba virgata</i>	X	X	X	X
	<i>Otus choliba</i>	X	X	X	X
	<i>Otus guatemalae</i>	X			
CAPRIMULGIFORMES					
CAPRIMULGIDAE	<i>Chordeiles minor</i>	X			
	<i>Nyctidromus albicollis</i>	X	X	X	X
NYCTIBIIDAE	<i>Nyctibius griseus</i>	X	X	X	X
APODIFORMES					
APODIDAE	<i>Chaetura spinicauda</i>	X	X	X	X
	<i>Panyptila cayennensis</i>		X	X	
	<i>Streptoprocne zonaris</i>	X	X	X	X
TROCHILIDAE	<i>Amazilia amabilis</i>		X	X	X
	<i>Amazilia edward</i>	X	X	X	X
	<i>Amazilia tzacatl</i>	X	X	X	X
	<i>Anthracothorax nigricollis</i>	X	X	X	X
	<i>Chalybura buffonii</i>	X	X	X	X
	<i>Chalybura urochrysis</i>	X	X	X	X
	<i>Chlorostilbon assimilis</i>	X	X	X	X
	<i>Damophila julie</i>	X	X	X	X
	<i>Eutoxeres aquila</i>	X	X	X	X
	<i>Florisuga mellivora</i>	X	X	X	X
	<i>Glaucis hirsuta</i>	X	X	X	X
	<i>Heliodoxa jacula</i>	X			X
	<i>Heliathryx barroti</i>	X			
	<i>Klais guimeti</i>	X			
	<i>Phaethornis guy</i>	X	X	X	X
	<i>Phaethornis longuemareus</i>	X	X	X	X
	<i>Phaethornis superciliosus</i>	X	X	X	X
	<i>Thalurania colombica</i>	X	X	X	X
	<i>Threnetes ruckeri</i>	X	X	X	X
TROGONIFORMES					
TROGONIDAE	<i>Trogon aurantiiventris</i>	X			X
	<i>Trogon clathratus</i>	X	X	X	X
	<i>Trogon massena</i>	X	X	X	X
	<i>Trogon rufus</i>	X	X	X	X
	<i>Trogon violaceus</i>		X	X	X
	<i>Trogon viridis</i>	X	X	X	X
CORACIIFORMES					
MOMOTIDAE	<i>Baryphthengus martii</i>	X	X	X	X
	<i>Electron platyrhynchum</i>	X	X	X	X
	<i>Hylomanes momotula</i>	X			
	<i>Momotus momota</i>	X	X	X	X
ALCEDINIDAE	<i>Ceryle torquata</i>	X	X	X	X
	<i>Chloroceryle amazona</i>		X	X	

TAXON		Catchment Area of Río Ciri Grande			Indio River
		Upper	Middle	Lower	
	<i>Chloroceryle americana</i>	X	X	X	X
	<i>Chloroceryle inda</i>		X	X	
PICIFORMES					
BUCCONIDAE	<i>Malacoptila panamensis</i>	X	X	X	X
	<i>Nonnula ruficapilla</i>		X	X	X
	<i>Notharchus pectoralis</i>		X	X	X
	<i>Nystalus radiatus</i>	X	X	X	X
RAMPHASTIDAE	<i>Aulacorhynchus prasinus</i>	X			X
	<i>Capito maculicoronatus</i>	X	X	X	X
	<i>Pteroglossus torquatus</i>	X	X	X	X
	<i>Ramphastos sulfuratus</i>	X	X	X	X
	<i>Selenidera spectabilis</i>	X			X
PICIDAE	<i>Campephilus melanoleucos</i>		X	X	X
	<i>Dryocopus lineatus</i>	X	X	X	X
	<i>Melanerpes pucherani</i>	X	X	X	X
	<i>Melanerpes rubricapillus</i>	X	X	X	X
	<i>Sphyrapicus varius</i>	X			
PASSERIFORMES					
FURNARIIDAE	<i>Automolus ochrolaemus</i>	X	X	X	X
	<i>Premnoplex brunnescens</i>	X			
	<i>Sclerurus guatemalensis</i>	X			
	<i>Synallaxis brachyura</i>	X			
	<i>Xenops minutus</i>	X	X	X	X
	<i>Xenops rutilans</i>	X			X
DENDROCOLAPTIDAE	<i>Dendrocincla fuliginosa</i>	X	X	X	X
	<i>Dendrocincla homochroa</i>	X			
	<i>Dendrocolaptes sanctiithomae</i>	X			
	<i>Glyphorhynchus spirurus</i>	X	X	X	X
	<i>Xiphorhynchus erythrogygius</i>	X			
	<i>Xiphorhynchus lachrymosus</i>		X	X	
	<i>Xiphorhynchus susurrans</i>	X	X	X	X
THAMNOPHILIDAE	<i>Cercomacra nigricans</i>		X	X	X
	<i>Cercomacra tyrannina</i>	X	X	X	X
	<i>Cymbilaimus lineatus</i>	X	X	X	X
	<i>Dysithamnus mentalis</i>	X	X	X	X
	<i>Dysithamnus puncticeps</i>	X			
	<i>Gymnocichla nudiceps</i>		X	X	
	<i>Gymnopithys leucaspis</i>	X	X	X	X
	<i>Hylophylax naevioides</i>	X	X	X	X
	<i>Microrhopias quixensis</i>	X	X	X	X
	<i>Myrmeciza exsul</i>	X	X	X	X
	<i>Myrmeciza longipes</i>	X	X	X	X
	<i>Myrmotherula axillaris</i>	X	X	X	X
	<i>Myrmotherula fulviventris</i>	X	X	X	X
	<i>Myrmotherula schisticolor</i>	X	X	X	X
	<i>Myrmotherula surinamensis</i>		X	X	
	<i>Phaenostictus mcleannani</i>	X			
	<i>Taraba major</i>	X	X	X	X
	<i>Thamnistes anabatinus</i>	X			
	<i>Thamnophilus atrinucha</i>	X	X	X	X
	<i>Thamnophilus doliatus</i>	X	X	X	X

TAXON		Catchment Area of Río Ciri Grande			Indio River
		Upper	Middle	Lower	
	<i>Thamnophilus punctatus</i>	X	X	X	
FORMICARIIDAE	<i>Formicarius analis</i>	X	X	X	X
	<i>Formicarius nigricapillus</i>	X			
	<i>Pittasoma michleri</i>	X			
TYRANNIDAE	<i>Attila spadiceus</i>	X	X	X	X
	<i>Camptostoma obsoletum</i>	X	X	X	X
	<i>Capsiempis flaveola</i>	X	X	X	X
	<i>Cnipodectes subbrunneus</i>	X	X	X	X
	<i>Colonia colonus</i>	X	X	X	X
	<i>Conopias albivittata</i>		X	X	
	<i>Contopus cinereus</i>	X	X	X	X
	<i>Contopus sordidulus</i>	X			
	<i>Contopus virens</i>	X	X	X	X
	<i>Elaenia chiriquensis</i>	X	X	X	X
	<i>Elaenia flavogaster</i>	X	X	X	X
	<i>Elaenia frantzii</i>	X			X
	<i>Empidonax traillii</i>	X			X
	<i>Empidonax virescens</i>	X	X	X	X
	<i>Legatus leucophaeus</i>		X	X	
	<i>Leptopogon amaurocephalus</i>	X			
	<i>Lophotriccus pilaris</i>		X	X	
	<i>Lophotriccus pileatus</i>	X			X
	<i>Megarhynchus pitanga</i>		X	X	
	<i>Mionectes oleagineus</i>	X	X	X	X
	<i>Mionectes olivaceus</i>	X	X	X	X
	<i>Mitrephanes phaeocercus</i>	X			
	<i>Myiarchus crinitus</i>	X	X	X	X
	<i>Myiarchus panamensis</i>		X	X	X
	<i>Myiarchus tuberculifer</i>	X	X	X	X
	<i>Myiobius atricaudus</i>	X	X	X	X
	<i>Myiobius barbatus</i>	X			
	<i>Myiobius sulphureipygius</i>	X			
	<i>Myiodynastes maculatus</i>	X	X	X	X
	<i>Myiophobus fasciatus</i>		X	X	
	<i>Myiozetetes cayanensis</i>		X	X	X
	<i>Myiozetetes granadensis</i>		X	X	
	<i>Myiozetetes similis</i>	X	X	X	X
	<i>Oncostoma olivaceum</i>	X	X	X	X
	<i>Onychorhynchus coronatus</i>	X	X	X	X
	<i>Ornithion brunneicapillum</i>		X	X	X
	<i>Pachyramphus cinnamomeus</i>	X	X	X	X
	<i>Pachyramphus polychopterus</i>				X
	<i>Pachyramphus rufus</i>		X	X	
	<i>Phaeomyias murina</i>		X	X	
	<i>Pitangus lictor</i>		X	X	
	<i>Pitangus sulphuratus</i>	X	X	X	X
	<i>Platyrinchus mystaceus</i>	X	X	X	X
	<i>Rhynchocyclus olivaceus</i>	X	X	X	X
	<i>Schiffornis turdinus</i>	X			X
	<i>Sublegatus arenarum</i>		X	X	
	<i>Terenotriccus erythrurus</i>	X	X	X	X
	<i>Tityra semifasciata</i>	X	X	X	X
	<i>Todirostrum cinereum</i>	X	X	X	X
	<i>Todirostrum nigriceps</i>	X	X	X	X
	<i>Tyrannulus elatus</i>		X	X	X

TAXON	Catchment Area of Rio Ciri Grande			Indio River	
	Upper	Middle	Lower		
	<i>Tyrannus melancholicus</i>	X	X	X	X
	<i>Tyrannus savana</i>	X	X	X	
	<i>Zimmerius vilissimus</i>	X	X	X	X
COTINGIDAE	<i>Cotinga nattererii</i>	X			
	<i>Querula purpurata</i>	X	X	X	X
PIPRIDAE	<i>Chiroxiphia lanceolata</i>	X			
	<i>Corapipo altera</i>	X	X	X	X
	<i>Manacus vitellinus</i>	X	X	X	X
HIRUNDINIDAE	<i>Pipra mentalis</i>	X	X	X	X
	<i>Hirundo pyrrhonota</i>	X	X	X	
	<i>Hirundo rustica</i>	X	X	X	X
	<i>Neochelidon tibialis</i>	X			X
	<i>Progne chalybea</i>	X	X	X	
	<i>Riparia riparia</i>	X			
	<i>Stelgidopteryx ruficollis</i>	X	X	X	X
	<i>Stelgidopteryx serripennis</i>		X	X	
	<i>Tachycineta albilineata</i>		X	X	
CORVIDAE	<i>Cyanocorax affinis</i>	X	X	X	X
TROGLODYTIDAE	<i>Campylorhynchus albobrunneus</i>		X	X	X
	<i>Cyphorhinus phaeocephala</i>	X	X	X	X
	<i>Henicorhina leucophrys</i>	X	X	X	X
	<i>Henicorhina leucosticta</i>	X	X	X	X
	<i>Microcerculus marginatus</i>	X	X	X	X
	<i>Thryothorus fasciatoventris</i>	X	X	X	X
	<i>Thryothorus leucotis</i>	X	X	X	X
	<i>Thryothorus modestus</i>	X	X	X	X
	<i>Thryothorus nigricapillus</i>	X	X	X	X
	<i>Thryothorus rufalbus</i>		X	X	X
	<i>Thryothorus rutilus</i>	X			X
	<i>Troglodytes aedon</i>	X	X	X	X
SYLVIIDAE	<i>Microbates cinereiventris</i>	X	X	X	X
	<i>Polioptila plumbea</i>	X	X	X	
	<i>Ramphocaenus melanurus</i>	X	X	X	X
TURDIDAE	<i>Catharus aurantiirostris</i>	X			X
	<i>Catharus fuscescens</i>		X	X	
	<i>Catharus minimus</i>	X			
	<i>Catharus ustulatus</i>	X	X	X	X
	<i>Hylocichla mustelina</i>	X			
	<i>Turdus assimilis</i>	X			X
	<i>Turdus grayi</i>	X	X	X	X
	<i>Turdus obsoletus</i>	X			
MIMIDAE	<i>Mimus gilvus</i>		X	X	
VIREONIDAE	<i>Hylophilus aurantiifrons</i>		X	X	
	<i>Hylophilus decurtatus</i>	X	X	X	X
	<i>Hylophilus flavipes</i>	X	X	X	X
	<i>Vireo flavifrons</i>	X			X
	<i>Vireo flavoviridis</i>	X	X	X	X
	<i>Vireo olivaceus</i>	X	X	X	X

TAXON		Catchment Area of Rio Ciri Grande			Indio River
		Upper	Middle	Lower	
	<i>Vireolanius pulchellus</i>	X	X	X	X
PARULIDAE	<i>Basileuterus rufifrons</i>	X	X	X	X
	<i>Dendroica castanea</i>	X	X	X	X
	<i>Dendroica coronata</i>	X			
	<i>Dendroica fusca</i>	X	X	X	X
	<i>Dendroica pensylvanica</i>	X	X	X	X
	<i>Dendroica petechia</i>	X	X	X	X
	<i>Dendroica virens</i>	X			
	<i>Geothlypis trichas</i>	X	X	X	X
	<i>Mniotilta varia</i>	X	X	X	X
	<i>Oporornis formosus</i>	X	X	X	X
	<i>Oporornis philadelphia</i>	X			X
	<i>Phaeothlypis fulvicauda</i>	X	X	X	X
	<i>Protonotaria citrea</i>	X	X	X	X
	<i>Seiurus aurocapillus</i>	X			
	<i>Seiurus motacilla</i>	X	X	X	X
	<i>Seiurus noveboracensis</i>	X	X	X	X
	<i>Vermivora chrysoptera</i>	X			X
	<i>Vermivora peregrina</i>	X	X	X	X
	<i>Wilsonia canadensis</i>	X			
	<i>Wilsonia pusilla</i>	X			
COEREBIDAE	<i>Coereba flaveola</i>	X	X	X	X
THRAUPIDAE	<i>Chlorophanes spiza</i>	X	X	X	X
	<i>Chrysothlypis chrysomelaena</i>	X			
	<i>Cyanerpes cyaneus</i>	X	X	X	X
	<i>Cyanerpes lucidus</i>	X			
	<i>Dacnis cayana</i>	X	X	X	X
	<i>Dacnis venusta</i>	X			X
	<i>Eucometis penicillata</i>		X	X	
	<i>Euphonia anaeae</i>	X	X	X	X
	<i>Euphonia fulvicrissa</i>	X			
	<i>Euphonia laniirostris</i>	X	X	X	X
	<i>Euphonia luteicapilla</i>	X	X	X	X
	<i>Habia fuscicauda</i>	X	X	X	X
	<i>Habia rubica</i>	X			X
	<i>Mitrospingus cassinii</i>	X	X	X	X
	<i>Piranga flava</i>	X			X
	<i>Piranga olivacea</i>	X	X	X	
	<i>Piranga rubra</i>	X	X	X	X
	<i>Ramphocelus dimidiatus</i>	X	X	X	X
	<i>Ramphocelus flammigerus</i>	X	X	X	X
	<i>Rhodinocichla rosea</i>		X	X	
	<i>Tachyphonus delatrii</i>	X	X	X	X
	<i>Tachyphonus luctuosus</i>	X	X	X	X
	<i>Tachyphonus rufus</i>	X	X	X	
	<i>Tangara florida</i>	X			X
	<i>Tangara gyrola</i>	X			X
	<i>Tangara icterocephala</i>	X	X	X	X
	<i>Tangara inornata</i>	X	X	X	X
	<i>Tangara larvata</i>	X	X	X	X
	<i>Thraupis episcopus</i>	X	X	X	X
	<i>Thraupis palmeri</i>	X	X	X	X
	<i>Amaurospiza concolor</i>		X	X	

TAXON		Catchment Area of Río Ciri Grande			Indio River
		Upper	Middle	Lower	
EMBEREZIDAE	<i>Arremon aurantirostris</i>	X	X	X	X
	<i>Arremonops conirostris</i>	X	X	X	X
	<i>Buarremon brunneinucha</i>	X			X
	<i>Emberizoides herbicola</i>	X			
	<i>Oryzoborus angolensis</i>	X	X	X	
	<i>Oryzoborus funereus</i>	X	X	X	X
	<i>Sporophila americana</i>	X	X	X	X
	<i>Sporophila minuta</i>		X	X	
	<i>Sporophila nigricollis</i>	X	X	X	X
	<i>Tiaris olivacea</i>	X	X	X	X
	<i>Volatinia jacarina</i>	X	X	X	X
	<i>Zonotrichia capensis</i>	X			
CARDINALIDAE	<i>Caryothraustes poliogaster</i>	X			
	<i>Cyanocopsa cyanoides</i>	X	X	X	X
	<i>Pheucticus ludovicianus</i>	X			
	<i>Saltator albicollis</i>	X	X	X	X
	<i>Saltator atriceps</i>	X	X	X	X
	<i>Saltator grossus</i>	X			
	<i>Saltator maximus</i>	X	X	X	X
	<i>Saltator striatipectus</i>	X	X	X	X
ICTERIDAE	<i>Amblycercus holosericeus</i>	X	X	X	X
	<i>Cacicus cela</i>	X	X	X	X
	<i>Cacicus uropygialis</i>	X	X	X	X
	<i>Icterus chrysater</i>	X	X	X	X
	<i>Icterus galbula</i>	X	X	X	X
	<i>Icterus mesomelas</i>		X	X	
	<i>Icterus spurius</i>	X	X	X	X
	<i>Molothrus aeneus</i>		X	X	
	<i>Molothrus oryzivorus</i>		X	X	X
	<i>Psarocolius decumanus</i>	X	X	X	
	<i>Psarocolius wagleri</i>	X	X	X	X
	<i>Quiscalus mexicanus</i>		X	X	
	<i>Sturnella magna</i>	X	X	X	
	<i>Sturnella militaris</i>		X	X	
FRINGILLIDAE	<i>Carduelis psaltria</i>		X	X	
Total	Species for Ciri Grande = 362	285	282	282	235

Source: Tejera et al. 1995; TLBG, UP, STRI 1999; Aparicio 1997a, Garcés 1999, Samudio et al. 1999.

Table A4.1-7 Ecological characteristics and State of Conservation of the Species of Birds of the Catchment Area of the Ciri Grande River .

KEY: State of conservation: ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; EX=Exotic; M=migratory; I, II=CITES; AU=Threatened according to the UICN. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Fru=frugivore; Ca=camivore; Ins=insectivore; Nec=nectarivore; Ca=carnion eating; Pis=piscivore; Her=herbivore. Behavior: T=terrestrial; SA=semiaquatic; A=arboreal or shrubby

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
ORDER TINAMIFORMS							
FAMILY TINAMIDAE							
<i>Tinamus major</i>	Fru	D	T				
<i>Crypturellus soui</i>	Fru	D	T				
ORDER PODICIPEDIFORMS							
FAMILY PODICIPEDIDAE							
<i>Podilymbus podiceps</i>	Pis	D	SA				
<i>Tachybaptus dominicus</i>	Pis	D	SA				
ORDER PELECANIFORMS							
FAMILY PELECANIDAE							
<i>Pelecanus occidentalis</i>	Pis	D	SA				
FAMILY PHALACROCORACIDAE							
<i>Phalacrocorax brasilianus</i>	Pis	D	SA				
FAMILY ANHINGIDAE							
<i>Anhinga anhinga</i>	Pis	D	SA				
FAMILY FREGATIDAE							
<i>Fregata magnificens</i>	Pis	D	SA				
ORDER CICONIIFORMS							
FAMILY ARDEIDAE							
<i>Ardea alba</i>	Pis	D	SA				
<i>Ardea herodias</i>	Pis	D	SA				
<i>Bubulcus ibis</i>	Pis/Ins	D	SA	EX			
<i>Butorides striatus</i>	Pis	D	SA				
<i>Casmerodius albus</i>	Pis	D	SA				
<i>Egretta caerulea</i>	Pis	D	SA				
<i>Egretta thula</i>	Pis	D	SA				
<i>Isobrychus exilis</i>	Pis	D	SA				
FAMILY CATHARTIDAE							

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
<i>Cathartes aura</i>	Ca	D	T/Ar				
<i>Cathartes burrovianus</i>	Ca	D	T/Ar				
<i>Coragyps atratus</i>	Ca	D	T/Ar				
<i>Sarcorampus papa</i>	Ca	D	T/Ar	T			
ORDER ANSERIFORMS							
FAMILY ANATIDAE							
<i>Cairina moschata</i>	Her/Fru	D	SA	T			
<i>Nomonyx dominicus</i>	Her/Fru	D	SA	T			
ORDER FALCONIFORMS							
FAMILY ACCIPITRIDAE							
<i>Buteo albicaudatus</i>	Car	D	T/Ar			II	
<i>Buteo magnirostris</i>	Car	D	T/Ar			II	
<i>Buteo nitidus</i>	Car	D	T/Ar				
<i>Buteo platypterus</i>	Car	D	T/Ar			II	M
<i>Buteo swainsoni</i>	Car	D	T/Ar			II	M
<i>Buteogallus anthracinus</i>	Car	D	T/Ar			II	
<i>Buteogallus meridionalis</i>	Car	D	T/Ar			II	
<i>Buteogallus urubitinga</i>	Car	D	T/Ar			II	
<i>Chondrohierax uncinatus</i>	Car	D	T/Ar			II	
<i>Elanoides forficatus</i>	Car	D	T/Ar			II	
<i>Elanus leucurus</i>	Car	D	T/Ar			II	
<i>Harpagus bidentatus</i>	Car	D	T/Ar			II	
<i>Ictinia plumbea</i>	Car	D	T/Ar			II	
<i>Leucopternis albicollis</i>	Car	D	T/Ar			II	
<i>Pandion haliaetus</i>	Car	D	T/Ar			II	M
<i>Spizaetus tyrannus</i>	Car	D	T/Ar			II	
FAMILY FALCONIDAE							
<i>Caracara cheriway</i>	Car	D	T/Ar				
<i>Falco peregrinus</i>	Car	D	T/Ar	T		I	M
<i>Falco ruficularis</i>	Car	D	T/Ar			II	
<i>Micrastur ruficollis</i>	Car	D	T/Ar			II	
<i>Micrastur semitorquatus</i>	Car	D	T/Ar			II	
<i>Milvago chimachima</i>	Car	D	T/Ar			II	
ORDER GALLIFORMS							
FAMILY CRACIDAE							

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS								
	<i>Chamaepetes unicolor</i>	Fru	D	Ar	T, ER	TU		
	<i>Ortalis cinereiceps</i>	Fru	D	Ar				
	FAMILY ODONTOPHORIDAE							
	<i>Colinus cristatus</i>	Fru	D	T				
	<i>Odontophorus melanotis</i>	Fru	D	T				
	<i>Rhynchortyx cinctus</i>	Fru	D	T				
	ORDER GRUIFORMS							
	FAMILY RALLIDAE							
	<i>Aramides cajanea</i>	Pis/Fru	D	SA				
	<i>Gallinula chloropus</i>	Pis/Fru	D	SA				
	<i>Laterallus albigularis</i>	Pis/Fru	D	SA				
	<i>Porphyrula martinica</i>	Pis/Fru	D	SA				
	ORDER CHARADRIIFORMS							
	FAMILY JACANIDAE							
	<i>Jacana spinosa</i>	Car	D	SA				
	<i>Jacana jacana</i>	Car	D	SA				
	FAMILY SCOLOPACIDAE							
	<i>Actitis macularia</i>	Car	D	SA				M
	FAMILY LARIDAE							
	<i>Larus pipixcan</i>	Pis	D	SA				M
	<i>Sterna maxima</i>	Pis	D	SA				M
	ORDER COLUMBIFORMS							
	FAMILY COLUMBIDAE							
	<i>Claravis mondetoura</i>	Fru	D	T/Ar	T			
	<i>Claravis pretiosa</i>	Fru	D	T/Ar				
	<i>Columba cayennensis</i>	Fru	D	T/Ar				
	<i>Columba livia</i>	Fru	D	T/Ar				
	<i>Columba nigrirostris</i>	Fru	D	T/Ar				
	<i>Columba speciosa</i>	Fru	D	T/Ar				
	<i>Columba subvinacea</i>	Fru	D	T/Ar	T			
	<i>Columbina minuta</i>	Fru	D	T/Ar				
	<i>Columbina talpacoti</i>	Fru	D	T/Ar				
	<i>Geotrygon chiriquensis</i>	Fru	D	T	T, ER			
	<i>Geotrygon lawrencii</i>	Fru	D	T	T, ER			
	<i>Geotrygon montana</i>	Fru	D	T				

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS									
	<i>Leptotila cassini</i>		Fru	D	T/Ar				
	<i>Leptotila verreauxi</i>		Fru	D	T/Ar				
ORDER PSITTACIFORMES									
	FAMILY PSITTACIDAE								
	<i>Amazona autumnalis</i>		Fru	D	Ar			II	
	<i>Amazona farinosa</i>		Fru	D	Ar			II	
	<i>Amazona onchrocephala</i>		Fru	D	Ar	T		II	
	<i>Aratinga pertinax</i>		Fru	D	Ar			II	
	<i>Brotogeris jugularis</i>		Fru	D	Ar			II	
	<i>Pionus menstruus</i>		Fru	D	Ar			II	
ORDER CUCULIFORMES									
	FAMILY CUCULIDAE								
	<i>Crotophaga ani</i>		Fru/Ins	D	T/Ar				
	<i>Crotophaga major</i>		Fru/Ins	D	T/Ar				
	<i>Crotophaga sulcirostris</i>		Fru/Ins	D	T/Ar				
	<i>Piaya cayana</i>		Fru/Ins	D	T/Ar				
	<i>Tapera naevia</i>		Fru/Ins	D	T/Ar				
ORDER STRIGIFORMES									
	FAMILY STRIGIDAE								
	<i>Ciccaba virgata</i>		Car	N	T/Ar				
	<i>Otus choliba</i>		Car	N	T/Ar			II	
	<i>Otus guatemalae</i>		Car	N	T/Ar				
ORDER CAPRIMULGIFORMES									
	FAMILY CAPRIMULGIDAE								
	<i>Chordeiles minor</i>		Ins	N	T/Ar				
	<i>Nyctidromus albigollis</i>		Ins	N	T/Ar				
FAMILY NYCTIBIDAE									
	<i>Nyctibius griseus</i>		Ins	N	T/Ar				
ORDER APODIFORMES									
	FAMILY APODIDAE								
	<i>Chaetura spinicauda</i>		Ins	D	T/Ar				
	<i>Panyptila cayennensis</i>		Ins	D	T/Ar				
	<i>Streptoprocne zonaris</i>		Ins	D	T/Ar				
FAMILY TROCHILIDAE									
	<i>Amazilia amabilis</i>		Nec	D	Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
<i>Amazilia edward</i>	Nec	D	Ar	T			
<i>Amazilia tzacatl</i>	Nec	D	Ar			II	
<i>Anthracothorax nigricollis</i>	Nec	D	Ar			II	
<i>Chalybura buffonii</i>	Nec	D	Ar			II	
<i>Chalybura urochrysis</i>	Nec	D	Ar			II	
<i>Chlorostilbon assimilis</i>	Nec	D	Ar	T			
<i>Damophila julie</i>	Nec	D	Ar			II	
<i>Eutoxeres aquila</i>	Nec	D	Ar			II	
<i>Florisuga mellivora</i>	Nec	D	Ar			II	
<i>Glaucis hirsuta</i>	Nec	D	Ar			II	
<i>Heliodoxa jacula</i>	Nec	D	Ar			II	
<i>Heliothryx barroti</i>	Nec	D	Ar			II	
<i>Klais guimeti</i>	Nec	D	Ar			II	
<i>Phaethornis guy</i>	Nec	D	Ar			II	
<i>Phaethornis longuemareus</i>	Nec	D	Ar				
<i>Phaethornis superciliosus</i>	Nec	D	Ar				
<i>Thalurania colombica</i>	Nec	D	Ar			II	
<i>Threnetes ruckeri</i>	Nec	D	Ar			II	
ORDER TROGONIFORMS							
FAMILY TROGONIDAE							
<i>Trogon aurantiventris</i>	Fru/Ins	D	Ar				
<i>Trogon clathratus</i>	Fru/Ins	D	Ar	T			
<i>Trogon massena</i>	Fru/Ins	D	Ar				
<i>Trogon rufus</i>	Fru/Ins	D	Ar				
<i>Trogon violaceus</i>	Fru/Ins	D	Ar				
<i>Trogon viridis</i>	Fru/Ins	D	Ar				
ORDER CORACIIFORMS							
FAMILY MOMOTIDAE							
<i>Baryphthengus martii</i>	Ins	D	T/Ar				
<i>Electron playrhyinchum</i>	Ins	D	T/Ar				
<i>Hylomanes momotula</i>	Ins	D	T/Ar				
<i>Momotus momota</i>	Ins	D	T/Ar				
FAMILY ALCEDINIDAE							
<i>Ceryle torquata</i>	Pis	D	SA				
<i>Chloroceryle amazona</i>	Pis	D	SA				

TAXON		Nourishing_Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS								
	<i>Chloroceryle americana</i>	Pis	D	SA				
	<i>Chloroceryle inda</i>	Pis	D	SA				
ORDER PICIFORMS								
FAMILY BUCCONIDAE								
	<i>Malacoptila panamensis</i>	Ins	D	T/Ar				
	<i>Nonnula ruficapilla</i>	Ins	D	T/Ar				
	<i>Notharchus pectoralis</i>	Ins	D	T/Ar				
	<i>Nystalus radiatus</i>	Ins	D	T/Ar				
FAMILY RAMPHASTIDAE								
	<i>Aulacorhynchus prasinus</i>	Fru/Ins	D	Ar				
	<i>Capito maculicoronatus</i>	Fru/Ins	D	Ar	T			
	<i>Pteroglossus torquatus</i>	Fru/Ins	D	Ar				
	<i>Ramphastos sulfuratus</i>	Fru/Ins	D	Ar			II	
	<i>Selenidera spectabilis</i>	Fru/Ins	D	Ar				
FAMILY PICIDAE								
	<i>Campephilus melanoleucos</i>	Ins	D	Ar				
	<i>Dryocopus lineatus</i>	Ins	D	Ar				
	<i>Melanerpes pucherani</i>	Ins	D	Ar				
	<i>Melanerpes rubricapillus</i>	Ins	D	Ar				
	<i>Sphyrapicus varius</i>	Ins	D	Ar				
ORDER PASSERIFORM+B414S								
FAMILY FURNARIIDAE								
	<i>Automolus ochrolaemus</i>	Ins	D	T/Ar				
	<i>Premnoplex brunnescens</i>	Ins	D	T/Ar				
	<i>Sclerurus guatemalensis</i>	Ins	D	T/Ar				
	<i>Synallaxis brachyura</i>	Ins	D	T/Ar				
	<i>Xenops minutus</i>	Ins	D	T/Ar				
	<i>Xenops rutilans</i>	Ins	D	T/Ar				
FAMILY DENDROCOLAPTIDAE								
	<i>Dendrocincla fuliginosa</i>	Ins	D	Ar				
	<i>Dendrocincla homochroa</i>	Ins	D	Ar				
	<i>Dendrocolaptes sanctithomae</i>	Ins	D	Ar				
	<i>Glyphorhynchus spirurus</i>	Ins	D	Ar				
	<i>Xiphorhynchus erythropygius</i>	Ins	D	Ar				
	<i>Xiphorhynchus lachrymosus</i>	Ins	D	Ar				

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS								
	<i>Xiphorhynchus susurrans</i>	Ins	D	Ar				
	FAMILY THAMNOPHILIDAE							
	<i>Cercomacra nigricans</i>	Ins	D	T/Ar				
	<i>Cercomacra tyrannina</i>	Ins	D	T/Ar				
	<i>Gymbilaimus lineatus</i>	Ins	D	T/Ar				
	<i>Dysithamnus mentalis</i>	Ins	D	T/Ar				
	<i>Dysithamnus puncticeps</i>	Ins	D	T/Ar				
	<i>Gymnocichla nudiceps</i>	Ins	D	T/Ar				
	<i>Gymnophrys leucaspis</i>	Ins	D	T/Ar				
	<i>Hylophylax naevioides</i>	Ins	D	T/Ar				
	<i>Microrhoptias quixensis</i>	Ins	D	T/Ar				
	<i>Myrmeciza exsul</i>	Ins	D	T/Ar				
	<i>Myrmeciza longipes</i>	Ins	D	T/Ar				
	<i>Myrmotherula axillaris</i>	Ins	D	T/Ar				
	<i>Myrmotherula fulviventris</i>	Ins	D	T/Ar				
	<i>Myrmotherula schisticolor</i>	Ins	D	T/Ar				
	<i>Myrmotherula surinamensis</i>	Ins	D	T/Ar				
	<i>Phaenostictus mcleannani</i>	Ins	D	T/Ar				
	<i>Taraba major</i>	Ins	D	T/Ar				
	<i>Thamnistes anabatinus</i>	Ins	D	T/Ar				
	<i>Thamnophilus atrinucha</i>	Ins	D	T/Ar				
	<i>Thamnophilus doliatus</i>	Ins	D	T/Ar				
	<i>Thamnophilus punctatus</i>	Ins	D	T/Ar				
	FAMILY FORMICARIIDAE							
	<i>Formicarius anatis</i>	Ins	D	T/Ar				
	<i>Formicarius nigricapillus</i>	Ins	D	T/Ar				
	<i>Pittasoma michleri</i>	Ins	D	T/Ar				
	FAMILY TYRANNIDAE							
	<i>Attila spadiceus</i>	Ins	D	Ar				
	<i>Camptostoma obsoletum</i>	Ins	D	Ar				
	<i>Capstempis flaveola</i>	Ins	D	Ar				
	<i>Cnipodectes subbrunneus</i>	Ins	D	Ar				
	<i>Colonia colonus</i>	Ins	D	Ar				
	<i>Conopias albobittata</i>	Ins	D	Ar				
	<i>Contopus cinereus</i>	Ins	D	Ar				

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS									
	<i>Contopus sordidulus</i>		Ins	D	Ar				
	<i>Contopus virens</i>		Ins	D	Ar				
	<i>Elaenia chiriquensis</i>		Ins	D	Ar				
	<i>Elaenia flavogaster</i>		Ins	D	Ar				
	<i>Elaenia frantzii</i>		Ins	D	Ar				
	<i>Empidonax traillii</i>		Ins	D	Ar				
	<i>Empidonax virescens</i>		Ins	D	Ar				
	<i>Legatus leucophaeus</i>		Ins	D	Ar				
	<i>Leptopogon amaurocephalus</i>		Ins	D	Ar	T			
	<i>Lophotriccus pilaris</i>		Ins	D	Ar				
	<i>Lophotriccus pileatus</i>		Ins	D	Ar				
	<i>Megarhynchus pitanga</i>		Ins	D	Ar				
	<i>Mionectes oleagineus</i>		Ins	D	Ar				
	<i>Mionectes olivaceus</i>		Ins	D	Ar				
	<i>Mitrephanes phaeocercus</i>		Ins	D	Ar				
	<i>Myiarchus crinitus</i>		Ins	D	Ar				
	<i>Myiarchus panamensis</i>		Ins	D	Ar				
	<i>Myiarchus tuberculifer</i>		Ins	D	Ar				
	<i>Myiobius atricaudus</i>		Ins	D	Ar				
	<i>Myiobius barbatus</i>		Ins	D	Ar				
	<i>Myiobius sulphureipygius</i>		Ins	D	Ar				
	<i>Myiodynastes maculatus</i>		Ins	D	Ar				
	<i>Myiophobus fasciatus</i>		Ins	D	Ar				
	<i>Myiozetetes cayanensis</i>		Ins	D	Ar				
	<i>Myiozetetes granadensis</i>		Ins	D	Ar				
	<i>Myiozetetes similis</i>		Ins	D	Ar				
	<i>Oncostoma olivaceum</i>		Ins	D	Ar	T			
	<i>Onychorhynchus coronatus</i>		Ins	D	Ar				
	<i>Ornithion brunneicapillum</i>		Ins	D	Ar				
	<i>Pachyrhamphus cinnamomeus</i>		Ins	D	Ar				
	<i>Pachyrhamphus rufus</i>		Ins	D	Ar				
	<i>Phaeomyias murina</i>		Ins	D	Ar				
	<i>Pitangus lictor</i>		Ins	D	Ar				
	<i>Pitangus sulphuratus</i>		Ins	D	Ar				
	<i>Platyrinchus mystaceus</i>		Ins	D	Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
<i>Rhychochylus olivaceus</i>	Ins	D	Ar				
<i>Schiffornis turdinus</i>	Ins	D	Ar				
<i>Sublegatus arenarum</i>	Ins	D	Ar				
<i>Terenotriccus erythrurus</i>	Ins	D	Ar				
<i>Tityra semifasciata</i>	Fru/Ins	D	Ar				
<i>Todirostrum cinereum</i>	Ins	D	Ar				
<i>Todirostrum nigriceps</i>	Ins	D	Ar				
<i>Tyrannulus elatus</i>	Ins	D	Ar				
<i>Tyrannus melancholicus</i>	Ins	D	Ar				
<i>Tyrannus savana</i>	Ins	D	Ar				
<i>Zimmerius vilissimus</i>	Ins	D	Ar				
FAMILY COTINGIDAE							
<i>Cotinga nattererii</i>	Fru	D	T/Ar				
<i>Querula purpurata</i>	Fru	D	T/Ar				
FAMILY PIPRIDAE							
<i>Chiroxiphia lanceolata</i>	Fru/Ins	D	T/Ar				
<i>Corapipo altera</i>	Fru	D	T/Ar				
<i>Manacus vitellinus</i>	Fru	D	T/Ar				
<i>Pipra mentalis</i>	Fru/Ins	D	T/Ar				
FAMILY HIRUNDINIDAE							
<i>Hirundo pyrrhonota</i>	Ins	D	SA				
<i>Hirundo rustica</i>	Ins	D	SA				
<i>Neohelidon tibialis</i>	Ins	D	SA				
<i>Progne chalybea</i>	Ins	D	SA				
<i>Riparia riparia</i>	Ins	D	SA				
<i>Stelgidopteryx ruficollis</i>	Ins	D	SA				
<i>Stelgidopteryx serripennis</i>	Ins	D	SA				
<i>Tachycineta albilineata</i>	Ins	D	SA				
FAMILY CORVIDAE							
<i>Cyanocorax affinis</i>	Fru/Ins	D	T/Ar				
FAMILY TROGLODYTIDAE							
<i>Campylorhynchus albobrunneus</i>	Ins	D	T/Ar	T			
<i>Cyphorhinus phaeocephala</i>	Ins	D	T/Ar				
<i>Henicorhina leucophrys</i>	Ins	D	T/Ar				
<i>Henicorhina leucosticta</i>	Ins	D	T/Ar				

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS									
	<i>Microcerculus marginatus</i>		Ins	D	T/Ar				
	<i>Thryothorus fasciatoventris</i>		Ins	D	T/Ar				
	<i>Thryothorus leucotis</i>		Ins	D	T/Ar				
	<i>Thryothorus modestus</i>		Ins	D	T/Ar				
	<i>Thryothorus nigricapillus</i>		Ins	D	T/Ar				
	<i>Thryothorus rufalbus</i>		Ins	D	T/Ar				
	<i>Thryothorus rutilus</i>		Ins	D	T/Ar				
	<i>Troglodytes aedon</i>		Ins	D	T/Ar				
	FAMILY SYLVIIDAE								
	<i>Microbates cinereiventris</i>		Ins	D	Ar				
	<i>Polioptila plumbea</i>		Ins	D	Ar				
	<i>Ramphocaelus melanurus</i>		Ins	D	Ar				
	FAMILY TURDIDAE								
	<i>Catharus aurantiirostris</i>		Fru/Ins	D	T/Ar				
	<i>Catharus fuscescens</i>		Fru/Ins	D	T/Ar				
	<i>Catharus minimus</i>		Fru/Ins	D	T/Ar				
	<i>Catharus ustulatus</i>		Fru/Ins	D	T/Ar				
	<i>Hylocichla mustelina</i>		Fru/Ins	D	T/Ar				
	<i>Turdus assimilis</i>		Fru/Ins	D	T/Ar				
	<i>Turdus grayi</i>		Fru/Ins	D	T/Ar				
	<i>Turdus obsoletus</i>		Fru/Ins	D	T/Ar				
	FAMILY MIMIDAE								
	<i>Mimus gilvus</i>		Fru	D					
	FAMILY VIREONIDAE								
	<i>Hylophilus aurantiifrons</i>		Ins	D	T/Ar				
	<i>Hylophilus decurtatus</i>		Ins	D	T/Ar				
	<i>Hylophilus flavipes</i>		Ins	D	T/Ar				
	<i>Vireo flavifrons</i>		Ins	D	T/Ar				
	<i>Vireo flavoviridis</i>		Ins	D	T/Ar				
	<i>Vireo olivaceus</i>		Ins	D	T/Ar				
	<i>Vireolanius pulchellus</i>		Ins	D	T/Ar				
	FAMILY PARULIDAE								
	<i>Basileuterus rufifrons</i>		Ins	D	T/Ar				
	<i>Dendroica castanea</i>		Ins	D	T/Ar				
	<i>Dendroica coronata</i>		Ins	D	T/Ar				

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS								
	<i>Dendroica fusca</i>	Ins	D	T/Ar				
	<i>Dendroica pensylvanica</i>	Ins	D	T/Ar				
	<i>Dendroica petechia</i>	Ins	D	T/Ar				
	<i>Dendroica virens</i>	Ins	D	T/Ar				
	<i>Geothlypis trichas</i>	Ins	D	T/Ar				
	<i>Mniotilta varia</i>	Ins	D	T/Ar				
	<i>Oporornis formosus</i>	Ins	D	T/Ar				
	<i>Oporornis philadelphia</i>	Ins	D	T/Ar				
	<i>Phaeothlypis fulvicauda</i>	Ins	D	T/Ar				
	<i>Protonotaria citrea</i>	Ins	D	T/Ar				
	<i>Seiurus aurocapillus</i>	Ins	D	T/Ar				
	<i>Seiurus motacilla</i>	Ins	D	T/Ar				
	<i>Seiurus noveboracensis</i>	Ins	D	T/Ar				
	<i>Yermivora chrysoptera</i>	Ins	D	T/Ar				
	<i>Yermivora peregrina</i>	Ins	D	T/Ar				
	<i>Wilsonia canadensis</i>	Ins	D	T/Ar				
	<i>Wilsonia pusilla</i>	Ins	D	T/Ar				
	FAMILY COEREBIDAE							
	<i>Coereba flaveola</i>	Ins/Nec	D	T/Ar				
	FAMILY THRAUPIDAE							
	<i>Chlorophanes spiza</i>	Fru/Ins	D	T/Ar				
	<i>Chrysothlypis chrysomelaena</i>	Fru/Ins	D	T/Ar	T			
	<i>Cyanerpes cyaneus</i>	Fru/Ins	D	T/Ar				
	<i>Cyanerpes lucidus</i>	Fru/Ins	D	T/Ar				
	<i>Dacnis cayana</i>	Fru/Ins	D	T/Ar				
	<i>Dacnis venusta</i>	Fru/Ins	D	T/Ar				
	<i>Eucometis penicillata</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia anneae</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia fulvicrissa</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia lanirostris</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia luteicapilla</i>	Fru/Ins	D	T/Ar				
	<i>Habia fuscicauda</i>	Fru/Ins	D	T/Ar				
	<i>Habia rubica</i>	Fru/Ins	D	T/Ar				
	<i>Mitrospingus cassinii</i>	Fru/Ins	D	T/Ar				
	<i>Piranga flava</i>	Fru/Ins	D	T/Ar				

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory	
CLASS BIRDS										
	<i>Piranga olivacea</i>		Fru/Ins	D	T/Ar					
	<i>Piranga rubra</i>		Fru/Ins	D	T/Ar					
	<i>Ramphocelus dimidiatus</i>		Fru/Ins	D	T/Ar					
	<i>Ramphocelus flammigerus</i>		Fru/Ins	D	T/Ar					
	<i>Rhodinocichla rosea</i>		Fru/Ins	D	T/Ar					
	<i>Tachyphonus delatrii</i>		Fru/Ins	D	T/Ar					
	<i>Tachyphonus luctuosus</i>		Fru/Ins	D	T/Ar					
	<i>Tachyphonus rufus</i>		Fru/Ins	D	T/Ar					
	<i>Tangara florida</i>		Fru/Ins	D	T/Ar					
	<i>Tangara gyrola</i>		Fru/Ins	D	T/Ar					
	<i>Tangara icterocephala</i>		Fru/Ins	D	T/Ar					
	<i>Tangara inornata</i>		Fru/Ins	D	T/Ar					
	<i>Tangara larvata</i>		Fru/Ins	D	T/Ar					
	<i>Thraupis episcopus</i>		Fru/Ins	D	T/Ar					
	<i>Thraupis palmeri</i>		Fru/Ins	D	T/Ar	T				
	FAMILY EMBEREZIDAE									
	<i>Amaurospiza concolor</i>		Fru/Ins	D	T/Ar					
	<i>Arremon aurantirostris</i>		Fru/Ins	D	T/Ar					
	<i>Arremonops conirostris</i>		Fru/Ins	D	T/Ar					
	<i>Buarremon brunneinucha</i>		Fru/Ins	D	T/Ar					
	<i>Emberizoides herbicola</i>		Fru/Ins	D	T/Ar					
	<i>Oryzoborus angolensis</i>		Fru/Ins	D	T/Ar					
	<i>Oryzoborus funereus</i>		Fru/Ins	D	T/Ar					
	<i>Sporophila americana</i>		Fru/Ins	D	T/Ar					
	<i>Sporophila minuta</i>		Fru/Ins	D	T/Ar					
	<i>Sporophila nigricollis</i>		Fru/Ins	D	T/Ar					
	<i>Tiaris olivacea</i>		Fru/Ins	D	T/Ar					
	<i>Volatinia jacarina</i>		Fru/Ins	D	T/Ar					
	<i>Zonotrichia capensis</i>		Fru/Ins	D	T/Ar					
	FAMILY CARDINALIDAE									
	<i>Caryothraustes polioaster</i>		Fru	D	T/Ar					
	<i>Cyanocitta cyanooides</i>		Fru	D	T/Ar					
	<i>Pheucticus ludovicianus</i>		Fru	D	T/Ar					
	<i>Saltator albicollis</i>		Fru	D	T/Ar					
	<i>Saltator atriceps</i>		Fru	D	T/Ar					

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
<i>Saltator grossus</i>	Fru	D	T/Ar				
<i>Saltator maximus</i>	Fru	D	T/Ar				
<i>Saltator striatipectus</i>	Fru	D	T/Ar				
FAMILY ICTERIDAE							
<i>Amblycercus holosericeus</i>	Fru/Ins	D	T/Ar				
<i>Cacicus cela</i>	Fru/Ins	D	T/Ar				
<i>Cacicus uropygialis</i>	Fru/Ins	D	T/Ar				
<i>Icterus chrysater</i>	Fru/Ins	D	T/Ar				
<i>Icterus galbula</i>	Fru/Ins	D	T/Ar				
<i>Icterus mesomelas</i>	Fru/Ins	D	T/Ar				
<i>Icterus spurius</i>	Fru/Ins	D	T/Ar				
<i>Molothrus aeneus</i>	Fru/Ins	D	T/Ar				
<i>Molothrus oryzivorus</i>	Fru/Ins	D	T/Ar				
<i>Psarocolius decumanus</i>	Fru/Ins	D	T/Ar				
<i>Psarocolius wagleri</i>	Fru/Ins	D	T/Ar				
<i>Quiscalus mexicanus</i>	Fru/Ins	D	T/Ar				
<i>Sturnella magna</i>	Fru/Ins	D	T/Ar				
<i>Sturnella militaris</i>	Fru/Ins	D	T/Ar				
FAMILY FRINGILLIDAE							
<i>Carduelis psaltria</i>	Ins	D	T/Ar	EX			
		TOTAL		3ER, 18T, 2EX	1	41	7

Source: Karr 1990; Ridgely y Gwynne 1993; Tejera et al. 1995; ANAM 2000; CITES 2003.

Table A4.1-8. Richness of Species of Reptiles and his Distribution in Three Sections (Upper, Middle and Lower) of the Catchment Area of the Ciri Grande River, compared with the species of Indio River.

TAXON		Catchment Area of Ciri Grande River			Indio River
		Upper	Middle	Lower	
CLASS REPTILIA					
CROCODYLIA					
ALLIGATORIDAE	<i>Caiman crocodilus</i>		X	X	X
CROCODYLIDAE	<i>Crocodylus acutus</i>		X	X	
LACERTILIA					
CORYTOPHANIDAE	<i>Basiliscus basiliscus</i>	X	X	X	X
	<i>Corytophanes cristatus</i>	X			X
GEKKONIDAE	<i>Gonatode albogularis</i>		X	X	X
	<i>Hemidactylus frenatus</i>		X	X	X
	<i>Lepidoblepharis xanthostigma</i>		X	X	X
	<i>Sphaerodactylus lineolatus</i>	X	X		X
IGUANIDAE	<i>Iguana iguana</i>	X	X	X	X
GYMNOPHTHALMIDAE	<i>Echinosaura horrida</i>	X			X
	<i>Gymnophthalmus speciosus</i>		X	X	
	<i>Leposoma rugiceps</i>		X	X	
	<i>Leposoma southi</i>	X	X		X
POLYCHROTIDAE	<i>Anolis auratus</i>		X	X	X
	<i>Anolis capito</i>	X	X		X
	<i>Anolis frenatus</i>	X			X
	<i>Anolis humilis</i>	X	X		X
	<i>Anolis limifrons</i>	X	X	X	X
	<i>Anolis lionotus</i>	X	X		X
	<i>Anolis tropidogaster</i>		X	X	
	<i>Anolis vittigerus</i>	X	X		X
SCINCIDAE	<i>Mabuya unimarginata</i>		X		X
TEIIDAE	<i>Ameiva ameiva</i>	X	X	X	X
	<i>Ameiva festiva</i>	X			X
	<i>Ameiva leptophrys</i>	X	X	X	X
SERPENTES					
COLUBRIDAE	<i>Chironius grandisquamis</i>	X			
	<i>Clelia clelia</i>	X			
	<i>Dryadophis melanolomus</i>		X	X	X
	<i>Drymarchon corais</i>		X	X	
	<i>Hydromorphus concolor</i>	X			
	<i>Imantodes cenchoa</i>	X			X
	<i>Imantodes gemmistratus</i>		X	X	
	<i>Leptodeira annulata</i>		X		X
	<i>Leptophis ahaetulla</i>		X	X	X
	<i>Oxybelis aeneus</i>		X	X	
	<i>Sibon argus</i>	X			X
	<i>Spilotes pullatus</i>	X	X		X
	<i>Tantilla schistosa</i>	X			
	<i>Urotheca euryzona</i>	X			X
	<i>Urotheca fulviceps</i>		X		X
	<i>Xenodon rabdocephalus</i>		X	X	X
ELAPIDAE	<i>Micrurus mipartitus</i>		X		X

TAXON		Catchment Area of Ciri Grande River			Indio River
		Upper	Middle	Lower	
CLASS REPTILIA					
	<i>Micrurus stewarti</i>		X	X	X
VIPERIDAE	<i>Bothrops asper</i>	X	X	X	X
	<i>Bothrops nasuta</i>	X			
BOIDAE	<i>Boa constrictor</i>	X			
TESTUDINES					
EMYDIDAE	<i>Rhynoclemmys annulata</i>		X	X	
	<i>Trachemys scripta</i>		X	X	
KINOSTERNIDAE	<i>Kinosternon leucostomum</i>		X	X	X
	<i>Kinosternon scorpioides</i>	X			
CHELYDRIDAE	<i>Chelydra serpentina</i>		X	X	
Total	Species for Ciri Grande = 51	27	37	26	34

Source: Tejera et al. 1995; TLBG, UP Y STRI 1999; Ibañez et al. 1996; Jaramillo e Ibañez 1997a; Samudio et al. 1999.

Table A4.1-9 Ecological Characteristic and State of Conservation of the Species of Reptiles of the Catchment Area of the Ciri Grande River. KEY: State of conservation: EN=endemic native; ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; I, II=CITES; TU=Threatened according to the IUCN. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Car=carnivore; Ins=insectivore; Fo=folivore; Om=omnivore. Behavior: T=terrestrial; SA=semiaquatic; Ar=arboreal or shrubby; Aq=aquatic.

TAXON	Nourishing Habit	Activity	Behavior	ANAM	IUCN	CITES
CLASS REPTILIA						
ORDER CROCODYLIA						
ALLIGATORIDAE						
<i>Caiman crocodilus</i>	Car	D/N	Aq	T		II
CROCODYLIDAE						
<i>Crocodylus acutus</i>	Car	D/N	Aq	T	TU	I, II
ORDER LACERTILIA						
CORYTOPHANIDAE						
<i>Basiliscus basiliscus</i>	Ins	D	SA			
<i>Coryphanes cristatus</i>	Ins	D	Ar	T		
GEKKONIDAE						
<i>Gonatode albogularis</i>	Ins	D	Ar			
<i>Hemidactylus frenatus</i>	Ins	D	Ar			
<i>Lepidoblepharis xanthostigma</i>	Ins	D	Ar	ER		
<i>Sphaerodactylus lineolatus</i>	Ins	D	Ar	ER		
IGUANIDAE						
<i>Iguana iguana</i>	Fo	D	Ar	T		II
GYMNOPHTHALMIDAE						
<i>Echinosaura horrida</i>	Ins	D/N	T			
<i>Gymnophthalmus speciosus</i>	Ins	D	T			
<i>Leposoma rugiceps</i>	Ins	D	T			
<i>Leposoma southi</i>	Ins	D	T			
POLYCHROTIDAE						
<i>Anolis auratus</i>	Ins	D	Ar			
<i>Anolis capito</i>	Ins	D	Ar			
<i>Anolis frenatus</i>	Ins	D	Ar			
<i>Anolis humilis</i>	Ins	D	Ar	ER		
<i>Anolis limifrons</i>	Ins	D	Ar			
<i>Anolis lionotus</i>	Ins	D	Ar	EN		
<i>Anolis tropidogaster</i>	Ins	D	Ar			
<i>Anolis vittigerus</i>	Ins	D	Ar	ER		
SCINCIDAE						
<i>Mabuya unimarginata</i>		D	T			
TEIIDAE						
<i>Ameiva ameiva</i>	Ins	D	T			
<i>Ameiva festiva</i>	Ins	D	T			

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
CLASS REPTILIA								
	<i>Ameiva leptophrys</i>		Ins	D	T	ER		
ORDER SERPENTES								
	COLUBRIDAE							
	<i>Chironius grandisquamis</i>		Car	D	T/Ar			
	<i>Clelia clelia</i>		Car	N	T/Ar			II
	<i>Dryadophis melanotomus</i>		Car	D	T/Ar			
	<i>Drymarchon corais</i>		Car	D	T/Ar			
	<i>Hydromorphus concolor</i>		Car	N	T/Ar	ER		
	<i>Imantodes cenchoa</i>		Car	N	T/Ar			
	<i>Imantodes gemmistratus</i>		Car	N	T/Ar			
	<i>Leptodeira annulata</i>		Car	D	T/Ar			
	<i>Leptophis ahaetulla</i>		Car	D	T/Ar			
	<i>Oxybelis aeneus</i>		Car	D	T/Ar			
	<i>Sibon argus</i>		Car	N	T/Ar	ER		
	<i>Spilotes pullatus</i>		Car	D	T/Ar			
	<i>Tanilla schistosa</i>		Car	N	T/Ar			
	<i>Urotheca euryzona</i>		Car	D/N	T/Ar			
	<i>Urotheca fulviceps</i>		Car	D	T/Ar			
	<i>Xenodon rabdocephalus</i>		Car	D	T/Ar			
	ELAPIDAE							
	<i>Micrurus mipartitus</i>		Car	D/N	T			
	<i>Micrurus stewarti</i>		Car	D/N	T	EN		
	VIPERIDAE							
	<i>Bothrops asper</i>		Car	D/N	T			
	<i>Bothrops nasuta</i>		Car	N	T			
	BOIDAE							
	<i>Boa constrictor</i>		Car	D/N	Ar	T		I, II
ORDER TESTUDINES								
	EMYDIDAE							
	<i>Rhynoclemmys annulata</i>		Om	D	SA			
	<i>Trachemys scripta</i>		Om	D	Aq			
	KINOSTERNIDAE							
	<i>Kinosternon leucostomum</i>		Om	N	Aq			
	<i>Kinosternon scorpioides</i>		Om	N	Aq			
	CHELYDRIDAE							
	<i>Chelydra serpentina</i>		Om	D	Aq			
					TOTAL	2EN, 5T	1	5

Source: Rand y Myers 1990; Tejera et al. 1995; Young et al. 1999; ANAM 2000; CITES 2003.

Table A4.1-10. Richness of Species of Amphibians and his Distribution in Three Sections (Upper, Middle and Lower) of the Catchment Area of the Ciri Grande River. Compared with the species of Indio River.

TAXON		Catchment Area of Ciri Grande River			Indio River
		Upper	Middle	Lower	
CLASS AMPHIBIA					
GYMNOPHIONA					
CAECILIAIDE	<i>Dermophis parviceps</i>		X	X	
	<i>Oascaecilia ochrocephala</i>		X		X
CAUDATA					
PLETHODONTIDAE	<i>Bolitoglossa biseriata</i>		X	X	X
	<i>Bolitoglossa schizodactyla</i>	X			X
	<i>Oedipina parvipes</i>				X
ANURA					
BUFONIDAE	<i>Atelopus zeteki</i>	X			
	<i>Bufo coccifer</i>	X			
	<i>Bufo coniferus</i>	X			X
	<i>Bufo haematiticus</i>	X	X	X	X
	<i>Bufo marinus</i>	X	X	X	X
	<i>Bufo typhonius</i>	X	X	X	X
CENTROLENIDAE	<i>Centrolene ilex</i>	X			X
	<i>Centrolene prosoblepon</i>	X			X
	<i>Cochranella albomaculata</i>	X			X
	<i>Cochranella granulosa</i>	X	X		X
	<i>Cochranella spinosa</i>	X	X		X
	<i>Hyalinobatrachium fleischmanni</i>	X	X	X	X
	<i>Hyalinobatrachium pulveratum</i>	X	X	X	X
	<i>Hyalinobatrachium vireovittatum</i>	X			X
DENDROBATIDAE	<i>Colostethus flotator</i>	X	X	X	X
	<i>Colostethus inguinalis</i>	X			X
	<i>Colostethus nubicola</i>	X			X
	<i>Colostethus pratti</i>	X			X
	<i>Colostethus talamancae</i>	X			X
	<i>Dendrobates auratus</i>	X	X	X	
	<i>Minyobates minutus</i>	X			X
	<i>Phyllobates lugubris</i>		X	X	X
HYLIDAE	<i>Agalychnis callidryas</i>	X	X	X	X
	<i>Agalychnis sp.</i>	X			
	<i>Gastrotheca cornuta</i>	X			X
	<i>Hyla crepitans</i>		X		X
	<i>Hyla ebraccata</i>	X	X	X	X
	<i>Hyla microcephala</i>	X	X	X	X
	<i>Hyla palmeri</i>	X			X
	<i>Hyla phlebodes</i>		X	X	X
	<i>Hyla rufitela</i>	X			X
	<i>Phrynohyas venulosa</i>	X	X		X
	<i>Scinax boulengeri</i>		X	X	X
	<i>Scinax rostrata</i>		X	X	X
	<i>Scinax rubra</i>		X	X	X
	<i>Smilisca phaeota</i>	X	X	X	X

TAXON		Catchment Area of Ciri Grande River			Indio River
		Upper	Middle	Lower	
CLASS AMPHIBIA					
	<i>Smilisca sila</i>	X	X	X	X
MICROHYLIDAE	<i>Chiasmocleis panamensis</i>		X	X	X
LEPTODACTYLIDAE	<i>Eleutherodactylus biporcatus</i>	X			
	<i>Eleutherodactylus bransfordii</i>	X	X		X
	<i>Eleutherodactylus bufoniformis</i>	X			X
	<i>Eleutherodactylus caryophyllaceus</i>	X			X
	<i>Eleutherodactylus cerasinus</i>	X	X		X
	<i>Eleutherodactylus crassidigitus</i>	X	X	X	X
	<i>Eleutherodactylus cruentus</i>	X			X
	<i>Eleutherodactylus diastema</i>	X	X	X	X
	<i>Eleutherodactylus fitzingeri</i>	X	X	X	X
	<i>Eleutherodactylus gaigeae</i>	X	X	X	X
	<i>Eleutherodactylus gollmeri</i>	X			X
	<i>Eleutherodactylus megacephalus</i>	X			X
	<i>Eleutherodactylus museosus</i>	X			X
	<i>Eleutherodactylus pardalis</i>	X			X
	<i>Eleutherodactylus podiciferus</i>	X			
	<i>Eleutherodactylus punctariolus</i>	X	X		X
	<i>Eleutherodactylus ridens</i>	X	X	X	X
	<i>Eleutherodactylus taeniatus</i>	X	X	X	X
	<i>Eleutherodactylus talamancae</i>	X			X
	<i>Eleutherodactylus vocator</i>	X	X	X	X
	<i>Leptodactylus insularum</i>		X	X	X
	<i>Leptodactylus labialis</i>	X	X	X	X
	<i>Leptodactylus melanonotus</i>	X	X	X	X
	<i>Leptodactylus pentadactylus</i>	X	X	X	X
	<i>Leptodactylus poecilochilus</i>	X	X		X
	<i>Physalaemus pustulosus</i>	X	X	X	X
RANIDAE	<i>Rana sp. (complejo pipiens)</i>	X			
	<i>Rana vaillanti</i>		X	X	X
	<i>Rana warszewitschii</i>	X			X
Total	Species for Ciri Grande = 71	59	42	33	64

Source: Tejera et al. 1995; TLBG, UP Y STRI 1999; Ibañez et al. 1996; Jaramillo e Ibañez 1997a; Samudio et al. 1999.

Table A4.1-11: Ecological Characteristics and State of Conservation of the Species of Amphibians of the Sub-basin of the Ciri Grande Lake. KEY: State of conservation: EN=endemic native; ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; I, II=CITES. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Car=carnivore; Ins=insectivore. Behavior: T=terrestrial; SA=semiaquatic; Ar=arboreal or shrubby; Fos=fosorio.

TAXON	Nourishing Habit	Activity	Behavior	ANAM	CITES
CLASS AMPHIBIA					
ORDER GYMNOPIHONA					
FAMILY CAECILIAE					
<i>Dermophis parviceps</i>	Ins	D	Fos	ER	
<i>Oasacaecilia ochrocephala</i>	Ins	D	Fos	ER	
ORDER CAUDATA					
FAMILY PLETHODONTIDAE					
<i>Bolitoglossa biseriata</i>	Ins	D	T	ER	
<i>Bolitoglossa schizodactyla</i>	Ins	D	T	EN	
ORDER ANURA					
FAMILY BUFONIDAE					
<i>Atelopus zeteki</i>	Ins	D	T	EN, T	I
<i>Bufo coccifer</i>	Ins	N	T		
<i>Bufo coniferus</i>	Ins	N	T		
<i>Bufo haematiticus</i>	Ins	N	T		
<i>Bufo marinus</i>	Ins	N	T		
<i>Bufo typhonius</i>	Ins	N	T		
FAMILY CENTROLENIDAE					
<i>Centrolene ilex</i>	Ins	N	Ar	ER	
<i>Centrolene prosoblepon</i>	Ins	N	Ar		
<i>Cochranella albomaculata</i>	Ins	N	Ar		
<i>Cochranella granulosa</i>	Ins	N	Ar	ER	
<i>Cochranella spinosa</i>	Ins	N	Ar		
<i>Hyalinobatrachium fleischmanni</i>	Ins	N	Ar		
<i>Hyalinobatrachium pulveratum</i>	Ins	N	Ar	ER	
<i>Hyalinobatrachium vireovittatum</i>	Ins	N	Ar	ER	
FAMILY DENDROBATIDAE					
<i>Colostethus flotator</i>	Ins	D	T	ER	
<i>Colostethus inguinalis</i>	Ins	D	SA	ER	
<i>Colostethus nubicola</i>	Ins	D	T	ER	
<i>Colostethus pratti</i>	Ins	D	T	ER	
<i>Colostethus talamancae</i>	Ins	D	T	ER	
<i>Dendrobates auratus</i>	Ins	D	T	ER, T	II
<i>Minyobates minutus</i>	Ins	D	T	EN	II
<i>Phyllobates lugubris</i>	Ins	D	T	ER, T	II
FAMILY HYLIDAE					
<i>Agalychnis callidryas</i>	Ins	N	T	T	
<i>Agalychnis sp.</i>	Ins	N	T		
<i>Gastrotheca cornuta</i>	Ins	N	T	ER, T	
<i>Hyla crepitans</i>	Ins	N	Ar		
<i>Hyla ebraccata</i>	Ins	N	Ar		
<i>Hyla microcephala</i>	Ins	N	Ar	T	
<i>Hyla palmeri</i>	Ins	N	Ar		
<i>Hyla phlebodes</i>	Ins	N	Ar	ER	
<i>Hyla rufitela</i>	Ins	N	Ar	ER	
<i>Phrynohyas venulosa</i>	Ins	N	T		
<i>Scinax boulengeri</i>	Ins	N	T/Ar		
<i>Scinax rostrata</i>	Ins	N	T/Ar		
<i>Scinax rubra</i>	Ins	N	T/Ar		
<i>Smilisca phaeota</i>	Ins	N	T/Ar		
<i>Smilisca sila</i>	Ins	N	T/Ar	ER	
FAMILY MICROHYLIDAE					
<i>Chiasmocleis panamensis</i>	Ins	N	T	ER	
FAMILY LEPTODACTYLIDAE					

TAXON			Nourishing Habit	Activity	Behavior	ANAM	CITES
CLASS AMPHIBIA							
		<i>Eleutherodactylus biporcatus</i>	Ins	D/N	T	ER	
		<i>Eleutherodactylus bransfordii</i>	Ins	N	T	ER	
		<i>Eleutherodactylus bufoniformis</i>	Ins	N	SA	ER	
		<i>Eleutherodactylus caryophyllaceus</i>	Ins	N	T	ER	
		<i>Eleutherodactylus cerasinus</i>	Ins	D/N	T/Ar	ER	
		<i>Eleutherodactylus crassidigitus</i>	Ins	N	T/Ar	ER	
		<i>Eleutherodactylus cruentus</i>	Ins	D/N	Ar	ER	
		<i>Eleutherodactylus diastema</i>	Ins	N	T		
		<i>Eleutherodactylus fitzingeri</i>	Ins	N	T/Ar	ER	
		<i>Eleutherodactylus gaigeae</i>	Ins	N	T	ER	
		<i>Eleutherodactylus gollmeri</i>	Ins	N	T	ER	
		<i>Eleutherodactylus megacephalus</i>	Ins	N	T		
		<i>Eleutherodactylus museosus</i>	Ins	N	T	EN, T	
		<i>Eleutherodactylus pardalis</i>	Ins	N	T	ER	
		<i>Eleutherodactylus podiciferus</i>	Ins	N	T	ER	
		<i>Eleutherodactylus punctariolus</i>	Ins	N	T	ER	
		<i>Eleutherodactylus ridens</i>	Ins	N	T/Ar		
		<i>Eleutherodactylus taeniatus</i>	Ins	N	T/Ar	ER	
		<i>Eleutherodactylus talamancae</i>	Ins	D/N	T	ER	
		<i>Eleutherodactylus vocator</i>	Ins	N	T/Ar	ER	
		<i>Leptodactylus insularum</i>	Ins	N	T		
		<i>Leptodactylus labialis</i>	Ins	N	T		
		<i>Leptodactylus melanonotus</i>	Ins	N	T		
		<i>Leptodactylus pentadactylus</i>	Car	N	T		
		<i>Leptodactylus poecilochilus</i>	Ins	N	T		
		<i>Physalaemus pustulosus</i>	Ins	N	T		
FAMILY RANIDAE							
		<i>Rana</i> sp. (complejo <i>pipiens</i>)	Ins	N	SA	EN	
		<i>Rana vaillanti</i>	Ins	N	SA		
		<i>Rana warszewitschii</i>	Ins	N	SA	ER	
					TOTAL	5EN, 7T	4

Source: Rand y Myers 1990; Tejera et al. 1995; Young et al. 1999; ANAM 2000; CITES 2003.

ANAM: Environmental National Authority

Table A4.1-12: Species of Aquatic Invertebrates (Crustaceans and Molluscs) According to his Value of Conservation, Habitat, Localization

TAXON	EIE	Area of Interes		Aquatic Habitat				High	Sub-Basin
		AIG	AIE	HWS	FFLWS	SFLWS	EWS		
Molluscs									
Acmaeidae									
<i>Acmaea</i> sp.							1	L	La
Arcidae									
<i>Anadara</i> sp.	1						1	L	La
Corbiculidae									
<i>Corbicula fluminea</i>	1		1		1	1		L	J,La
Neritidae									
<i>Nerita</i> sp.							1	L	La
Olividae									
<i>Oliva</i> sp.							1	L	La
Pilidae									
<i>Pomacea</i> sp.			1				1	M,L	J,C,La
<i>Pomacea cummingi</i>	1						1	L	J
Tellinidae									
<i>Tellina</i> sp.							1	L	La
Thiaridae									
<i>Melanoides tuberculata</i>			1	1	1	1	1	U,M,L	J,C,La
Trochidae									
<i>Calliostoma</i> sp.	1						1	L	La
Turridae									
<i>Monilispira</i> sp.								L	La
SUBTOTAL	4	0	3	1	2	2	9		
Crustaceans									
Palaemonidae									
<i>Macrobrachium amazonicum</i>			1						J
<i>Macrobrachium carcinus</i>	1	1	1	1	1	1	1	U,M,L	J,C,La
<i>Macrobrachium crenulatum</i>	1	1	1	1	1	1	1	U,M,L	J,C,La
<i>Macrobrachium acanthurus</i>	1	1	1	1	1	1	1	U,M,L	J,C,La
Atyidae									
<i>Atya scabra</i>	1	1	1	1	1	1		U,M	C,I
<i>Potimirin glabra</i>		1	1	1	1	1		M	C,I
Portunidae									
<i>Callinectes</i> sp.	1	1					1	L	La
Pseudothelphusidae									
<i>Pseudothelphusa americana</i>	1	1	1		1	1		M	A,C,I
Grapsidae									
<i>Sesarma</i> sp.	1	1					1	L	I
SUBTOTAL	7	8	6	5	6	6	5		
Total of Invertebrates	11	8	9	6	8	8	14		

Legend: EIE: species of special interest; AIG: areas of general interes; AIE: areas of specific interes HWS:Highland water system; FFWS: Fast Flowing Lowland Water System;SFLWS: Slow Flowing Lowland Water System ; EWS: Estuarine Water system; U: Upper; M:Middle; L:Lower; J: Alhajuela, C: Ciri, La: Lagarto, I: Indio

Family	Specie	Common Name	Physiologic Classification	Type of Habitat	Distribution	Catchment Area											
						Ciri		Lagarto			Alhajuela						
						U	M	L	U	M	L	U	M	L			
	<i>Eleotris pisonis</i>	s/n	Periferic	SFLWS+E90									1	1			
	<i>Gobiomorus dormitor</i>	guabina de río	Periferic	SFLWS, FFLWS	SI, PE								1	1			
Engraulidae																	
	<i>Anchoviella elongata</i>	s/n	Periferic	EWS	GI									1			
Erythrinidae																	
	<i>Hoplias microlepis</i>	pejepero	Primary	SFLWS	SI, PE							1	1	1			
Gobiidae																	
	<i>Awaous banana</i>	s/n	Periferic	SFLWS, FFLWS	SI								1	1			
	<i>Sycidium altum</i>	chupapiedra	Periferic	SFLWS, FFLWS, HWS	SI, GI							1	1	1			
Gobiesocidae																	
	<i>Gobiosox nuchus</i>	s/n	Periferic	SFLWS, SHBL	SI, EG								1	1			
Haemulidae																	
	<i>Pomadasys croco</i>	roncador	Periferic	FFLWS, EWS	SI, GI									1			
Hypopomidae																	
	<i>Brachyhypopomus occidentalis</i>	cabuya	Primary	SFLWS, FFLWS, HWS	SI, GI							1	1	1			
Lebiasinidae																	
	<i>Piabucina panamensis</i>	domicandela	Primary	SFLWS, FFLWS, HWS	SI, GI							1	1	1			
Loricariidae																	
	<i>Ancistrus chagresi</i>	chupapalo	Primary	SFLWS, FFLWS	SI, GI								1	1			
	<i>Chaetostoma fischeri</i>	chupapalo	Primary	SFLWS, FFLWS	SI, GI								1	1			
	<i>Hypostomus panamensis</i>	cococha	Primary	SFLWS, FFLWS	SI, GI, PE								1	1			
	<i>Leptoancistrus canensis</i>	chupapalo	Primary	SFLWS, FFLWS, HWS	SI, GI							1	1	1			
	<i>Rineloricaria uracantha</i>	chupapalo	Primary	SFLWS, FFLWS	SI, GI							1	1	1			
Mugilidae																	
	<i>Agonostomus monticola</i>	dajao	Periferic	SFLWS, FFLWS, HWS	SI, GI							1	1	1			
	<i>Joturus pichardi</i>	bocachico	Periferic	SFLWS, FFLWS	SI							1	1	1			
Pimelodidae																	
	<i>Pimelodella chagresi</i>	barbudito	Primary	SFLWS, FFLWS	SI							1	1	1			
	<i>Rhamdia quelen</i>	barbudo	Primary	SFLWS, HWS	SI, GI, PE							1	1	1			
	<i>Brachyhaphis cascajalensis</i>	parvivo	Secondary	SFLWS, FFLWS	SI, PE								1	1			
	<i>Brachyhaphis episcopi</i>	parvivo	Secondary	SFLWS, FFLWS, HWS	SI, GI							1	1	1			
	<i>Neoheterandria tridentiger</i>	parvivo	Secondary	SFLWS, HWS	SI, GI							1	1	1			
	<i>Poecilia gillii</i>	parvivo	Secondary	SFLWS, FFLWS, HWS	SI, GI, PE							1	1	1			
Rivulidae																	
	<i>Rivulus brunneus</i>	s/n	Secondary		SI									1			
	<i>Rivulus</i> sp.	sp.	Secondary	SFLWS, FFLWS, HWS	SI, GI							1	1	1			
Synbranchidae																	
	<i>Synbranchus marmoratus</i>	culebra de agua	Secondary	SFLWS, FFLWS, HWS	SI, GI							1	1	1			

Family	Specie	Common Name	Physiologic Classification	Type of Habitat	Distribution	Catchment Area													
						Ciri			Lagarto			Alhajuela							
						U	M	L	U	M	L	U	M	L	U	M	L		
Sygnathidae																			
	<i>Microphis brachyurus</i>	s/n	Periferic	FFLWS						1									
	<i>Pseudophallus mindii</i>	s/n	Periferic	EWS	GI														
Trichomycteridae																			
	<i>Trichomycterus striatus</i>	s/n	Primary	SFLWS, FFLWS, HWS	SI, GI			1	1	1	1							1	
TOTAL: Family: 23; species:58; Periferic:20; Primary:23; Secondary: 15																			
TOTAL: HWS: 18; SFLWS: 43; FFLWS: 37; EWS: 10						17	38	33	30	40	49								34

* Genera y specie introduced

HWS: Highland Water System

FFLWS: Fast Flowing Lowlands Water System

SFLWS: Slow Flowing Lowland Water System

EWS: Estuarine Water System

GI: area of general interes

SI: area of specific interes

PE: Periferic

U:Upper Catchment Area

M:Middle Catchment Area

L:Lower Catchment Area

Source: Louis Berger (1999).

Table A4.1-14: Species of Terrestrial Insects by Distribution and Location.

TAXON	Section of the Catchment Area			Catchment Area
	Upper	Middle	Lower	
Tabanidae				
<i>Catachlorps fulmineus</i>	+			C
<i>Dicleracera fasiata</i>	+	+	+	C,L
<i>Dicleracera hartmanni</i>			+	C,L
<i>Philopatabanus magnificus</i>	+	+	+	C,L
<i>Philopatabanus nigrinubilus</i>	+			C,L
<i>Tabanus albocirculus</i>		+	+	C,L
<i>Tabanus surifer</i>	+			C
<i>Tabanus unistriatus</i>		+	+	C,L
<i>Tabanus occidentalis</i>	+	+	+	C,L
<i>Tabanus puntipleura</i>			+	C,L
<i>Tabanus pungens</i>	+			C
<i>Chrysops melaenus</i>	+	+	+	C,L
<i>Chrysops nexosus</i>		+	+	C,L
<i>Chrysops variegatus</i>		+	+	C,L
<i>Chrysops calogaster</i>			+	C
<i>Esenbeckia parasineventris</i>		+	+	C,L
<i>Leucotabanus exaestuans</i>		+	+	C,L
<i>Fifena flavipennis</i>		+	+	C,L
<i>Stibasoma flaviventre</i>	+			C
<i>Poeciloderas quadripunctatus</i>	+			C
Culicidae				
<i>Culex coronatus</i>			+	C,L
<i>Culex (Melanoconium) sp.</i>	+	+	+	C,L
<i>Culex vomerifer</i>	+	+	+	C,L
<i>Culex quinquefasciatus</i>		+	+	C,L
<i>Psoropha feraz</i>		+	+	C,L
<i>Psoropha lineata</i>	+			C
<i>Wyeomyia arthrostigma</i>	+	+	+	C,L
<i>Anopheles punctimacula</i>	+	+	+	C,L
<i>Anopheles pseudopuntipennis</i>		+	+	C,L
<i>Aedes taeniorhynchus</i>		+	+	C,L
<i>Aedes septentriatus</i>	+			C
<i>Coquillettida venezuelensis</i>			+	C,L
<i>Mansonia titillans</i>			+	C,L
<i>Haemagogus indicoler</i>	+	+		C
<i>Sabathes chloropterus</i>	+	+	+	C,L
<i>Sabathes undosus</i>	+			C
Psichodidae				
<i>Lutzomyia adydifera</i>	+		+	C
<i>Lutzomyia camposi</i>	+	+	+	C,L
<i>Lutzomyia carpenteri</i>	+	+	+	C,L
<i>Lutzomyiap panamensis</i>	+	+	+	C,L
<i>Lutzomyia sanguinaria</i>	+		+	C,L
<i>Lutzomyia trapidoi</i>			+	C,L
<i>Lutzomyia triramula</i>	+	+	+	C,L
<i>Lutzomyia gomezi</i>	+	+	+	C,L
<i>Lutzomyia ylephiletor</i>	+			C,L
<i>Lutzomyia shannoni</i>			+	C,L
<i>Lutzomyia hartmanni</i>	+			C
<i>Lutzomyia vespertilionis</i>	+			C

Table A4.1-14: Species of Terrestrial Insects by Distribution and Location.

TAXON	Section of the Catchment Area			Catchment Area
	Upper	Middle	Lower	
Ceratopogonidae				
<i>Culicoides furens</i>	+	+	+	C,L
<i>Culicoides insignis</i>		+	+	C,L
Simuliidae				
<i>Simulium sanguineum</i>	+	+	+	C,L
<i>Simulium quadrivittatum</i>	+	+	+	C,L
<i>Simulium ochraceatum</i>		+	+	C,L
<i>Simulium metallicum</i>		+	+	C,L
<i>Simuliummexicanum</i>	+		+	C,L
Triatominae				
<i>Rhodnius pallescens</i>	+	+	+	C
<i>Pastrongylus geniculatus</i>	+			C
<i>Pastrongylus humeralis</i>	+			C
<i>Pastrongylus rufotuberculatus</i>	+			C

Legend: C: Ciri, L: Lagarto.

Source: Louis Berger (1999)

TABLE A4.1-15
Species of Aquatic Insects According its Distribution for Catchment Area

TAXON	Catchment Area		
	Ciri	Indio	Lagarto
Aeshenidae	X	X	X
Athericidae	X	X	X
Baetidae	X	X	X
Caenidae	X	X	X
Calamoceratidae	X	X	X
Calopterygidae	X	X	X
Ceratopogonidae	X	X	X
Chironomidae	X	X	X
Coenagrionidae	X	X	X
Corydalidae	X	X	X
Dixidae	X	X	X
Dolichopodidae	X	X	X
Dysticidae	X	X	X
Elmidae	X	X	X
Empididae	X	X	X
Entomobrydae	X	X	X
Ephydriidae	X	X	X
Glossomatidae	X	X	X
Gomphidae	X	X	X
Gyrinidae	X	X	X
Hebridae	X	X	X
Heptageniidae	X	X	X
Hydrophilidae	X	X	X
Hydropsychidae	X	X	X
Hydroptilidae	X	X	X
Leptoceridae	X	X	X
Leptohyphidae	X	X	X
Leptophlebiidae	X	X	X
Libellulidae	X	X	X
Megapodagrionidae	X	X	X
Naucoridae	X	X	X
Perlidae	X	X	X
Philopotamidae	X	X	X
Polithoridae	X	X	X
Polycentropodidae	X	X	X
Psephenidae	X	X	X
Psychodidae	X	X	X
Ptylodatilidae	X	X	X
Pyralidae	X	X	X
Reduviidae	X	X	X
Scarbidae	X	X	X
Scirtidae	X	X	X
Simulidae	X	X	X
Stratiomyidae	X	X	X
Tupilidae	X	X	X
Vellidae	X	X	X

Source: Louis Berger

Table A4.1-16: Statistics of the Changes of Use of the Soil for the Catchment Area of Ciri Grande River

Category of Use	Specific Area of Interest			General Area of Interest			Upper Catchment			Middle Catchment			Lower Catchment		
	2000 Surf/Ha	1990 Surf/Ha	Change of Use Surf/Ha	2000 Surf/Ha	1990 Surf/Ha	Change of Use Surf/Ha	2000 Surf/Ha	1990 Surf/Ha	Change of Use Surf/Ha	2000 Surf/Ha	1990 Surf/Ha	Change of Use Surf/Ha	2000 Surf/Ha	1990 Surf/Ha	Change of Use Surf/Ha
Mature Forest	0.0	0.0	0.0	1469.0	1506.1	-37.1	-2	1469.0	1506.1	-37.1	-2.5	0.0	0.0	0.0	0.0
Secondary Forest	156.4	368.8	-212.4	2321.5	2595.0	-273.5	-11	1715.8	1750.5	-34.6	-2.0	596.9	713.0	-116.1	-16.3
Pasture	2073.4	1845.4	227.9	4331.1	4207.2	123.9	3	1243.4	1204.1	39.3	3.3	4369.7	4170.0	199.7	4.8
Stubble and Shrub land	740.2	778.9	-38.7	9477.3	9371.1	106.2	1	6062.0	6109.5	-47.4	-0.8	3486.6	3597.8	-111.2	-3.1
Temporary agriculture	24.3	1.0	24.3	185.7	105.6	80.1	76	142.1	62.3	79.8	128.2	64.5	36.9	27.6	74.9
TOTAL	2994.2	2994.1	0.0	17784.6	17785.0	-0.4	67	10632.3	10632.3	0.0	126.2	8517.7	8517.7	0.0	60.3

Sup/Ha: Surface by Hectare

Source: SIG-URS, Holdings with ACP DATA.

Table A4.1-17
Statistic for the Change Use of the Soil
Catchments Area of Ciri Grande River

Zone name: Mature forests

Class Name	Count	%	Hectares
0 screen	5	0.01	0.450
1 mature forest	54627	84.08	4916.430
2 Secondary forest n		0.01	0.720
3 Shrub land	10320	15.88	928.800
4 Pasture	14	0.02	1.260
5 Commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	0	0.00	0.000
Total	64974	100.00	5847.660

Zone name: Secondary Forest

Class Name	Count	%	Hectares
0 screen	232	0.15	20.880
1 Mature forest	16	0.01	1.440
2 Secondary forest	120838	77.47	10875.420
3 Shrub land	29223	18.73	2630.070
4 Pasture	4656	2.98	419.040
5 Commercial agriculture	3	0.00	0.270
6 Subsistence agriculture	1015	0.65	91.350
Total	155983	100.00	14038.470

Zone name: Shrub land

Class Name	Count	%	Hectares
0 screen	307	0.08	27.630
1 Mature forest	81	0.02	7.290
2 Secondary forest	4696	1.28	422.640
3 Shrub land	326775	89.41	29409.750
4 Pasture	26566	7.27	2390.940
5 commercial agriculture	489	0.13	44.010
6 subsistence agriculture	6585	1.80	592.650
Total	365499	100.00	32894.910

Table A4.1-17
Statistic for the Change Use of the Soil
Catchments Area of Ciri Grande River

Zone name: Pasture

Class Name	Count	%	Hectares
0 fondo	133	0.07	11.970
1 Mature forest	2	0.00	0.180
2 Secondary forest	77	0.04	6.930
3 Shrub land	9696	5.17	872.640
4 Pasture	177138	94.50	15942.420
5 commercial agriculture	297	0.16	26.730
6 Subsistence agriculture	96	0.05	8.640
Total	187439	100.00	16869.510

Zone name: Commercial agriculture

Class Name	Count	%	Hectares
0 screen	0	0.00	0.000
1 Mature forest	0	0.00	0.000
2 Secondary forest	0	0.00	0.000
3 Shrub land	0	0.00	0.000
4 Pasture	0	0.00	0.000
5 Commercial agriculture	0	0.00	0.000
6 subsistence agriculture	0	0.00	0.000
Total	0	0.00	0.000

Zone name: subsistence agriculture

Class Name	Count	%	Hectares
0 screen	0	0.00	0.000
1 Mature forest	5	0.10	0.450
2 Secondary forest	1148	22.48	103.320
3 Shrub land	2656	52.02	239.040
4 Pasture	1083	21.21	97.470
5 commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	214	4.19	19.260

**TABLE A4.1-18
INSTALLATIONS OF HEALTH ACCORDING TO TYPE,
SPECIFIC AREA OF INTEREST CATCHMENT AREA OF CIRÍ GRANDE RIVER.
DECEMBER, 2003**

Location	Type
Cirí Grande	Puesto de Salud
Arenas Blancas	Puesto de Salud

Source: Listing of Installations of the regions de Salud, Panama Oeste Area. March 2003.

**TABLE A4.1-19
HUMAN RESOURCES ACCORDING TO THE ACCESS TO A REFERENCE HEALTH
CENTER AT THE SPECIFIC AREA OF INTEREST. CATCHMENT AREA OF CIRÍ GRANDE
RIVER. DECEMBER 2003.**

Type of Personnel	Reference Health Center	
	Nueva Trinidad	El Espino
Doctor	1	2
Nurse	--	3
Dentist	--	4
Auxiliar of Nursing	--	6
Assistant of Pharmacy	1	1
Medical technician	--	1
Social worker	--	1
Educador for the Health	--	1
Assistant of Health	1	11

Sources: Planning Department of the Region de Salud of Panama Oeste Area, 2003.

**TABLE A4.1-20
INSTALLATIONS OF HEALTH ACCORDING TO THE GENERAL AREA
OF INTEREST. CATCHMENT AREA OF CIRÍ GRANDE RIVER. DECEMBER 2003.**

Location	Type
Cirí de Los Sotos	Puesto de Salud
Santa Rosa	Puesto de Salud
Tres Hermanas	Puesto de Salud
La Arenosa	Sub- Centro de Salud
Cirí Grande	Puesto de Salud
Las Claras Arriba	Puesto de Salud
Río Indio	Puesto de Salud
La Humildad	Puesto de Salud
El Cacao	Centro de Salud ⁽¹⁾
La Florida	Puesto de Salud

Legend: (1) Changed from Puesto de Salud to Centro de Salud, three months ago.

Source: Listing of Installations of the Region de Salud, Panama Oeste Area, March 2003.

TABLE A4.1-21
HUMAN RESOURCES BY PERSONNEL, HEALTH INSTALLATION AND ACCORDING TO
THE PERSONAL IN THE GENERAL AREA OF INTEREST, CATCHMENT AREA OF CIRÍ
GRANDE RIVER. DECEMBER 2003.

Type of Official	Type of Installation		
	Puesto de Salud	Sub Centro de Salud	Centro de Salud
Doctor		1	1
Nurse			3**
Auxiliar of nursering		1	
Assistant de pharmacy			1
Health assistant	7		1
Health Promoter			1
Administrative assistant		1	2

Leyenda: ** 2 japanese nurses.

Source: The Planning department of the Region de Salud of Panama Oeste Area. 2003.

TABLE A4.1-22
REFERENCE HEALTH INSTALLATIONS.
AREA OF INTEREST GENERAL, CATCHMENT AREA OF CIRÍ GRANDE.
DECEMBER 2003.

Installation	Installation of Reference
Puesto de Salud Cirí de los Sotos	Centro de Salud de El Espino
Puesto de Salud Santa Rosa	Centro de Salud de El Espino
Puesto de Salud Tres Hermanas	Centro de Salud de El Espino
Sub Centro de Nueva La Arenosa	Centro de Salud de El Espino Hospital Nicolás A Solano (H.N.A.S.)
Puesto de Salud Cirí Grande	Centro de Salud de El Espino
Puesto de Salud Las Claras Arriba	Centro de Salud de El Espino
Puesto de Salud Río Indio	Centro de Salud de El Espino
Puesto de Salud La Humildad	Centro de Salud de El Espino
Centro de Salud El Cacao	Centro de Salud de Capira y H.N.S.S.
Puesto de Salud La Florida	Centro de Salud de El Espino

Source: Listing of Installations of the Region de Salud de, Panama Oeste Area, March 2003.

TABLE A4.1-23
MAIN CAUSES OF MORTALITY BY CORREGIMIENTO
AND ACCORDING TO CAUSE. CAPIRA. 2002

Cause	Deaths					
	Total	Corregimiento of Residence				
		Cirí de los Sotos	Cirí Grande	El Cacao	La Trinidad	Santa Rosa
Total	48	7	12	10	8	11
Diarrhea and gastroenteritis of presumed infectious origin	1	-	-	1	-	-
The other infectious illnesses and parasitosis	1	-	-	1	-	-
Tumors (neoplasias) harmful	8	-	1	4	3	-
hypertensive illnesses	1	-	-	-	-	1
Isquemics illnesses of the heart	1	-	-	-	1	-
Other illnesses of the heart	2	-	-	-	2	-
Brain-vascular Illnesses	4	1	1	1	-	1
Pneumonia	1	1	-	-	-	-
liver Illnesses	1	-	-	-	-	1
Some affections originated in the prenatal period	2	-	1	-	1	-
Congenital malformations, deformities and chromosomes anomalies	2	-	-	1	-	1
Accidents, wounds self-inflicted, aggressions and another violence	7	2	-	1	1	3
Other Causes	17	3	9	1	-	4

Source: Contraloría General de la República. December 18, 2003.

TABLE A4.1-24
MAIN CAUSES OF MORBIDITY ATTENDED IN FIELD TRIP IN TRES HERMANAS.
AREA OF INTERES GENERAL. CATCHMENT AREA OF CIRI GRANDE RIVER.
YEAR 2001.

Group by Age	Cause	Number
Less than 1 year	Low weight	6
	Bronchitis	5
	Piodermatitis	5
	Cold	5
	Leishmaniasis	4
1 - 4 year	Parasitic	27
	Leishmaniasis	20
	Piodermatitis	17
	Low weight	10
	tonsillitis	7
5- 14 year	Parasitic	31
	Leishmaniasis	18
	Piodermatitis	7
	Faringitis	5
	Bronquitis	4
15 - 19 year	Parasitic	14
	Leishmaniasis	10
	pharingitis	8
	Piodermatitis	8
	Foot Fungus	7
20 - 49	Lumbago	15
	pharingitis	14
	Wound in Foot	12
	Alergy	7
	Leishmaniasis	4
50- 59	Lumbago	4
	Foot Fungus	3
	Pain in Waist	3
	Strange body in eye	2
	Hand injured	2
60 and more	Lumbago	7
	Pharingitis	2
	Otitis	2
	Hand injured	1
	Headache	1

Source: Medical field trip report. Department of Statistical and Medical Reports of Centro de Salud de El Espino. August 2001

TABLE A4.1-25
MAIN CAUSES OF MORBIDITY ATTENDED IN INSTALLATIONS OF HEALTH WITH
MEDICAL RESOURCE. AREA OF INTERES GENERAL. CATCHMENT AREA OF
CIRI GRANDE RIVER. YEAR 2002.

GROUPS BY AGE	Cause
Less than 1 year	- - Flu syndrome
	- Diarrhea
	- Rhinopharyngitis acute
	- Bronchitis acute
	- Undernourishment
1 - 4 years	- Diarrhea
	- Flu Síndrome
	- Rhinopharyngitis
	- Undernourishment protein caloric
	- Bronchitis
5- 9 years	- Flu Síndrome
	- Rhinopharyngitis acute
	- other anemia
	- Tonsillitis
	- Parasitosis
10- 14 years	-Flu Síndrome
	- Diarrhea
	- Bronchial asthma
	- Rhinopharyngitis acute
	- Anemia
15- 19	- Flu Síndrome
	- Diarrhea
	- I.V.U.
	- Rinofaringitis acute
	- Asthma bronchial
20- 49	- Flu Síndrome
	- Diarrhea
	- H.T.A.
	- I.V.U.
	- Vaginitis acute
50-59	- H.T.A.
	- Flu Síndrome
	- Diarrhea
	- Diabetes mellitus
	- Asthma bronchial
60 and more	- H.T.A.
	- Flu Síndrome
	- Diabetes mellitus
	- Diarrhea
	- Asthma bronchial
	- Arthritis

Source: Medical field trip report. . Department of Statistical and Medical Reports of. Región de Salud de Panamá Oeste. Marzo 2003

TABLE A4.1.26
ILLNESSES OF OBLIGATORY NOTIFICATION.
CAPIRA DISTRICT. PANAMA OESTE AREA. YEAR 2002

Cause	Number	Rate
Flu syndrome	669	19.6
Diarrhea	913	26.7
Conjuntivitis	172	5
Vulvovaginitis	77	4.8
pelvic inflammatory diseases	79	4.9
Chicken pox	45	1.3
Bronchopneumonia	4	0.1
Leishmaniasis	403	11.8
Dengue Fever	6	0.2
Amebiasis	9	0.3
Hepatitis	15	0.4

Source: Department of Statistical and Medical Records of the Region of Health of Panama Oeste Area. Marzo 2003.

ANNEX - 2

Table A4.2-1 Species of Flora for Type of Habitat

TAXON		UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
ACANTHACEAE		X							
	<i>Aphelandra campanensis</i>	X				X	X		
	<i>Blechum pyramidatum</i>		X	X	X				
ACTINIDACEAE									
	<i>Saurauia yasicae</i>	X				X	X		
ANACARDIACEAE									
	<i>Anacardium occidentale</i>	X	X	X	X	X		X	X
	<i>Astronium graveolens</i>		X	X	X				
ANNONACEAE									
	<i>Anaxagorea sp.</i>	X				X	X		
	<i>Annona montana</i>	X	X			X	X		
	<i>Annona pittieri</i>	X				X	X		
	<i>Annona spraguei</i>		X	X	X			X	X
	<i>Rollinia mucosa</i>	X				X	X		
APOCYNACEAE									
	<i>Aspidosperma spruceanum</i>	X	X	X	X	X			
	<i>Lacmellea speciosa</i>	X	X	X	X		X		
	<i>Stemmadenia alfari</i>	X				X	X		
ARALIACEAE									
	<i>Dendropanax arboreus</i>	X	X	X	X	X	X		
	<i>Dendropanax sessiliflorus</i>	X				X	X		
ARECACEAE									
	<i>Aiphanes hirsuta</i>	X				X	X		
	<i>Attalea butyracea</i>		X	X	X				
	<i>Chamaedorea tepejilote</i>	X				X	X		
	<i>Cryosophila warscewiczii</i>	X	X			X	X		
	<i>Euterpe precatoria</i>	X				X	X		
	<i>Geonoma cuneata</i>	X	X			X	X		
	<i>Socratea exorrhiza</i>	X	X	X		X	X		
	<i>Welfia regia</i>	X	X	X	X				
ASCLEPIADACEAE									
	<i>Asclepias curassavica</i>	X	X	X		X	X	X	
ASTERACEAE									
	<i>Verbesina lanata</i>	X				X	X		
BIGNONIACEAE									
	<i>Amphitecna isthmica</i>	X				X	X		
	<i>Amphitecna spathicalyx</i>	X				X	X		
	<i>Tabebuia rosea</i>		X	X	X		X	X	
	<i>Tabebuia guayacan</i>		X	X			X	X	
BOMBACACEAE									
	<i>Matisia exaltata</i>	X				X	X		
	<i>Matisia sanblasensis</i>	X							
	<i>Pachira aquatica</i>	X	X	X	X	X			
	<i>Pachira sessilis</i>		X	X	X	X			
	<i>Quararibea asterolepis</i>	X	X	X		X			
	<i>Quararibea obliquifolia</i>	X				X			
BORAGINACEAE									
	<i>Cordia alliodora</i>	X	X	X	X			X	
	<i>Cordia cymosa</i>	X				X	X		
	<i>Cordia lucidula</i>	X	X			X	X		
BURSERACEAE									
	<i>Protium aff. guianense</i>	X	X		X				
	<i>Protium tenuifolium</i>	X			X				
	<i>Tetragastris panamensis</i>	X	X	X	X				
CAPARIDACEAE									
	<i>Capparis antonensis</i>	X				X	X		
	<i>Capparis discolor</i>					X	X		

	TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
	<i>Capparis pittieri</i>	X				X	X	X	
CECROPIACEAE									
	<i>Cecropia garciae</i>	X			X				
	<i>Cecropia insignis</i>	X	X	X		X	X		
	<i>Cecropia obtusifolia</i>	X	X	X	X	X	X	X	X
CELASTRACEAE									
	<i>Maytenus schippii</i>	X	X	X	X				
CHLORANTHACEAE									
	<i>Hedyosmum bonplandianum</i>	X				X	X		
	<i>Hedyosmum scaberrimum</i>	X				X	X		
CHRYSOBALANACEAE									
	<i>Hirtella latifolia</i>	X	X	X	X		X	X	
	<i>Hirtella triandra</i>	X	X	X		X	X		
	<i>Hirtella tubiflora</i>	X			X				
	<i>Licania macrocarpa</i>	X			X				
CLETHRACEAE									
	<i>Clethra lanata</i>	X				X	X		
CLUSIACEAE									
	<i>Calophyllum brasiliense</i>	X	X	X	X	X	X		
	<i>Calophyllum longifolium</i>	X				X			
	<i>Chrysochlamys grandifolia</i>	X	X			X			
	<i>Clusia divaricata</i>	X				X	X		
	<i>Dystovomita paniculata</i>	X			X	X	X		
	<i>Marila laxiflora</i>	X	X	X	X	X			
	<i>Marila pluricostata</i>	X			X				
	<i>Symphonia globulifera</i>	X	X	X		X	X		
	<i>Tovomita longifolia</i>	X			X				
	<i>Vismia baccifera</i>	X			X				
	<i>Vismia billbergiana</i>	X	X	X	X	X	X		
	<i>Vismia macrophylla</i>	X			X	X	X		
COMBRETACEAE									
	<i>Terminalia amazonia</i>	X	X	X	X	X	X	X	
CYATHEACEAE									
	<i>Cyathea petiolata</i>	X				X	X		
ELAEOCARPACEAE									
	<i>Sloanea aff. meianthera</i>	X							
ERYTHROXYLACEAE									
	<i>Erythroxylum macrophyllum</i>	X				X	X		
EUPHORBIACEAE									
	<i>Acalypha diversifolia</i>	X				X	X		
	<i>Alchornea costaricensis</i>				X	X			
	<i>Alchornea latifolia</i>	X			X	X			
	<i>Conceveiba pleiostemona</i>	X	X		X				
	<i>Croton draco</i>	X	X	X	X	X			
	<i>Croton lanjouwensis</i>	X			X	X			
	<i>Drypetes sp. aff. amazonica</i>	X	X		X	X			
	<i>Hieronyma oblonga</i>	X			X	X			
	<i>Maprounea guianensis</i>	X	X		X				
	<i>Pera arborea</i>	X	X	X	X		X	X	
	<i>Sapium glandulosum</i>	X			X	X			
	<i>Tetrorchidium gorgonae</i>	X			X	X			
FABACEAE									
	<i>Dussia macropophyllata</i>	X			X	X			
	<i>Dussia munda</i>	X	X		X	X			
	<i>Dussia tessmannii</i>	X							
	<i>Erythrina costaricensis</i>	X	X			X			
	<i>Inga ciliata ss: subcapitata</i>	X			X	X			
	<i>Inga laurina</i>	X	X	X		X			

TAXON		UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
	<i>Inga filiformis</i>	X				X			
	<i>Inga marginata</i>	X	X		X	X			
	<i>Inga oerstediana</i>	X			X	X			
	<i>Inga punctata</i>		X	X	X				
	<i>Inga sapindoides</i>	X	X	X					
	<i>Inga sertulifera</i>	X				X	X		
	<i>Inga sierrae</i>	X			X	X	X		
	<i>Inga urceolata</i>	X			X	X	X		
	<i>Iriartea deltoidea</i>	X	X						
	<i>Lonchocarpus oliganthus</i>	X			X				
	<i>Ormosia amazonica</i>	X	X	X	X	X			
	<i>Platymiscium pinnatum</i>	X		X	X				
	<i>Sclerolobium costaricense</i>	X			X				
	<i>Senna dariensis</i>	X		X	X				
	<i>Swartzia simplex var. ochracea</i>	X	X	X	X	X			
	<i>Tachigali versicolor</i>	X	X	X		X			
FLACOURTIACEAE									
	<i>Casearia arborea</i>	X			X				
	<i>Casearia commersoniana</i>	X	X	X		X			
	<i>Casearia sylvestris</i>	X			X	X			
	<i>Laetia thamnia</i>	X	X	X	X	X			
	<i>Lunania piperoides</i>	X			X	X			
	<i>Mayna odorata</i>	X	X		X	X			
	<i>Ryania speciosa</i>	X			X				
	<i>Xylosma oligandra</i>	X				X			
GESNERIACEAE									
	<i>Besleria formicaria</i>	X				X	X		
HERNANDIACEAE									
	<i>Hernandia stenura</i>	X				X	X		
HIPPOCRATEACEAE									
	<i>Salacia petenensis</i>	X				X			
HUMIRIACEAE									
	<i>Humiriastrum diguense</i>	X			X	X	X		
ICACINACEAE									
	<i>Calatola costaricensis</i>	X			X	X	X		
LACISTEMATAACEAE									
	<i>Lacistema aggregatum</i>	X	X	X	X				
	<i>Lozania pittieri</i>	X			X				
LAURACEAE									
	<i>Cinnamomum paratriplinerve</i>	X				X	X		
	<i>Licaria excelsa</i>	X				X	X		
	<i>Ocotea dendrodaphne</i>	X			X	X			
	<i>Ocotea meziana</i>	X	X			X	X		
	<i>Ocotea tonduzii</i>	X				X	X		
	<i>Pleurothyrium aff. hexaglandulos</i>	X				X	X		
LECYTHIDACEAE									
	<i>Eschweilera sp.aff. angustifolia</i>	X	X		X				
	<i>Eschweilera calyculata</i>	X	X		X				
	<i>Gustavia dubia</i>	X	X		X				
	<i>Gustavia superba</i>	X	X	X	X		X	X	
MALPIGHIACEAE									
	<i>Bunchosia dwyeri</i>	X				X			
MALVACEAE									
	<i>Hampea albipetala</i>		X		X				
	<i>Hampea appendiculata</i>	X			X	X			

TAXON		UCA	MCA	LCA	bpot	bspots	bpotm	rast	past
MELASTOMATACEAE									
	<i>Aciotis indecora</i>	X				X			
	<i>Clidemia octona</i>	X				X			
	<i>Conostegia rufescens</i>	X				X			
	<i>Conostegia xalapensis</i>	X				X			
	<i>Graffenrieda galeottii</i>	X	X			X			
	<i>Henriettella tuberculosa</i>		X	X	X				
	<i>Miconia argentea</i>	X	X			X		X	
	<i>Miconia minutiflora</i>	X	X	X		X			
	<i>Miconia dorsiloba</i>	X				X	X		
	<i>Miconia elata</i>	X				X			
	<i>Miconia ligulata</i>	X				X			
	<i>Miconia simplex</i>	X			X	X			
	<i>Miconia sp.aff.umbriensis</i>	X						X	
	<i>Mouriri sp.aff.exilis</i>		X	X	X				
MELIACEAE									
	<i>Carapa guianensis</i>	X			X	X			
	<i>Guarea kunthiana</i>	X	X		X	X			
MONIMIACEAE									
	<i>Mollinedia pinchotiana</i>	X				X	X		
	<i>Siparuna conica</i>	X				X	X		
	<i>Siparuna pauciflora</i>	X	X	X	X	X			
MORACEAE									
	<i>Brosimum guianense</i>	X				X	X		
	<i>Clarisia biflora</i>	X	X		X				
	<i>Ficus colubrinae</i>	X	X	X	X	X			
	<i>Ficus petenensis</i>	X				X			
	<i>Ficus tonduzii</i>	X	X	X		X			
	<i>Ficus yoponensis</i>	X	X	X		X			
	<i>Helicostylis tovarensis</i>	X	X			X	X		
	<i>Maquira guianensis</i>	X		X		X	X		
	<i>Naucleopsis capirensis</i>	X				X	X		
	<i>Naucleopsis naga</i>	X			X	X			
	<i>Perebea xanthochyma</i>	X			X	X	X		
	<i>Poulsenia armata</i>	X	X	X	X	X	X		
	<i>Pourouma bicolor</i>	X	X			X			
	<i>Pourouma minor</i>	X				X	X		
	<i>Sorocea affinis</i>	X	X	X		X	X		
	<i>Sorocea pubivena</i>	X			X	X			
MYRICACEAE									
	<i>Myrica mexicana</i>	X	X			X			
MYRISTICACEAE									
	<i>Otoba acuminata</i>	X				X	X		
	<i>Otoba novogranatensis</i>	X				X	X		
	<i>Virola sebifera</i>	X	X		X	X	X		
MYRSINACEAE									
	<i>Myrsine coriacea</i>	X			X	X			
	<i>Parathesis amplifolia</i>	X				X			
MYRTACEAE									
	<i>Eugenia galalonensis</i>	X	X	X	X	X			
	<i>Eugenia octopleura</i>	X			X	X			
	<i>Eugenia oerstediana</i>	X			X	X			
	<i>Myrcia gatunensis</i>	X	X	X	X	X		X	
	<i>Plinia povedae</i>	X			X	X			
OCHNACEAE									
	<i>Cespedesia macrophylla</i>	X	X		X	X	X		
OLACACEAE									
	<i>Heisteria acuminata</i>	X	X	X		X			

TAXON		UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
	<i>Chionanthus panamensis</i>	X	X		X	X			
PIPERACEAE									
	<i>Piper arboreum</i>	X	X	X	X	X		X	
	<i>Piper augustum</i>	X				X			
	<i>Piper cordulatum</i>	X	X	X		X			
	<i>Piper fimbriulatum</i>	X				X			
	<i>Piper longispicum</i>	X			X	X			
	<i>Piper reticulatum</i>	X	X	X	X				
POACEAE									
	<i>Andropogon bicornis</i>								
	<i>Axonopus fissifolius</i>	X	X	X		X			
PODOCARPACEAE									
	<i>Podocarpus guatemalensis</i>	X				X			
POLYGONACEAE									
	<i>Coccoloba manzinellensis</i>	X	X			X			
	<i>Coccoloba padiformis</i>		X	X	X			X	
PROTEACEAE									
	<i>Panopsis suaveolens</i>	X				X			
PTERIDACEAE									
	<i>Adiantum lucidum</i>	X	X		X	X			
	<i>Adiantum villosum</i>	X	X		X				
RHIZOPHORACEAE									
	<i>Cassipourea elliptica</i>	X	X	X	X	X			
RUBIACEAE									
	<i>Allenanthus erythrocarpus</i>	X				X			
	<i>Chimarrhis latifolia</i>	X				X			
	<i>Cosmibuena macrocarpa</i>	X				X			
	<i>Coutarea hexandra</i>	X	X		X				
	<i>Elaeagia auriculata</i>	X				X			
	<i>Faramea eurycarpa</i>	X				X			
	<i>Genipa americana</i>		X	X	X		X	X	
	<i>Genipa williamsii</i>	X				X			
	<i>Gonzalagunia rudis</i>	X	X			X			
	<i>Guettarda crispiflora</i>	X				X			
	<i>Ladenbergia brenesii</i>	X				X	X		
	<i>Palicourea guianensis</i>	X	X	X	X		X		
	<i>Palicourea triphylla</i>	X				X			
	<i>Psychotria acuminata</i>	X		X		X	X		
	<i>Psychotria allenii</i>	X				X	X		
	<i>Psychotria capitata</i>	X	X	X		X			
	<i>Psychotria chagrensis</i>	X	X	X	X	X			
	<i>Psychotria correae</i>	X				X			
	<i>Psychotria deflexa</i>	X	X	X	X	X			
	<i>Psychotria elata</i>	X	X	X	X	X			
	<i>Psychotria luxurians</i>	X	X	X		X			
	<i>Psychotria marginata</i>	X	X	X	X	X			
	<i>Psychotria pittieri</i>	X				X			
	<i>Psychotria poeppigiana</i>	X				X			
	<i>Randia lasiantha</i>	X				X			
	<i>Rondeletia buddleioides</i>	X	X			X			
RUTACEAE									
	<i>Stauranthus perforatus</i>	X				X			

	TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
	<i>Zanthoxylum juniperinum</i>	X				X			
SABIACEAE									
	<i>Meliosma grandiflora</i>	X				X			
	<i>Meliosma occidentalis</i>	X				X			
SAPINDACEAE									
	<i>Allophylus gentryi</i>	X				X			
	<i>Allophylus psilospermus</i>	X			X	X			
	<i>Cupania cinerea</i>	X	X		X	X			
SAPOTACEAE									
	<i>Chrysophyllum brenesii</i>	X				X			
	<i>Chrysophyllum venezuelanense</i>	X	X		X	X			
	<i>Pouteria calistophylla</i>	X				X			
	<i>Pouteria congestifolia</i>	X				X			
	<i>Pouteria silvestris</i>	X				X			
	<i>Sarcaulus brasiliensis</i>	X			X	X			
SIMAROUBACEAE									
	<i>Simarouba amara</i>	X			X	X			
SOLANACEAE									
	<i>Solanum hayesii</i>	X	X		X	X			
STAPHILIACEAE									
	<i>Turpinia occidentalis</i>	X			X	X			
STERCULIACEAE									
	<i>Sterculia recordiana</i>	X	X		X	X			
	<i>Theobroma simiarum</i>	X			X				
TEOPHRASTACEAE									
	<i>Clavija mezii</i>	X	X		X	X			
THEACEAE									
	<i>Gordonia brandegeei</i>	X			X	X			
	<i>Laplacea fruticosa</i>	X							
THYMELACEAE									
	<i>Daphnopsis americana</i>	X			X				
TILIACEAE									
	<i>Apeiba membranacea</i>	X	X	X	X	X			
	<i>Heliocarpus americanus</i>	X	X	X	X	X			
ULMACEAE									
	<i>Celtis schippii</i>	X	X		X	X			
VERBENACEAE									
	<i>Aegiphila anomala</i>	X				X			
	<i>Aegiphila panamensis</i>				X	X			
	<i>Vitex cooperi</i>	X			X	X			
VIOLACEAE									
	<i>Gloeospermum blakeanum</i>	X	X	X	X	X			
	<i>Hybanthus denticulatus</i>	X			X	X			
	<i>Rinorea dasyadena</i>	X			X	X			
VOCHYSIACEAE									
	<i>Vochysia ferruginea</i>	X			X	X			
	<i>Vochysia hondurensis</i>	X				X	X		
Total of Family: 71	Total of species: 256								

UCA=Upper Catchment Area ;MCA=Middle Catchment Area;LCA=Lower Catchment Area

bpot= Tropical Evergreen Ombrophilous Lowlands Forests <500m

bpots=Tropical Evergreen Ombrophilous Submontane Forest

bpotm=Tropical Evergreen Ombrophilous Montane Forest

rast=Shrublands or Productive System with Significant Natural Woody or Spontaneous Vegetation (10-50%)

past=Pasture land or Productive System with Significant Natural Woody or Spontaneous Vegetation (<10%)

Source: Louis Berger (1999); PMCC (2000); CTFS (2003)

Table A4.2-2
List of Species and According to Categories of Conservation

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ^a	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
ACANTHACEAE								
	<i>Aphelandra deppeana</i>							X
	<i>Aphelandra B456panamensis</i>		LRnT					X
	<i>Aphelandra sinclairiana</i>					X		
	<i>Aphelandra campanensis</i>				ED			X
	<i>Trichanthera gigantea</i>					X		
ACTINIDIACEAE								
	<i>Saurauia yasicae</i>	VU	LRnT			X		
ANACARDIACEAE								
	<i>Anacardium excelsum</i>					X	X	X
	<i>Astronium graveolens</i>	VU				X		
	<i>Mangifera indica</i>				CU	X		
	<i>Mosquitoxylum jamaicense</i>							X
	<i>Spondias cytherea</i>				CU			X
	<i>Spondias mombin</i>				CU	X		
	<i>Spondias radlkoferi</i>					X		
	<i>Tapirira guianensis</i>					X	X	
ANNONACEAE								
	<i>Anaxagorea panamensis</i>	VU				X	X	
	<i>Anaxagorea alleni</i>						X	
	<i>Annona acuminata</i>		VU			X		
	<i>Annona hayesii</i>		VU			X	X	
	<i>Annona purpurea</i>							
	<i>Annona spraguei</i>	VU	END			X	X	X
	<i>Annona glabra</i>					X		
	<i>Crematosperma panamense</i>	VU				X		
	<i>Cymbopetalum lanugipetalum</i>					X		
	<i>Desmopsis panamensis</i>		LRnT			X		
	<i>Duguetia panamensis</i>	VU	LRnT				X	
	<i>Guatteria amplifolia</i>					X		
	<i>Guatteria dumetorum</i>					X		
	<i>Guatteria sessilicarpa</i>		EN				X	
	<i>Malmea garwood</i>					X		
	<i>Oxandra longipetala</i>		VU			X		
	<i>Oxandra panamensis</i>		VU				X	
	<i>Rollinia pittieri</i>						X	
	<i>Unonopsis floribunda</i>						X	
	<i>Unonopsis panamensis</i>		END			X		X
	<i>Unonopsis pittieri</i>					X		X
	<i>Unonopsis theobromifolia</i>						X	
	<i>Xylopia bocatorena</i>					X		
	<i>Xylopia frutescens</i>						X	X
	<i>Xylopia macrantha</i>					X		
	<i>Xylopia aromatica</i>		LRnT					X
APOCYNACEAE								
	<i>Aspidosperma cruenta</i>		LRnT			X	X	
	<i>Aspidosperma megalocarpon</i>					X		
	<i>Lacmellea panamensis</i>					X		
	<i>Macoubea sprucei</i>						X	X
	<i>Malouetia guatemalensis</i>						X	
	<i>Plumeria acutifolia</i>						X	
	<i>Rauvolfia littoralis</i>					X		X
	<i>Stemmadenia alfari</i>					X		X
	<i>Stemmadenia grandiflora</i>							X
	<i>Tabernaemontana arborea</i>					X	X	

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Tabernaemontana sananho</i>							X
	<i>Tabernaemontana undulata</i>						X	
	<i>Theveti ahouai</i>					X		
ARALIACEAE								
	<i>Dendropanax arboreus</i>					X	X	X
	<i>Dendropanax sessiliflorus</i>		VU				X	
	<i>Dendropanax arboreus</i>					X	X	X
	<i>Oreopanax capitatus</i>		VU			X		
	<i>Schefflera morototoni</i>					X		
	<i>Sciadodendron excelsum</i>							X
ARECACEAE								
	<i>Astrocaryum alatum</i>	VU	LRnT					X
	<i>Astrocaryum standleyanum</i>		VU			X	X	X
	<i>Antalea butyraceae</i>		LRnT			X		
	<i>Bactris barronis</i>		END		EN	X	X	X
	<i>Bactris coloniata</i>					X		
	<i>Bactris coloradonis</i>		LRnT			X		X
	<i>Bactris major</i>					X	X	
	<i>Bactris panamensis</i>				EN	X		
	<i>Calyptrogyne costatifrons</i>	VU	VU					X
	<i>Chamaedorea tepejilote</i>		LRnT			X		
	<i>Cryosophila warscewiczii</i>					X	X	X
	<i>Elaeis oleifera</i>		LRnT			X		
	<i>Euterpe precatoria</i>					X		X
	<i>Geonoma congesta</i>					X		
	<i>Geonoma cuneata</i>	VU				X		X
	<i>Geonoma interrupta</i>		LRnT			X		
	<i>Geonoma deversa</i>					X		X
	<i>Iriartea deltoidea</i>						X	X
	<i>Oenocarpus mapora</i>	VU	VU			X	X	
	<i>Phytelphas seemannii</i>	END	END			X		
	<i>Socratea exorrhiza</i>	VU				X	X	X
	<i>Synechanthus warscewiczianus</i>	VU				X		
	<i>Welfia regia</i>		LRnT				X	X
	<i>Wettinia panamensis</i>	VU					X	
ASTERACEAE								
	<i>Koanophyllon wetmorei</i>		VU			X		X
	<i>Verbesina lanata</i>						X	X
BIGNONIACEAE								
	<i>Amphitecna isthmica</i>		R					X
	<i>Amphitecna latifolia</i>						X	
	<i>Amphitecna spathicalyx</i>		END		EN			X
	<i>Bourreria costaricensis</i>						X	
	<i>Godmania aesculifolia</i>		LRnT					X
	<i>Jacaranda caucana</i>		VU				X	
	<i>Jacaranda copaia</i>					X		X
	<i>Parmentiera cereifera</i>		END, EN			X		
	<i>Tabebuia guayacan</i>	VU	VU			X	X	
	<i>Tabebuia rosea</i>	VU	VU			X		X
	<i>Tabebuia ochracea</i>					X		
BOMBACACEAE								
	<i>Cavanillesia platanifolia</i>		LRnT			X		
	<i>Ceiba pentandra</i>					X		X
	<i>Gyranthera darienensis</i>		EN				X	
	<i>Matisia exalata</i>		EN				X	
	<i>Matisia jefensis</i>		EN				X	X
	<i>Ochroma pyramidale</i>					X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Pachira aquatica</i>						X	
	<i>Pachira quinata</i>		VU			X		
	<i>Pachira sessilis</i>	VU	LRnT			X	X	
	<i>Pseudobombax septenatum</i>					X		
	<i>Quararibea asterolepis</i>					X		
	<i>Quararibea obliquifolia</i>						X	X
	<i>Quararibea platyphylla</i>	VU				X		
	<i>Quararibea pterocalyx</i>					X		
BORAGINACEAE								
	<i>Cordia alliodora</i>		LRnT			X		
	<i>Cordia bicolor</i>					X		
	<i>Cordia dwyeri</i>	VU					X	
	<i>Cordia lasiocalyx</i>	VU				X		X
	<i>Cordia lucidula</i>		LRnT				X	X
	<i>Cordia panamensis</i>					X		
	<i>Cordia porcata</i>	VU						X
BURSERACEAE								
	<i>Bursera simaruba</i>					X		X
	<i>Protium costaricense</i>					X		
	<i>Protium glabrum</i>					X		
	<i>Protium inconforme</i>	VU	END				X	
	<i>Protium panamense</i>		LRnT			X	X	X
	<i>Protium correae</i>					X		
	<i>Protium tenuifolium</i>					X		
	<i>Tetragastris panamensis</i>					X	X	X
	<i>Trattinnickia aspera</i>		LRnT			X	X	
CACTACEAE								
	<i>Pereskia bleo</i>		VU					X
CAPPARIDACEAE								
	<i>Capparis frondosa</i>					X		
	<i>Capparis pittieri</i>						X	X
	<i>Capparis antonensis</i>							X
CARICACEAE								
	<i>Carica cauliflora</i>					X		
	<i>Jacaratia spinosa</i>					X		X
	<i>Jacaratia dolichaula</i>							X
CECROPIACEAE								
	<i>Cecropia garciae</i>							X
	<i>Cecropia insignis</i>					X		X
	<i>Cecropia longipes</i>		END			X	X	
	<i>Cecropia obtusifolia</i>					X	X	X
	<i>Cecropia peltata</i>					X		
	<i>Pourouma bicolor</i>					X	X	X
CELASTRACEAE								
	<i>Crossopetalum parviflorum</i>		LRnT			X		
	<i>Maytenus schippii</i>					X		X
	<i>Quetzalia occidentalis</i>						X	
CHLORANTHACEAE								
	<i>Hedyosmum scaberrimum</i>							X
CHRYSOBALANACEAE								
	<i>Hirtella americana</i>						X	X
	<i>Hirtella latifolia</i>						X	X
	<i>Hirtella racemosa</i>		LRnT			X		
	<i>Hirtella triandra</i>					X		X
	<i>Licania affinis</i>	VU					X	
	<i>Licania cruegeriana</i>						X	
	<i>Licania fassiculata</i>		END, EN					

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajueta	Ciri
	<i>Licania hypoleuca</i>					X		
	<i>Licania morii</i>		END, EN				X	
	<i>Licania platypus</i>					X		
	<i>Licania arborea</i>							X
	<i>Maranthes panamensis</i>	VU				X	X	
CLETHRACEAE								
	<i>Clethra lanata</i>							X
CLUSIACEAE								
	<i>Calophyllum brasiliensis</i>						X	X
	<i>Calophyllum longifolium</i>		VU			X	X	X
	<i>Chrysochlamys eclipes</i>		END		EN	X	X	
	<i>Clusia divaricata</i>							X
	<i>Dystovomita paniculata</i>						X	X
	<i>Garcinia intermedia</i>		LRnT			X	X	
	<i>Garcinia madruno</i>		LRnT			X	X	X
	<i>Mammea immansueta</i>		EN,END			X	X	
	<i>Marila domingensis</i>						X	
	<i>Marila lactogena</i>		VU				X	
	<i>Marila laxiflora</i>					X	X	X
	<i>Marila pluricostata</i>		VU				X	
	<i>Symphonia globulifera</i>		VU			X	X	X
	<i>Tovomita longifolia</i>					X	X	X
	<i>Tovomita stylosa</i>					X		
	<i>Tovomita weddelliana</i>						X	
	<i>Tovomitopsis myrcioides</i>							X
	<i>Vismia baccifera</i>					X		
	<i>Vismia billbergiana</i>					X		
	<i>Vismia jefensis</i>	VU					X	
	<i>Vismia macrophylla</i>					X		X
COCHLOSPERMACEAE								
	<i>Cochlospermum vitifolium</i>				CU	X		
COMBRETACEAE								
	<i>Terminalia amazonia</i>	VU				X		
	<i>Terminalia oblonga</i>						X	
CYATHEACEAE								
	<i>Cyathea petiolata</i>	VU				X	X	X
CYCADACEAE								
	<i>Zamia skinnerii</i>					X	X	
CYCLANTHACEAE								
	<i>Cyclanthus bipartitus</i>		VU			X	X	X
	<i>Carludovica drudei</i>					X		X
DICHAPETALACEAE								
	<i>Tapura cubensis</i>		VU				X	
DILLENIAEAE								
	<i>Curatella americana</i>							X
EBENACEAE								
	<i>Diospyros artanthifolia</i>		LRnT			X		X
ELAEOCARPACEAE								
	<i>Sloanea meianthera</i>					X		X
	<i>Sloanea megaphylla</i>	VU					X	
	<i>Sloanea terniflora</i>					X		
	<i>Sloanea zuliaensis</i>					X	X	X
ERYTHROXYLACEAE								
	<i>Erythroxylum citrifolium</i>					X		
	<i>Erythroxylum macrophyllum</i>					X		
	<i>Erythroxylum panamense</i>					X		X

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ^a	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
EUPHORBIACEAE								
	<i>Acalypha diversifolia</i>					X	X	X
	<i>Acalypha macrostachya</i>						X	
	<i>Adelia triloba</i>					X		X
	<i>Alchornea costaricensis</i>					X	X	X
	<i>Alchornea latifolia</i>					X		X
	<i>Conceveiba pleiostemona</i>							X
	<i>Croton billbergianus</i>		LRnT			X		
	<i>Croton pachypodus</i>				EN			X
	<i>Croton draco</i>							X
	<i>Croton schiedeana</i>		LRnT			X		
	<i>Drypetes standleyi</i>	END	LRnT			X		
	<i>Euphorbia elata</i>						X	
	<i>Garcia nutans</i>					X		
	<i>Hevea brasiliensis</i>				CU	X		
	<i>Hura crepitans</i>					X		
	<i>Hyeronima alchorneoides</i>					X		
	<i>Hyeronima oblonga</i>						X	X
	<i>Mabea occidentalis</i>						X	
	<i>Maprounea guianensis</i>						X	
	<i>Margaritaria nobilis</i>					X		X
	<i>Pera arborea</i>					X		
	<i>Phyllanthus acuminatus</i>					X		
	<i>Sapium glandulosum</i>					X		
	<i>Tetrorchidium euryphyllum</i>							X
	<i>Tetrorchidium gorgonae</i>					X		
FABACEAE: CAESALPINOIDE								
	<i>Cassia moschata</i>		LRnT				X	
	<i>Copaifera aromatica</i>	VU					X	
	<i>Cynometra bauhiniaefolia</i>					X		
	<i>Dialium guianense</i>					X		
FABACEAE: CAESALPINOIDE								
	<i>Hymenaea courbaril</i>					X	X	X
	<i>Prioria copaifera</i>		END			X		
	<i>Schizolobium parahybum</i>					X		
	<i>Senna dariensis</i>						X	
	<i>Swartzia panamensis</i>	VU				X		
	<i>Swartzia simplex v. grandiflora</i>					X		
	<i>Swartzia simplex var. ochracea</i>					X	X	X
	<i>Tachigali versicolor</i>	VU				X		
FABACEAE: FABOIDEAE								
	<i>Andira inermis</i>					X	X	X
	<i>Dalbergia retusa</i>		LRnT			X	X	
	<i>Diphysa robinoides</i>					X	X	X
	<i>Dipteryx panamensis</i>	VU				X	X	
	<i>Dussia macrophyllata</i>							X
	<i>Dussia munda</i>							X
	<i>Eritrina costaricensis</i>					X		X
	<i>Eritrina fusca</i>					X		X
	<i>Fissicalyx fendleri</i>		LRnT			X		X
	<i>Gliricidia sepium</i>		LRnT		CU	X		
	<i>Lonchocarpus latifolius</i>					X	X	
	<i>Lonchocarpus velutinus</i>					X		X
	<i>Myrospermum frutescens</i>					X		
	<i>Ormósia amazonica</i>		VU			X		X
	<i>Ormósia croatii</i>					X		
	<i>Ormosia macrocalyx</i>					X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Ormosia panamensis</i>		LRnT			X		
	<i>Platymiscium pinnatum</i>	VU	VU			X		
	<i>Platypodium elegans</i>		LRnT			X		
	<i>Pterocarpus belizensis</i>		LRnT			X		
	<i>Pterocarpus rohrii</i>					X		
	<i>Pterocarpus officinalis</i>					X		X
	<i>Vatairea lundellii</i>						X	
FABACEAE:MIMOSOIDEAE.								
	<i>Abarema barbouriana</i>		EN			X	X	X
	<i>Abarema macradenium</i>		LRnT			X	X	
	<i>Acacia melanoceras</i>					X	X	X
	<i>Acacia riparia</i>					X		
	<i>Albizia adinocephala</i>				CU	X		X
	<i>Albizia procera</i>				CU		X	
	<i>Cojoba rufescens</i>					X		X
	<i>Enterolobium cyclocarpum</i>					X	X	X
	<i>Enterolobium schomburgkii</i>							X
	<i>Inga cocleensis</i>		LRnT			X		
	<i>Inga laurina</i>						X	X
	<i>Inga goldmanii</i>					X		
	<i>Inga hayesii</i>	VU					X	
	<i>Inga mucuna</i>	VU				X		
	<i>Inga marginata</i>					X		
	<i>Inga oerstediana</i>					X		
	<i>Inga pauciflora</i>	VU	END					X
	<i>Inga pezizifera</i>					X	X	
	<i>Inga portobellensis</i>		END				X	
	<i>Inga punctata</i>					X		
	<i>Inga nobilis</i>					X		
	<i>Inga ruiziana</i>					X		
	<i>Inga acuminata</i>					X		
	<i>Inga sapindoides</i>					X		
	<i>Inga sertulifera</i>							X
	<i>Inga spectabilis</i>					X		
	<i>Inga thibaudiana</i>						X	
	<i>Inga umbellifera</i>					X		
	<i>Inga vera</i>					X		
	<i>Inga multijuga</i>					X		
	<i>Leucaena multicapitula</i>				CU	X		
	<i>Marmaroxylon dinizii</i>					X		
	<i>Pithecellobium hymeneaifolium</i>							X
	<i>Pseudosamanea guachapele</i>					X		X
	<i>Samanea saman</i>		LRnt				X	X
FLACOURTIACEAE								
	<i>Banara guianensis</i>					X		X
	<i>Casearia aculeata</i>					X		
	<i>Casearia arborea</i>					X	X	X
	<i>Casearia commersoniana</i>					X	X	X
	<i>Casearia guianensis</i>					X		
	<i>Casearia sylvestris</i>					X		X
	<i>Casearia coronata</i>					X		
	<i>Hasseltia floribunda</i>					X		X
	<i>Lacistema aggregatum</i>					X		
	<i>Laetia procera</i>					X		
	<i>Laetia hamnia</i>					X	X	X
	<i>Lindackeria laurina</i>					X		
	<i>Lozania pittieri</i>					X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Mayna grandifolia</i>						X	X
	<i>Prockia crucis</i>							X
	<i>Ryania speciosa</i>							X
	<i>Tetrathylacium johansenii</i>					X	X	
	<i>Xylosma oligandrum</i>					X		
	<i>Xylosma chloranthum</i>					X		
	<i>Zuelania guidonia</i>					X		
HERNANDIACEAE								
	<i>Hernandia didymantha</i>							X
	<i>Hernandia stenura</i>		LRnt				X	X
HIPPOCASTANACEAE								
	<i>Billia columbianum</i>						X	X
HIPPOCRATEACEAE								
	<i>Cheiloclinium cognatum</i>						X	X
	<i>Salacia gigantea</i>						X	
HUMIRIACEAE								
	<i>Humiriastrum diguense</i>	VU				X	X	X
	<i>Sacoglottis ovicarpa</i>	VU					X	
	<i>Sacoglottis trichogyna</i>	VU					X	
	<i>Vantanea depleta</i>	VU				X	X	
ICACINACEAE								
	<i>Calatola costaricensis</i>							X
	<i>Discophora guianensis</i>					X		
LAURACEAE								
	<i>Beilschmiedia pendula</i>					X		X
	<i>Caryodaphnopsis burgeri</i>					X		
	<i>Nectandra cissiflora</i>					X		
	<i>Nectandra lineata</i>					X		
	<i>Nectandra martinicensis</i>							X
	<i>Nectandra purpurea</i>					X		
	<i>Nectandra cuspidata</i>					X		
	<i>Ocotea cernua</i>					X		X
	<i>Ocotea dendrodaphne</i>					X		X
	<i>Ocotea endresiana</i>						X	
	<i>Ocotea ira</i>		LRnT			X	X	
	<i>Ocotea oblonga</i>					X		
	<i>Ocotea paulii</i>							X
	<i>Ocotea puberula</i>					X		
	<i>Ocotea rubrinervis</i>						X	
	<i>Ocotea veraguensis</i>						X	
	<i>Ocotea whitei</i>					X		X
	<i>Phoebe cinnamomifolia</i>		LRnT			X		X
LECYTHIDACEAE								
	<i>Couratari guianensis</i>						X	
	<i>Eschweilera amplexifolia</i>		END				X	
	<i>Eschweilera calyculata</i>						X	X
	<i>Eschweilera jacquelyniae</i>	VU					X	
	<i>Eschweilera panamensis</i>						X	
	<i>Eschweilera pittieri</i>						X	
	<i>Grias cauliflora</i>					X		
	<i>Gustavia dubia</i>						X	X
	<i>Gustavia fosteri</i>		VU,END			X		
	<i>Gustavia superba</i>					X		X
	<i>Lecythis ampla</i>						X	
LEPIDOBOTRYACEAE								
	<i>Rupitlocarpon caracolito</i>		VU				X	
LYTHRACEAE								

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Lafoensia puniceifolia</i>					X		
MAGNOLIACEAE								
	<i>Talauma gloriensis</i>						X	
	<i>Talauma sambuensis</i>		EN, END				X	
MALPHIGIACEAE								
	<i>Byrsonima nemoralis</i>		EN				X	
	<i>Bunchosia odorata</i>		LRnT					
	<i>Bunchosia cornifolia</i>					X		
	<i>Byrsonima crassifolia</i>				CU	X		X
	<i>Byrsonima spicata</i>					X		X
	<i>Malpighia romeroana</i>					X		
	<i>Spachea membranacea</i>	END				X		
	<i>Spachea correae</i>	VU				X		
MALVACEAE								
	<i>Hampea appendiculata</i>	VU				X		X
	<i>Lopimia dasypetala</i>							X
MELASTOMATACEAE								
	<i>Bellucia pentamera</i>							X
	<i>Clidemia densiflora</i>					X		X
	<i>Clidemia dentata</i>					X		X
	<i>Clidemia octona</i>					X		X
	<i>Clidemia septuplinerva</i>					X		X
	<i>Conostegia bracteata</i>		LRnT			X		X
	<i>Conostegia cinnamomea</i>		LRnT			X		
	<i>Conostegia rufescens</i>							X
	<i>Conostegia xalapensis</i>						X	X
	<i>Henriettella fascicularis</i>							X
	<i>Henriettella succosa</i>					X		
	<i>Henriettella trachyphylla</i>						X	
	<i>Leandra dichotoma</i>					X		
	<i>Leandra granatensis</i>					X		
	<i>Miconia affinis</i>					X		X
	<i>Miconia argentea</i>					X		X
	<i>Miconia centronioides</i>						X	
	<i>Miconia curvipetiolata</i>	VU						X
	<i>Miconia dorsiloba</i>		LRnT					X
	<i>Miconia elata</i>					X		X
	<i>Miconia holosericea</i>							X
	<i>Miconia hondurensis</i>					X		
	<i>Miconia impetolaris</i>					X		X
	<i>Miconia lacera</i>					X		X
	<i>Miconia ligulata</i>					X		
	<i>Miconia lonchophylla</i>					X		
	<i>Miconia minutiflora</i>	VU				X		X
	<i>Miconia nervosa</i>					X		X
	<i>Miconia prasina</i>					X		X
	<i>Miconia reducens</i>						X	
	<i>Miconia serrulata</i>					X		
	<i>Miconia shattuckii</i>		LRnT			X		
	<i>Miconia simplex</i>					X		
	<i>Mouriri completens</i>						X	
	<i>Mouriri myrtilloides</i>					X		
	<i>Mouriri panamensis</i>		VU				X	
	<i>Tococa acuminata</i>		VU				X	
MELIACEAE								
	<i>Carapa guianensis</i>	VU	LRnT			X	X	X
	<i>Cederla odorata</i>	VU				X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Guarea glabra</i>					X		
	<i>Guarea grandifolia</i>					X		X
	<i>Guarea guidonia</i>					X		
	<i>Guarea kunthiana</i>						X	
	<i>Guarea pterorhachis</i>					X		
	<i>Guarea rhopalocarpa</i>						X	
	<i>Swietenia macrophylla</i>	VU	VU				X	X
	<i>Trichilia hirta</i>					X		
	<i>Trichilia pallida</i>					X		
MELIACEAE								
	<i>Trichilia pleeana</i>					X		
	<i>Trichilia quadrijuga</i>						X	
	<i>Trichilia martiana</i>	VU					X	
	<i>Trichilia tuberculata</i>	VU				X		X
MONIMIACEAE								
	<i>Mollinedia darienensis</i>	VU	END			X		
	<i>Mollinedia pinchotiana</i>							X
	<i>Siparuna guianensis</i>	VU				X		
	<i>Siparuna pauciflora</i>	VU				X		
	<i>Siparuna tonduzii</i>							X
MORACEAE								
	<i>Artocarpus altilis</i>				CU	X		
	<i>Brosimum alicastrum</i>					X		
	<i>Brosimum costaricanum</i>	VU				X		
	<i>Brosimum guianense</i>	VU				X	X	X
	<i>Brosimum lactescens</i>						X	
	<i>Brosimum utile</i>	VU				X	X	
	<i>Castilla elastica</i>					X		X
	<i>Chlorophora tinctoria</i>	VU				X		
	<i>Ficus brevibracteata</i>						X	
	<i>Ficus bullenei</i>	VU				X		
	<i>Ficus colubrinae</i>					X		
	<i>Ficus costaricana</i>					X		
	<i>Ficus citrifolia</i>					X		
	<i>Ficus insipida</i>					X		
	<i>Ficus maxima</i>					X		
	<i>Ficus nymphaeifolia</i>					X		X
	<i>Ficus obtusifolia</i>					X		
	<i>Ficus pertusa</i>					X		
	<i>Ficus petenesis</i>							X
	<i>Ficus popenoei</i>					X		
	<i>Ficus tonduzii</i>					X		
	<i>Ficus trigonata</i>					X		
	<i>Ficus yoponensis</i>					X		
	<i>Ficus dugandii</i>		LRnT			X		
	<i>Ficus perforata</i>					X		
	<i>Ficus paraensis</i>					X		
	<i>Helicostylis tovarensis</i>							X
	<i>Maquira costaricana</i>					X		X
	<i>Naucleopsis capirensis</i>							X
	<i>Naucleopsis ulei</i>						X	
	<i>Perebea angustifolia</i>						X	
	<i>Perebea xanthochyma</i>					X	X	X
	<i>Poulsenia armata</i>					X	X	X
	<i>Pseudolmedia laevigata</i>						X	
	<i>Pseudolmedia spuria</i>					X	X	
	<i>Sorocea affinis</i>					X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ^a	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Sorocea pubivena</i>	VU						X
	<i>Trophis racemosa</i>					X		
	<i>Trophis caucana</i>					X		X
MYRISTICACEAE								
	<i>Componeura capitellata</i>		LRnT				X	
	<i>Componeura sprucei</i>						X	
	<i>Osteophloeum platyspermum</i>						X	X
	<i>Otoba acuminata</i>		LRnT				X	X
	<i>Otoba novagranatensis</i>	VU					X	X
	<i>Otoba parvifolia</i>						X	
	<i>Virola elongata</i>		EN			X		
	<i>Virola koschnyi</i>						X	
	<i>Virola sebifera</i>					X	X	X
	<i>Virola surinamensis</i>		VU			X	X	
	<i>Virola multiflora</i>					X	X	
MYRSINACEAE								
	<i>Ardisia bartlettii</i>					X		
	<i>Ardisia fendleri</i>					X		X
	<i>Ardisia guianensis</i>					X		
	<i>Ardisia revoluta</i>						X	
	<i>Stylogyne standleyi</i>					X		
MYRTACEAE								
	<i>Calycolpus warszewiczianus</i>		LRnT			X		X
	<i>Calyptanthes tumidonodia</i>	VU			EN		X	
	<i>Chamguava schippii</i>		LRnT			X		
	<i>Eugenia coloradensis</i>					X		
	<i>Eugenia galalonensis</i>					X		
	<i>Eugenia nesiotica</i>	VU						X
	<i>Eugenia oerstedea</i>					X		
	<i>Eugenia venezuelensis</i>							X
	<i>Eugenia uniflora</i>				CU	X		X
	<i>Myrcia gatunensis</i>		LRnT			X		X
	<i>Myrcia fosteri</i>	VU				X		X
	<i>Plinia povedae</i>							X
	<i>Psidium friedrichsthalianum</i>		LRnT			X		
	<i>Syzygium malaccense</i>				CU	X	X	
NYCTAGINACEAE								
	<i>Guapira costaricana</i>						X	X
	<i>Guapira standleyana</i>		LRnT			X		
	<i>Neea amplifolia</i>					X		
	<i>Neea delicatula</i>		LRnT					
OCHNACEAE								
	<i>Cespedezia macrophylla</i>					X		X
	<i>Ouratea lucens</i>					X		X
OLACACEAE								
	<i>Heisteria acuminata</i>		LRnT			X	X	
	<i>Heisteria concinna</i>					X		X
	<i>Minquartia guianensis</i>						X	
	<i>Chionanthus panamensis</i>							X
PICRAMNACEAE								
	<i>Picramnia latifolia</i>					X	X	X
PIPERACEAE								
	<i>Piper arboreum</i>					X		X
	<i>Piper augustum</i>					X		
	<i>Piper aequale</i>					X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ^a	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Piper auritum</i>					X		
	<i>Piper colonense</i>					X		X
	<i>Piper schiedeianum</i>						X	
	<i>Piper cordulatum</i>		LRnT					X
	<i>Piper culebratum</i>	VU						X
	<i>Piper grande</i>		LRnT					X
	<i>Piper hispidum</i>		LRnT					X
	<i>Piper imperiale</i>		LRnT			X		
	<i>Piper aequale</i>	VU				X		
	<i>Piper reticulatum</i>					X		
POLYGONACEAE								
	<i>Coccoloba acapulcensis</i>					X		
	<i>Coccoloba ascendens</i>					X		X
	<i>Coccoloba coronata</i>					X		
	<i>Coccoloba manzanillensis</i>	VU	END			X		X
	<i>Coccoloba obovata</i>					X		
	<i>Coccoloba acuminata</i>					X		
	<i>Triplaris umingiana</i>					X		X
PROTEACEAE								
	<i>Panopsis suaveolens</i>							X
	<i>Roupala montana</i>					X		X
QUIINACEAE								
	<i>Lacunaria panamensis</i>		END				X	
	<i>Quiina schippii</i>					X	X	X
RHAMNACEAE								
	<i>Colubrina glandulosa</i>					X		
	<i>Colubrina heteroneura</i>					X		
RHIZOPHORACEAE								
	<i>Cassipourea elliptica</i>					X	X	X
RUBIACEAE								
	<i>Alibertia edulis</i>					X	X	X
	<i>Alseis blackiana</i>		R			X	X	X
	<i>Amaioua corymbosa</i>		END			X	X	X
	<i>Amaioua magnicarpa</i>		VU		EN		X	
	<i>Antirrhoea trichantha</i>	VU	END			X		X
	<i>Appunia seibertii</i>	VU				X		
	<i>Bertiera guianensis</i>					X		
	<i>Borojoa panamensis</i>		LRnT			X		
	<i>Calycophyllum candidissimum</i>					X		
	<i>Chimarrhis parviflora</i>					X		X
	<i>Chomelia spinosa</i>							X
	<i>Coutarea hexandra</i>							X
	<i>Elaeagia nitidifolia</i>						X	
	<i>Faramea luteovirens</i>					X		X
	<i>Faramea multiflora</i>	VU				X		
	<i>Faramea occidentalis</i>					X		
	<i>Genipa americana</i>		LRnT			X		
	<i>Genipa williamsii</i>							X
	<i>Gonzalagunia rosea</i>					X		
	<i>Guettarda foliacea</i>					X		X
	<i>Hamelia axillaris</i>					X		
	<i>Hamelia patens</i>					X		X
	<i>Isernia haenkeana</i>					X		
	<i>Isernia laevis</i>					X	X	
	<i>Ixora floribunda</i>					X		X
	<i>Macrocnemum roseum</i>					X	X	X

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Palicourea guianensis</i>		LRnT			X		X
	<i>Palicourea triphylla</i>	VU						X
	<i>Pentagonia macrophylla</i>					X	X	X
	<i>Pentagonia parvifolia</i>						X	
	<i>Pogonopus speciosus</i>					X		
	<i>Posoqueria latifolia</i>					X		
	<i>Psychotria acuminata</i>							X
	<i>Psychotria allenii</i>						X	X
	<i>Psychotria brachiata</i>					X		X
	<i>Psychotria capitata</i>					X		X
	<i>Psychotria chagrensis</i>					X		X
	<i>Psychotria deflexa</i>					X		X
	<i>Psychotria elata</i>					X		X
	<i>Psychotria erecta</i>					X		
	<i>Psychotria graciliflora</i>					X		
	<i>Psychotria tenuifolia</i>					X		
	<i>Psychotria grandis</i>					X		
	<i>Psychotria horizontalis</i>					X		X
	<i>Psychotria limonensis</i>					X		
	<i>Psychotria luxurians</i>						X	X
	<i>Psychotria marginata</i>					X		X
	<i>Psychotria micrantha</i>							X
	<i>Psychotria pittieri</i>					X		
	<i>Psychotria poeppigiana</i>					X		X
	<i>Psychotria pubescens</i>							X
	<i>Psychotria racemosa</i>							X
	<i>Psychotria suerrensis</i>					X		X
	<i>Psychotria brachybotrya</i>							X
	<i>Psychotria carthagenensis</i>					X		X
	<i>Randia armata</i>					X		
	<i>Randia grandifolia</i>	VU				X		
	<i>Rosenbergiodendron formosum</i>					X		
	<i>Rudgea cornifolia</i>					X		
	<i>Rudgea pittieri</i>	VU					X	
	<i>Tocoyena pittieri</i>					X		
	<i>Warszewiczia coccinea</i>							X
RUTACEAE								
	<i>Citrus sinensis</i>				CU			X
	<i>Hortia colombiana</i>	VU					X	
	<i>Zanthoxylum ekmanii</i>	VU				X		
	<i>Zanthoxylum panamense</i>		LRnT			X		
	<i>Zanthoxylum juniperinum</i>					X		
	<i>Zanthoxylum setulosum</i>		LRnT			X		
SABIACEAE								
	<i>Meliosma glabrata</i>		LRnT			X		
SABIACEAE								
	<i>Meliosma idiopoda</i>						X	
	<i>Meliosma occidentalis</i>							X
	<i>Meliosma subcordata</i>						X	
SAPINDACEAE								
	<i>Allophyllus psilospermus</i>					X		X
	<i>Cupania cinerea</i>							X
	<i>Cupania hirsuta</i>						X	
	<i>Cupania latifolia</i>					X		
	<i>Cupania pubescens</i>							X
	<i>Cupania scrobiculata</i>					X		

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Cupania sylvatica</i>					X	X	X
	<i>Cupania latifolia</i>					X		
	<i>Matayba apetala</i>	END				X	X	
	<i>Matayba glaberrima</i>							
	<i>Matayba scrobiculata</i>					X		
	<i>Sapindus saponaria</i>						X	
	<i>Talisia nervosa</i>					X		
	<i>Talisia princeps</i>					X		
SAPOTACEAE								
	<i>Chrysophyllum argenteum</i>					X		
	<i>Chrysophyllum cainito</i>				CU	X		
	<i>Manilkara bidentata</i>					X	X	
	<i>Manilkara zapota</i>				CU	X		
	<i>Pouteria buenaventurensis</i>		LRnT					X
	<i>Pouteria campechiana</i>						X	
	<i>Pouteria cuspidata</i>						X	
	<i>Pouteria fossicola</i>					X		
	<i>Pouteria leptopedicellata</i>	END					X	
	<i>Pouteria multiflora</i>							X
	<i>Pouteria reticulata</i>					X		
	<i>Pouteria stipitata</i>					X		X
	<i>Pouteria torta</i>		LRnT				X	
	<i>Pouteria sapota</i>				CU	X		
	<i>Pouteria austin-smithii</i>						X	
	<i>Pouteria calistophylla</i>	END					X	
	<i>Pouteria foveolata</i>						X	
SIMAROUBACEAE								
	<i>Quassia amara</i>					X		
	<i>Simarouba amara</i>					X		X
SOLANACEAE								
	<i>Cestrum megalophyllum</i>					X		X
	<i>Cyphomandra hartwegii</i>							X
	<i>Solanum arboreum</i>					X		X
	<i>Solanum asperum</i>						X	
	<i>Solanum hayesii</i>							X
	<i>Solanum steyemarkii</i>					X	X	
	<i>Solanum nudum</i>					X		
	<i>Solanum rudepannum</i>					X		
STAPHYLEACEAE								
	<i>Turpinia occidentalis</i>					X		X
STERCULIACEAE								
	<i>Guazuma ulmifolia</i>					X		
	<i>Herrania purpurea</i>					X		
	<i>Sterculia apetala</i>					X	X	X
	<i>Sterculia costaricana</i>						X	
	<i>Sterculia glauca</i>						X	X
	<i>Sterculia recordiana</i>					X		X
	<i>Theobroma bernoullii</i>		LRnT			X	X	
	<i>Theobroma cacao</i>				CU	X		
THEACEAE								
	<i>Ternstroemia tepezapote</i>					X	X	
THEOPHRASTACEAE								
	<i>Clavija costaricana</i>		LRnT			X		
	<i>Clavija mezii</i>						X	
THYMELEACEAE								
	<i>Daphnopsis correae</i>				EN		X	X
TILIACEAE								

FAMILY	ESPECIE	Categories of Conservation				CATCHMENT AREAS		
		ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Apeiba aspera</i>					X	X	X
	<i>Apeiba tibourbou</i>					X	X	
	<i>Heliocarpus popayanensis</i>					X		X
	<i>Luehea seemannii</i>					X		
	<i>Luehea speciosa</i>					X		X
	<i>Mortoniiodendron anisophyllum</i>		VU			X		X
	<i>Trichospermum galeottii</i>					X		X
TURNERACEAE								
	<i>Turnera panamensis</i>		VU			X		
ULMACEAE								
	<i>Celtis schippii</i>	VU				X		X
	<i>Trema micrantha</i>					X		
URTICACEAE								
	<i>Myriocarpa longipes</i>					X		
	<i>Urera baccifera</i>					X		
	<i>Urera caracasana</i>							X
VERBENACEAE								
	<i>Aegiphila anomala</i>							X
	<i>Aegiphila panamensis</i>	VU				X	X	X
	<i>Vitex cooperi</i>		EN					X
	<i>Vitex cymosa</i>						X	
VIOLACEAE								
	<i>Gloespermum sphaerocarpum</i>						X	
	<i>Hybanthus prunifolius</i>					X		X
	<i>Leonia glycyarpa</i>						X	
	<i>Rinorea brachythrix</i>	END			EN			
	<i>Rinorea dasyadena</i>						X	
	<i>Rinorea lindeniana</i>						X	
	<i>Rinorea squamata</i>					X		X
	<i>Rinorea sylvatica</i>					X		
VOCHYSIACEAE								
	<i>Erismia blancoa</i>	VU					X	
	<i>Qualea polychroma</i>	VU					X	
	<i>Vochysia hondurensis</i>						X	X
	<i>Vochysia ferruginea</i>					X		
Total of Family: 82								
Total of Species: 681								
ANAM: 6 species endangered; 77 Vulnerable.						0	0	0
UICN: 19 species endangered; 89 near threatened; 32 Vulnerable; 2 Rare B402species								

VU= Vulnerable;LRnt= near threatened (UICN);CU= Cultivated; EN=Endemic;End= Endangered; R: Rare
CHECKLIST: Check List of Flora of Panamá.

Source : Panama Canal Watershed Monitoring Project (1999); Center for Tropical Forest Science (2003)
Louis Berger (1999).

**Table A4.2-3
Aquatic Macrophytes for Catchment Areas**

Family/Specie	CATCHMENT AREAS			HABIT		
	Ciri	Lagarto	Alhajuela			
ALISMATACEAE						
<i>Sagittaria platyphylla</i>		M, L				Sum
ARACEAE						
<i>Montrichardia arborescens</i>	M, L	M, L				Mar
<i>Pistia stratiotes</i>		M, L		Fl		
<i>Spatiphyllum friedrichsthalii</i>		U, M, L				Mar
<i>Spatiphyllum quindiuense</i>		U, M				Mar
ASTERACEAE						
<i>Ambrosia cumanensis</i>			Li			Mar
AZOLLACEAE						
<i>Azolla</i> sp.	M, L	M, L	Li	Fl		
CABOMBACEAE						
<i>Cabomba piauhyensis</i>	M, L	A, M				Sum
CERATOPHYLLACEAE						
<i>Ceratophyllum demersum</i>	M, L	M, L				Sum
CHARACEAE						
<i>Chara</i> sp.	M, L	M, L	Li			Sum
COMMELINACEAE						
<i>Commelina elegans</i>	M, L	U, M, L	Li			Mar
CYCLANTHACEAE						
<i>Dicranopigyum crinitum</i>		U, M				Mar
CYPERACEAE						
<i>Cyperus giganteus</i>	M, L	U, M, L				Mar
<i>Eleocharis elegans</i>	M, L	U, M		Em		
<i>Fuirena umbellata</i>	M, L	U, M, L				Mar
FABACEAE						
<i>Mimosa pigra</i>			Li			Mar
<i>Senna alata</i>	M, L		Li			Mar
<i>Sesbania emerus</i>	M, L		Li			Mar
HYDROCHARITACEAE						
<i>Hydrilla verticillata</i>	M, L	M, L	Li			Sum
JUNCACEAE						
<i>Juncus</i> sp.	M, L	U, M, L		Em		
LEMNACEAE						
<i>Lemna minor</i>	M, L	M	Li	Fl		
LENTIBULARIACEAE						
<i>Utricularia</i> sp.	M, L	U, M		Fl		Sum
LIMNOCHARITACEAE						
<i>Limnocharis flava</i>	M, L	U, M, L		Em		
MARSILEACEAE						
<i>Marsilea policarpa</i>	M, L	U, M		Em		
MAYACACEAE						
<i>Mayaca</i> sp.	M, L	U, M				Sum
MENYANTHACEAE						
<i>Nymphoides indica</i>	M, L	U, M		Em		

Family/Specie	SUB BASIN			HABIT			
	Ciri	Lagarto	Alhajuela				
NYMPHAEACEAE							
<i>Nymphaea ampla</i>		U, M		Em			
<i>Nymphaea sp.</i>	M, L	U, M		Em			
ONAGRACEAE							
<i>Jussiaea natans</i>	M, L	U, M, L	Li			Mar	
<i>Ludwigia helminthorrhiza</i>		U, M, L				Mar	
POACEAE							
<i>Gynerium sagittatum</i>	M, L	U, M, L	Li			Mar	
<i>Hymenachne amplexicaulis</i>	M, L	U, M, L	Li			Mar	
<i>Luziola subintegra</i>	M, L	U, M, L				Mar	
<i>Panicum grande</i>	M, L	U, M, L				Mar	
<i>Panicum maximum</i>	M, L	U, M, L				Mar	
<i>Panicum purpurascens</i>	M, L	U, M, L	Li			Mar	
<i>Paspalidium geminatum</i>	M, L	U, M, L				Mar	
<i>Paspalum repens</i>	M, L	U, M, L	Li			Mar	
PODOSTEMACEAE							
<i>Marathrum sp.</i>							
POLYGONACEAE							
<i>Polygonum acuminatum</i>	M, L	U, M, L	Li			Mar	
<i>Polygonum hysspidum</i>	M, L	U, M, L	Li			Mar	
<i>Polygonum punctatum</i>	M, L	U, M, L				Mar	
PONTEDERIACEAE							
<i>Eichhornia azurea</i>	M, L	U, M, L		Em			
<i>Eichhornia crassipes</i>	M, L	U, M, L			Fl		
<i>Pontederia rotundifolia</i>	M, L	U, M, L				Mar	
PTERIDACEAE							
<i>Acrostichum aureum</i>	M, L	U, M, L				Mar	
<i>Ceratopteris pteridioides</i>			Li		Fl		
SALVINEACEAE							
<i>Salvinia sp.</i>	M, L	U, M, L			Fl		
TYP <i>Typha sp.</i>	M, L	U, M, L		Em		Mar	

Source: Lois Berger (1999); Biological Inventory of the Panama Canal Watershed (1994)

U= Upper catchment area ;M= Middle catchment area ; L= Lower catchment area
Li=littoral band; Em=Emergent; Fl=Floating; Mar=Marginal;Sum=Sumerged

Table A4.2.4. Richness of Species of Mammals and his Distribution in Three Sections (Upper, Middle and lower) of the Catchment Area of the Lagarto River compared with the species of Indio River.

TAXON		Sub-Basin of Lagarto River			Indio River
		Upper	Middle	Lower	
CLASS MAMMALIA					
DIDELPHIMORPHIA					
DIDELPHIDAE	<i>Didelphis marsupialis</i>	X	X	X	X
	<i>Philander opossum</i>		X	X	
MARMOSIDAE	<i>Marmosa robinsoni</i>		X	X	
VERMILINGUA					
MYRMECOPHAGIDAE	<i>Cyclopes didactylus</i>		X		
	<i>Myrmecophaga tridactyla</i>		X		
	<i>Tamandua mexicana</i>	X	X	X	X
PHYLLOPHAGA					
BRADYPODIDAE	<i>Bradypus variegatus</i>	X	X	X	X
MEGALONYCHIDAE	<i>Choloepus hoffmanni</i>		X	X	
CINGULATA					
DASYPODIDAE	<i>Dasypus novemcinctus</i>	X	X	X	X
CHIROPTERA					
EMBALLONURIDAE	<i>Cormura brevirostris</i>		X	X	
	<i>Rynchonycteris naso</i>	X			
	<i>Saccopterix bilineata</i>		X	X	
NOCTILIONIDAE	<i>Noctilio albiventris</i>	X			
	<i>Noctilio leporinus</i>	X	X	X	
MORMOOPIDAE	<i>Pteronotus parnellii</i>	X	X	X	X
PHYLLOSTOMIDAE	<i>Micronycteris minuta</i>	X	X	X	
	<i>Micronycteris microtis</i>		X	X	
	<i>Micronycteris hirsuta</i>		X	X	
	<i>Glyphonycteris daviesi</i>		X	X	
	<i>Glyphonycteris sylvestris</i>		X	X	
	<i>Lampronnycteris branchyotis</i>		X	X	
	<i>Phyllostomus hastatus</i>	X	X	X	X
	<i>Phyllostomus discolor</i>				X
	<i>Lonchorhina aurita</i>		X	X	
	<i>Tonatia silvicola</i>	X	X	X	X
	<i>Tonatia brasiliense</i>				X
	<i>Tonatia bidens</i>		X	X	
	<i>Trachops cirrhosus</i>		X	X	
	<i>Chrotopterus auritus</i>		X	X	
	<i>Glossophaga comissarisi</i>	X	X	X	X
	<i>Glossophaga soricina</i>	X	X	X	X
	<i>Lonchophylla robusta</i>	X			X
	<i>Carollia castanea</i>	X	X	X	X
	<i>Carollia perspicillata</i>	X	X	X	X
	<i>Carollia brevicauda</i>				X
	<i>Sturnira lilium</i>				X
	<i>Uroderma bilobatum</i>	X	X	X	X
	<i>Platyrrhinus helleri</i>	X	X	X	X
	<i>Vampyroides caraccioli</i>		X	X	
	<i>Vampyressa pusilla</i>	X	X	X	X
	<i>Vampyressa nymphaea</i>		X	X	
	<i>Chiroderma trinitatum</i>		X	X	
	<i>Chiroderma salvini</i>				X
	<i>Chiroderma villosum</i>		X	X	

TAXON		Sub-Basin of Lagarto River			Indio River
		Upper	Middle	Lower	
	<i>Artibeus jamaicensis</i>	X	X	X	X
	<i>Artibeus intermedius</i>	X			X
	<i>Artibeus lituratus</i>	X	X	X	X
	<i>Artibeus phaeotis</i>	X	X	X	X
	<i>Artibeus watsoni</i>	X	X	X	X
	<i>Enchisthenes hartii</i>				X
	<i>Ectophylla macconelli</i>		X	X	
	<i>Centurio senex</i>		X	X	
	<i>Desmodus rotundus</i>	X	X	X	X
NATALIDAE	<i>Natalus stramineus</i>		X	X	
THYROPTERIDAE	<i>Thyroptera tricolor</i>		X	X	
VESPERTILIONIDAE	<i>Myotis nigricans</i>		X	X	
	<i>Rhogeessa tumida</i>		X	X	
MOLOSSIDAE	<i>Molossus molossus</i>		X	X	
	<i>Promops centralis</i>				X
PRIMATES					
CEBIDAE	<i>Aotus lemurinus</i>		X	X	X
	<i>Cebus capucinus</i>		X	X	
	<i>Saguinus geoffroyi</i>	X	X	X	X
ATELIDAE	<i>Alouatta palliata</i>		X	X	
	<i>Ateles geoffroyi</i>		X		
CARNIVORA					
PROCYONIDAE	<i>Nasua narica</i>		X	X	
	<i>Potos flavus</i>		X	X	
	<i>Procyon cancrivorous</i>		X		
	<i>Procyon lotor</i>		X	X	X
MUSTELIDAE	<i>Conepatus semistriatus</i>				X
	<i>Eira barbara</i>		X	X	
	<i>Galictis vittata</i>		X		
	<i>Lontra longicaudis</i>	X	X	X	X
FELIDAE	<i>Herpailurus yaguaroundi</i>		X	X	
	<i>Leopardus pardalis</i>		X	X	X
	<i>Leopardus wiedii</i>		X		
	<i>Puma concolor</i>				X
CANIDAE	<i>Speothos venaticus</i>		X		
	<i>Urocyon cinereoargenteus</i>	X	X		
ARTIODACTYLA					
TAYASSUIDAE	<i>Tayassu pecari</i>		X		
	<i>Tayassu tajacu</i>		X	X	X
CERVIDAE	<i>Mazama americana</i>		X	X	
	<i>Odocoileus virginianus</i>	X	X	X	X
PERISSODACTYLA					
TAPIRIDAE	<i>Tapirus bairdii</i>		X		
RODENTIA					
SCIURIDAE	<i>Microsciurus alfari</i>		X	X	
	<i>Microsciurus mimulus</i>				X
	<i>Sciurus granatensis</i>		X	X	X
	<i>Sciurus variegatoides</i>	X	X		X

TAXON		Sub-Basin of Lagarto River			Indio River
		Upper	Middle	Lower	
AGOUTIDAE	<i>Agouti paca</i>		X	X	X
DASYPROCTIDAE	<i>Dasyprocta punctata</i>		X	X	X
HYDROCHAERIDAE	<i>Hydrochaeris isthmus</i>	X	X		X
ECHIMYIDAE	<i>Diplomys labilis</i>		X	X	
	<i>Haplomys gymnurus</i>		X	X	
	<i>Proechimys semispinosus</i>	X	X	X	X
ERETHIZONTIDAE	<i>Coendou rothschildi</i>		X	X	X
HETEROMYIDAE	<i>Heteromys desmarestianus</i>		X	X	X
	<i>Liomys adpersus</i>		X	X	
MURIDAE	<i>Melanomys caliginosus</i>		X	X	X
	<i>Oecomys bicolor</i>		X	X	
	<i>Oryzomys talamancae</i>		X	X	
	<i>Rattus rattus</i>		X	X	X
	<i>Sigmodon hispidus</i>		X	X	
	<i>Sigmodontomys alfari</i>		X	X	X
	<i>Tylomys watsoni</i>		X		
	<i>Zygodontomys brevicauda</i>		X	X	
LAGOMORPHA					
LEPORIDAE	<i>Sylvilagus brasiliensis</i>	X	X		X
SIRENIA					
TRICHECHIDAE	<i>Trichechus manatus</i>		X		
Total	Species for Río Lagarto = 96	33	92	77	50

Source: Tejera et al. 1995; TLBG, UP y STRI 1999; Handley 1966; Moreno y Gallardo 1997a; Tomblin 1997a; Araúz 2003; Samudio et al. 1999.

Table A4.2-5. Ecological characteristics and State of Conservation of the Species of Mammals of the Catchment Area of the Lagarto River.

KEY: State of conservation: EN=endemic native; A=Treated; EX=Exotic; I, II=CITES; AU=Threatened according to the IUCN. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Fru=frugivore; Car=carnivore; Ins=insectivore; Fo=follivore; Nec=nectarivore; Pis=piscivore; Her=herbivore; Hem=hematofagous; Gra=granivore; Om=omnivore. Behavior: T=terrestrial; SA=semiaquatic; F=flying; Ar=arboreal or shrubby; Aq=aquatic.

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
CLASS MAMMALIA						
ORDER DIDELPHIMORPHIA						
FAMILY DIDELPHIDAE						
<i>Didelphis marsupialis</i>	Om	N	T/Ar			
<i>Philander opossum</i>	Car	N	Ar			
FAMILY CALUROMYIDAE						
<i>Caluromys derbianus</i>	Fru	N	Ar			
FAMILY MARMOSIDAE						
<i>Marmosa robinsoni</i>	Fru/Ins	N	Ar			
ORDER VERMILINGUA						
FAMILY MYRMECOPHAGIDAE						
<i>Cyclops didactylus</i>	Ins	N	Ar	A		
<i>Myrmecophaga tridactyla</i>	Ins	D	T	A	AU	II
<i>Tamandua mexicana</i>	Ins	D/N	T/Ar	A		
ORDER PHYLLOPHAGA						
FAMILY BRADYPODIDAE						
<i>Bradypus variegatus</i>	Fo	D	Ar			II
FAMILY MEGALONYCHIDAE						
<i>Choloepus hoffmanni</i>	Fo	D	Ar			
ORDER CINGULATA						
FAMILY DASYPODIDAE						
<i>Dasybus novemcinctus</i>	Ins	N	SF	A		
ORDER CHIROPTERA						
FAMILY EMBALLONURIDAE						
<i>Cormura brevirostris</i>	Ins	N	F			
<i>Rynchonycteris naso</i>	Ins	N	F			
<i>Saccopteryx bilineata</i>	Ins	N	F			
FAMILY NOCTILIONIDAE						
<i>Noctilio albiventris</i>	Ins	N	F			
<i>Noctilio leporinus</i>	Car	N	F			
FAMILY MORMOOPIDAE						
<i>Pteronotus gymnonotus</i>	Ins	N	F			
<i>Pteronotus parnellii</i>	Ins	N	F			
FAMILY PHYLLOSTOMIDAE						
<i>Micronycteris minuta</i>	Ins	N	F			
<i>Micronycteris microtis</i>	Ins	N	F			
<i>Micronycteris hirsuta</i>	Ins	N	F			
<i>Glyphonycteris daviesi</i>	Ins	N	F			
<i>Glyphonycteris sylvestris</i>	Ins	N	F			
<i>Lamproncycteris branchyotis</i>	Ins	N	F			

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
	<i>Phyllostomus hastatus</i>	Fru/Car	N	F		
	<i>Lonchorhina aurita</i>	Fru/Ins	N	F		
	<i>Tonatia silvicola</i>	Ins	N	F		
	<i>Tonatia bidens</i>	Ins	N	F		
	<i>Trachops cirrhosus</i>	Car	N	F		
	<i>Chiropterus auritus</i>	Car	N	F		
	<i>Glossophaga comissarisi</i>	Nec	N	F		
	<i>Glossophaga soricina</i>	Nec	N	F		
	<i>Lonchophylla robusta</i>	Nec	N	F		
	<i>Carollia castanea</i>	Fru	N	F		
	<i>Carollia perspicillata</i>	Fru	N	F		
	<i>Uroderma bilobatum</i>	Fru	N	F		
	<i>Platyrrhinus helleri</i>	Fru	N	F		
	<i>Vampyroides caraccioli</i>	Fru	N	F		
	<i>Vampyressa pusilla</i>	Fru	N	F		
	<i>Vampyressa nymphea</i>	Fru	N	F		
	<i>Chiroderma trinitatum</i>	Fru	N	F		
	<i>Chiroderma vilosum</i>	Fru	N	F		
	<i>Artibeus jamaicensis</i>	Fru	N	F		
	<i>Artibeus intermedius</i>	Fru	N	F		
	<i>Artibeus lituratus</i>	Fru	N	F		
	<i>Artibeus phaeotis</i>	Fru	N	F		
	<i>Artibeus watsoni</i>	Fru	N	F		
	<i>Ectophylla macconnelli</i>	Fru	N	F		
	<i>Centurio senex</i>	Fru	N	F		
	<i>Desmodus rotundus</i>	Hem	N	F		
	FAMILY NATALIDAE					
	<i>Natalus stramineus</i>	Ins	N	F		
	FAMILY THYROPTERIDAE					
	<i>Thyroptera tricolor</i>	Ins	N	F		
	FAMILY VESPERTILIONIDAE					
	<i>Myotis nigricans</i>	Ins	N	F		
	<i>Rhogeessa tumida</i>	Ins	N	F		
	FAMILY MOLOSSIDAE					
	<i>Molossus molossus</i>	Ins	N	F		
	FAMILY FURIPTERIDAE					
	<i>Furipterus horrens</i>	Ins	N	F		
	ORDER PRIMATES					
	FAMILY CEBIDAE					
	<i>Aotus lemurinus</i>	Fru/Fo	N	Ar	AU	II
	<i>Cebus capucinus</i>	Fru/Car	D	Ar	A	II
	<i>Saguinus geoffroyi</i>	Ins/Fru	D	Ar	A	
	FAMILY ATELIDAE					
	<i>Alouatta palliata</i>	Fru/Fo	D	Ar	A	I
	<i>Ateles geoffroyi</i>	Fru	D	Ar	A	I, II
	ORDER CARNIVORA					

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
FAMILY PROCYONIDAE						
<i>Nasua narica</i>	Fru/Car	D	T/Ar	A		
<i>Potos flavus</i>	Fru	N	Ar			
<i>Procyon cancrivorus</i>	Om	N	T	A		
<i>Procyon lotor</i>	Om	N	T	A		
FAMILY MUSTELIDAE						
<i>Eira barbara</i>	Om	D	T			
<i>Galictis vittata</i>	Om	D/N	T/Ar			
<i>Lontra longicaudis</i>	Car	D	SA	A		I
FAMILY FELIDAE						
<i>Herpailurus yagouaroundi</i>	Car	D	T	A		I
<i>Leopardus pardalis</i>	Car	N	T	A		I
<i>Leopardus wiedii</i>	Car	N	T/Ar	A		I
FAMILY CANIDAE						
<i>Speothos venaticus</i>	Car	D	T	A	AU	I
<i>Urocyon cinereoargenteus</i>	Car	N	T	A		
ORDER ARTIODACTYLA						
FAMILY TAYASSUIDAE						
<i>Tayassu pecari</i>	Fru	D	T	A		II
<i>Tayassu tajacu</i>	Fru	D	T	A		II
FAMILY CERVIDAE						
<i>Mazama americana</i>	Fru	D	T	A		
<i>Odocoileus virginianus</i>	Fru	D	T	A		
ORDER PERISSODACTYLA						
FAMILY TAPIRIDAE						
<i>Tapirus bairdii</i>	Fru	D/N	T	A	AU	I
ORDER RODENTIA						
FAMILY SCIURIDAE						
<i>Microsciurus alfari</i>	Fru	D	Ar			
<i>Sciurus granatensis</i>	Fru	D	Ar			
<i>Sciurus variegatoides</i>	Fru	D	Ar			
FAMILY AGOUTIDAE						
<i>Agouti paca</i>	Fru	N	T	A		
FAMILY DASYPROCTIDAE						
<i>Dasyprocta punctata</i>	Fru	D	T	A		
FAMILY HYDROCHAERIDAE						
<i>Hydrochaeris isthmus</i>	Her	N	SA	A		
FAMILY ECHIMYIDAE						
<i>Diplomys labilis</i>	Fru	N	T			
<i>Haplomys gymnurus</i>	Fru	N	T			
<i>Proechimys semispinosus</i>	Fru	N	T			
FAMILY ERETHIZONTIDAE						
<i>Coendou rothschildi</i>	Fru/Fo	N	Ar	EN		
FAMILY HETEROMYIDAE						
<i>Heteromys desmarestianus</i>	Gra/Fru	N	T			
<i>Liomys adpersus</i>	Gra/Fru	N	T	EN	AU	

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
FAMILY MURIDAE						
<i>Melanomys caliginosus</i>	Fru	N	T			
<i>Oecomys bicolor</i>	Fru	N	T			
<i>Oryzomys talamancae</i>	Fru	N	T			
<i>Rattus rattus</i>	Om	N	T	EX		
<i>Signodon hispidus</i>	Om	N	T			
<i>Signodontomys alfari</i>	Fru	N	T			
<i>Tylomys watsoni</i>	Fru	N	T			
<i>Zygodontomys brevicauda</i>	Om	N	T			
ORDER LAGOMORPHA						
FAMILY LEPORIDAE						
<i>Sylvilagus brasiliensis</i>	Her	D	T			
ORDER SIRENIA						
FAMILY TRICHECHIDAE						
<i>Trichechus manatus</i>	Her		Aq	A	AU	I
			TOTAL	2EN, 27A	7AU	15

Source: Tejera et al. 1995; Kalko et al. 1996; Samudio 2002; ANAM 2000, CITES 2003.

ANAM: Environmental National Authority

Table A4.2.6. Richness of Species of Birds and his Distribution in Three Sections (Upper, Middle and Lower) of the Catchment Area of the Lagarto River compared with the species of Indio River.

TAXON	Catchment Area of Lagarto River			Indio River
	Upper	Middle	Lower	
CLASS BIRDS				
TINAMIFORMES				
TINAMIDAE	<i>Tinamus major</i>	X	X	X
	<i>Crypturellus soui</i>	X	X	X
PODICIPEDIFORMES				
PODICIPEDIDAE	<i>Podilymbus podiceps</i>	X	X	X
	<i>Tachybaptus dominicus</i>	X	X	X
PELECANIFORMES				
PELECANIDAE	<i>Pelecanus occidentalis</i>		X	
PHALACROCORACIDAE	<i>Phalacrocorax brasilianus</i>		X	
ANHINGIDAE	<i>Anhinga anhinga</i>		X	
FREGATIDAE	<i>Fregata magnificens</i>		X	
CICONIIFORMES				
ARDEIDAE	<i>Ardea alba</i>	X		X
	<i>Ardea herodias</i>	X	X	X
	<i>Bubulcus ibis</i>	X	X	X
	<i>Butorides striatus</i>	X	X	X
	<i>Casmerodius albus</i>	X	X	X
	<i>Egretta caerulea</i>	X	X	X
	<i>Egretta thula</i>	X	X	X
	<i>Egretta tricolor</i>		X	X
	<i>Ixobrychus exilis</i>	X		
	<i>Nyctanassa violacea</i>		X	X
	<i>Nycticorax nycticorax</i>		X	X
	<i>Pilherodius pileatus</i>		X	X
	<i>Tigrisoma lineatum</i>		X	X
CATHARTIDAE	<i>Cathartes aura</i>	X	X	X
	<i>Coragyps atratus</i>	X	X	X
ANSERIFORMES				
ANATIDAE	<i>as discors</i>		X	X
	<i>Cairina moschata</i>	X		
	<i>Nomonyx dominicus</i>	X		
FALCONIFORMES				
ACCIPITRIDAE	<i>Buteo magnirostris</i>	X		X
	<i>Buteo nitidus</i>	X	X	X
	<i>Buteo platypterus</i>		X	X
	<i>Buteogallus anthracinus</i>	X	X	X
	<i>Buteogallus meridionalis</i>	X		
	<i>Buteogallus urubitinga</i>	X	X	X
	<i>Elanoides forficatus</i>	X	X	X
	<i>Elanus leucurus</i>	X	X	X
	<i>Geranospiza caurulescens</i>		X	X
	<i>Harpagus bidentatus</i>	X	X	X
	<i>Ictinia plumbea</i>	X		X
	<i>Leucopternis albicollis</i>	X	X	X
	<i>Leucopternis semiplumbea</i>		X	X
	<i>Pandion haliaetus</i>	X	X	X
	<i>Spizaetus tyrannus</i>	X	X	X

TAXON		Catchment Area of Lagarto River			Indio River
		Upper	Middle	Lower	
CLASS BIRDS					
FALCONIDAE	<i>Caracara cheriway</i>	X	X	X	
	<i>Micrastur ruficollis</i>	X			X
	<i>Milvago chimachima</i>	X			X
GALLIFORMES					
CRACIDAE	<i>Chamaepetes unicolor</i>				X
	<i>Ortalis cinereiceps</i>	X	X	X	X
	<i>Penelope purpurascens</i>		X	X	
ODONTOPHORIDAE	<i>Colinus cristatus</i>	X			
GRUIFORMES					
RALLIDAE	<i>Aramides axillaris</i>		X	X	
	<i>Aramides cajanea</i>	X	X	X	X
	<i>Gallinula chloropus</i>	X	X	X	
	<i>Laterallus albigularis</i>	X	X	X	
	<i>Porphyryla martinica</i>	X	X	X	
	<i>Porzana carolina</i>		X	X	
	<i>Porzana flaviventer</i>		X	X	
ARAMIDAE	<i>Aramus guarana</i>		X	X	
CHARADRIIFORMES					
JACANIDAE	<i>Jacana spinosa</i>	X	X	X	
	<i>Jacana jacana</i>	X	X	X	X
SCOLOPACIDAE	<i>Actitis macularia</i>		X	X	
	<i>Bartramia longicauda</i>		X	X	
	<i>Calidris minutilla</i>		X	X	
	<i>Gallinago gallinago</i>		X	X	
	<i>Numenius phaeopus</i>		X	X	
COLUMBIFORMES					
COLUMBIDAE	<i>Claravis pretiosa</i>	X	X	X	
	<i>Columba cayennensis</i>	X	X	X	
	<i>Columba livia</i>	X			X
	<i>Columba nigrirostris</i>	X	X	X	X
	<i>Columba speciosa</i>	X	X	X	X
	<i>Columba subvinacea</i>				X
	<i>Columbina minuta</i>	X	X	X	
	<i>Columbina talpacoti</i>	X	X	X	X
	<i>Geotrygon chiriquensis</i>				X
	<i>Geotrygon montana</i>	X	X	X	X
	<i>Leptotila cassinii</i>	X	X	X	X
	<i>Leptotila verreauxi</i>	X	X	X	X
PSITTACIFORMES					
PSITTACIDAE	<i>Amazona autumnalis</i>	X	X	X	X
	<i>Amazona farinosa</i>	X	X	X	
	<i>Amazona onchrocephala</i>	X			X
	<i>Brotogeris jugularis</i>	X	X	X	X
	<i>Pionopsitta haematotis</i>		X	X	
	<i>Pionus menstruus</i>	X	X	X	X
CUCULIFORMES					
CUCULIDAE	<i>Coccyzus minor</i>		X	X	
	<i>Crotophaga ani</i>	X	X	X	X
	<i>Crotophaga major</i>	X	X	X	
	<i>Crotophaga sulcirostris</i>	X			

TAXON	Catchment Area of Lagarto River			Indio River
	Upper	Middle	Lower	
CLASS BIRDS				
	<i>Dromococcyx phasianellus</i>		X	X
	<i>Piaya cayana</i>	X	X	X
	<i>Tapera naevia</i>	X	X	X
STRIGIFORMES				
TYTONIDAE	<i>Tyto alba</i>		X	
STRIGIDAE	<i>Ciccaba nigrolineata</i>			
	<i>Ciccaba virgata</i>	X		X
	<i>Otus choliba</i>	X		X
	<i>Otus guatemalae</i>		X	X
	<i>Pulsatrix perspicillata</i>		X	X
CAPRIMULGIFORMES				
CAPRIMULGIDAE	<i>Nyctidromus albicollis</i>	X	X	X
NYCTIBIIDAE	<i>Nyctibius grandis</i>		X	
	<i>Nyctibius griseus</i>	X		X
APODIFORMES				
APODIDAE	<i>Chaetura brachyura</i>		X	
	<i>Chaetura spinicauda</i>	X		X
	<i>Chaetura vauxi</i>		X	
	<i>Panyptila cayennensis</i>	X	X	
	<i>Streptoprocne zonaris</i>	X	X	X
TROCHILIDAE	<i>Amazilia amabilis</i>	X	X	X
	<i>Amazilia edward</i>	X	X	X
	<i>Amazilia tzacatl</i>	X	X	X
	<i>Anthracothorax nigricollis</i>	X		X
	<i>Chalybura buffonii</i>	X	X	X
	<i>Chalybura urochrysa</i>	X	X	X
	<i>Chlorostilbon assimilis</i>	X	X	X
	<i>Damophila julie</i>	X	X	X
	<i>Eutoxeres aquila</i>	X		X
	<i>Florisuga mellivora</i>	X	X	X
	<i>Glaucis aenea</i>		X	
	<i>Glaucis hirsuta</i>	X	X	X
	<i>Heliodoxa jacula</i>			X
	<i>Heliophryx barroti</i>		X	
	<i>Lepidopyga coeruleogularis</i>		X	
	<i>Phaeochroa cuvierii</i>		X	
	<i>Phaethornis guy</i>	X		X
	<i>Phaethornis longuemareus</i>	X	X	X
	<i>Phaethornis superciliosus</i>	X	X	X
	<i>Thalurania colombica</i>	X	X	X
	<i>Threnetes ruckeri</i>	X	X	X
TROGONIFORMES				
TROGONIDAE	<i>Trogon aurantiiventris</i>			X
	<i>Trogon clathratus</i>	X		X
	<i>Trogon massena</i>	X	X	X
	<i>Trogon melanurus</i>		X	
	<i>Trogon rufus</i>	X	X	X
	<i>Trogon violaceus</i>	X	X	X
	<i>Trogon viridis</i>	X	X	X
CORACIFORMES				
MOMOTIDAE	<i>Baryphthengus martii</i>	X	X	X

TAXON		Catchment Area of Lagarto River			Indio River
		Upper	Middle	Lower	
CLASS BIRDS					
	<i>Electron platyrhynchum</i>	X	X	X	X
	<i>Momotus momota</i>	X	X	X	X
ALCEDINIDAE	<i>Ceryle alcyon</i>		X	X	
	<i>Ceryle torquata</i>	X	X	X	X
	<i>Chloroceryle aenea</i>		X	X	
	<i>Chloroceryle amazona</i>	X	X	X	
	<i>Chloroceryle americana</i>	X	X	X	X
	<i>Chloroceryle inda</i>	X	X	X	
PICIFORMES					
BUCCONIDAE	<i>Malacoptila panamensis</i>	X	X	X	X
	<i>Nonnula ruficapilla</i>	X			X
	<i>Notharchus macrorhynchus</i>		X	X	
	<i>Notharchus pectoralis</i>	X	X	X	X
	<i>Notharchus tectus</i>		X	X	
	<i>Nystalus radiatus</i>	X			X
RAMPHASTIDAE	<i>Aulacorhynchus prasinus</i>				X
	<i>Capito maculicoronatus</i>	X			X
	<i>Pteroglossus torquatus</i>	X	X	X	X
	<i>Ramphastos sulfuratus</i>	X	X	X	X
	<i>Ramphastos swaisonii</i>		X	X	
	<i>Selenidera spectabilis</i>				X
PICIDAE	<i>Campephilus melanoleucos</i>	X	X	X	X
	<i>Dryocopus lineatus</i>	X	X	X	X
	<i>Melanerpes pucherani</i>	X			X
	<i>Melanerpes rubricapillus</i>	X	X	X	X
PASSERIFORMES					
FURNARIIDAE	<i>Automolus ochrolaemus</i>	X	X	X	X
	<i>Sclerurus guatemalensis</i>		X	X	
	<i>Sclerurus mexicanus</i>		X	X	
	<i>Xenops minutus</i>	X	X	X	X
	<i>Xenops rutilans</i>				X
DENDROCOLAPTIDAE	<i>Campylorhynchus trochilirostris</i>		X	X	
	<i>Dendrocincla fuliginosa</i>	X	X	X	X
	<i>Dendrocincla homochroa</i>		X	X	
	<i>Dendrocolaptes sanctiithomae</i>		X	X	
	<i>Glyphorhynchus spirurus</i>	X	X	X	X
	<i>Xiphorhynchus lachrymosus</i>	X			
	<i>Xiphorhynchus picus</i>		X	X	
	<i>Xiphorhynchus susurrans</i>	X	X	X	X
THAMNOPHILIDAE	<i>Cercomacra nigricans</i>	X	X	X	X
	<i>Cercomacra tyrannina</i>	X	X	X	X
	<i>Cymbilaimus lineatus</i>	X	X	X	X
	<i>Dysithamnus mentalis</i>	X			X
	<i>Dysithamnus puncticeps</i>		X	X	
	<i>Gymnocichla nudiceps</i>	X			
	<i>Gymnophis leucaspis</i>	X	X	X	X
	<i>Hylophylax naevioides</i>	X	X	X	X
	<i>Microrhopias quixensis</i>	X	X	X	X
	<i>Myrmeciza exsul</i>	X	X	X	X
	<i>Myrmeciza longipes</i>	X			X
	<i>Myrmotherula axillaris</i>	X	X	X	X
	<i>Myrmotherula fulviventris</i>	X	X	X	X

TAXON	Catchment Area of Lagarto River			Indio River
	Upper	Middle	Lower	
CLASS BIRDS				
	<i>Myrmotherula schisticolor</i>	X	X	X
	<i>Myrmotherula surinamensis</i>	X		
	<i>Phaenostictus mcleannani</i>		X	
	<i>Taraba major</i>	X		X
	<i>Thamnophilus atrinucha</i>	X		X
	<i>Thamnophilus doliatus</i>	X	X	X
	<i>Thamnophilus punctatus</i>	X	X	
FORMICARIIDAE	<i>Formicarius analis</i>	X	X	X
	<i>Hylopezus perspicillatus</i>		X	
	<i>Pittasoma michleri</i>			
TYRANNIDAE	<i>Attila spadiceus</i>	X	X	X
	<i>Camptostoma obsoletum</i>	X	X	X
	<i>Capsiempis flaveola</i>	X	X	X
	<i>Cnipodectes subbrunneus</i>	X	X	X
	<i>Colonia colonus</i>	X		X
	<i>Conopias albobittata</i>	X	X	
	<i>Contopus cinereus</i>	X	X	X
	<i>Contopus virens</i>	X	X	X
	<i>Elaenia chiriquensis</i>	X	X	X
	<i>Elaenia flavogaster</i>	X	X	X
	<i>Elaenia frantzii</i>			X
	<i>Empidonax traillii</i>		X	X
	<i>Empidonax virescens</i>	X	X	X
	<i>Legatus leucophaeus</i>	X	X	
	<i>Lipaugus unirufus</i>		X	
	<i>Lophotriccus pilaris</i>	X	X	
	<i>Lophotriccus pileatus</i>			X
	<i>Megarhynchus pitanga</i>	X	X	X
	<i>Mionectes oleagineus</i>	X	X	X
	<i>Mionectes olivaceus</i>	X	X	X
	<i>Myiarchus crinitus</i>	X	X	X
	<i>Myiarchus panamensis</i>	X	X	X
	<i>Myiarchus tuberculifer</i>	X	X	X
	<i>Myiobius atricaudus</i>	X		X
	<i>Myiobius sulphureipygius</i>		X	
	<i>Myiodynastes luteiventris</i>		X	
	<i>Myiodynastes maculatus</i>	X	X	X
	<i>Myiopagis viridicata</i>		X	
	<i>Myiophobus fasciatus</i>	X	X	X
	<i>Myiozetetes cayanensis</i>	X	X	
	<i>Myiozetetes granadensis</i>	X		X
	<i>Myiozetetes similis</i>	X	X	X
	<i>Oncostoma olivaceum</i>	X	X	X
	<i>Onychorhynchus coronatus</i>	X		X
	<i>Ornithion brunneicapillum</i>	X	X	X
	<i>Pachyramphus albogriseus</i>		X	
	<i>Pachyramphus cinnamomeus</i>	X	X	X
	<i>Pachyramphus polychopterus</i>		X	X
	<i>Pachyramphus rufus</i>	X		
	<i>Phaeomyias murina</i>	X		
	<i>Pitangus lictor</i>	X	X	X
	<i>Pitangus sulphuratus</i>	X	X	X
	<i>Platyrinchus coronatus</i>		X	
	<i>Platyrinchus mystaceus</i>	X		X
	<i>Rhynchocyclus olivaceus</i>	X	X	X
	<i>Schiffornis turdinus</i>			X
	<i>Süblegatus arenarum</i>	X		

TAXON	Catchment Area of Lagarto River			Indio River
	Upper	Middle	Lower	
CLASS BIRDS				
	<i>Terenotriccus erythrurus</i>	X	X	X
	<i>Tityra semifasciata</i>	X	X	X
	<i>Todirostrum cinereum</i>	X	X	X
	<i>Todirostrum nigriceps</i>	X	X	X
	<i>Tolmomyias sulphureus</i>		X	
	<i>Tyrannulus elatus</i>	X	X	X
	<i>Tyrannus dominicensis</i>		X	
	<i>Tyrannus melancholicus</i>	X	X	X
	<i>Tyrannus savana</i>	X	X	
	<i>Tyrannus tyrannus</i>		X	
	<i>Zimmerius vilissimus</i>	X	X	X
COTINGIDAE	<i>Cotinga nattererii</i>		X	
	<i>Querula purpurata</i>	X	X	X
PIPRIDAE	<i>Chiroxiphia lanceolata</i>		X	
	<i>Corapipo altera</i>	X		X
	<i>Manacus vitellinus</i>	X	X	X
	<i>Pipra coronata</i>		X	
	<i>Pipra mentalis</i>	X	X	X
HIRUNDINIDAE	<i>Hirundo pyrrhonota</i>	X		
	<i>Hirundo rustica</i>	X	X	X
	<i>Neochelidon tibialis</i>			X
	<i>Progne chalybea</i>	X	X	
	<i>Riparia riparia</i>		X	
	<i>Stelgidopteryx ruficollis</i>	X	X	X
	<i>Stelgidopteryx serripennis</i>	X	X	
	<i>Tachycineta albilineata</i>	X	X	
CORVIDAE	<i>Cyanocorax affinis</i>	X	X	X
TROGLODYTIDAE	<i>Campylorhynchus albobrunneus</i>	X		X
	<i>Cyphorhinus phaeocephala</i>	X	X	X
	<i>Henicorhina leucophrys</i>	X		X
	<i>Henicorhina leucosticta</i>	X	X	X
	<i>Microcerculus marginatus</i>	X	X	X
	<i>Thryothorus fasciatoventris</i>	X	X	X
	<i>Thryothorus leucotis</i>	X	X	X
	<i>Thryothorus modestus</i>	X	X	X
	<i>Thryothorus nigricapillus</i>	X	X	X
	<i>Thryothorus rufalbus</i>	X	X	X
	<i>Thryothorus rutilus</i>		X	X
	<i>Thryothorus thoracicus</i>		X	
	<i>Troglodytes aedon</i>	X	X	X
SYLVIIDAE	<i>Microbates cinereiventris</i>	X	X	X
	<i>Poliptila plumbea</i>	X	X	
	<i>Ramphocaenus melanurus</i>	X	X	X
TURDIDAE	<i>Catharus aurantiirostris</i>			X
	<i>Catharus fuscescens</i>	X		
	<i>Catharus ustulatus</i>	X	X	X
	<i>Hylocichla mustelina</i>		X	
	<i>Turdus assimilis</i>			X
	<i>Turdus grayi</i>	X	X	X
MIMIDAE	<i>Dumetella carolinensis</i>		X	
	<i>Mimus gilvus</i>	X		

TAXON		Catchment Area of Lagarto River			Indio River
		Upper	Middle	Lower	
CLASS BIRDS					
VIREONIDAE	<i>Hylophilus aurantiifrons</i>	X	X	X	
	<i>Hylophilus decurtatus</i>	X	X	X	X
	<i>Hylophilus flavipes</i>	X	X	X	X
	<i>Vireo flavifrons</i>		X	X	X
	<i>Vireo flavoviridis</i>	X	X	X	X
	<i>Vireo olivaceus</i>	X	X	X	X
	<i>Vireolanius pulchellus</i>	X	X	X	X
PARULIDAE	<i>Basileuterus rufifrons</i>	X	X	X	X
	<i>Dendroica castanea</i>	X	X	X	X
	<i>Dendroica fusca</i>	X			X
	<i>Dendroica magnolia</i>		X	X	
	<i>Dendroica pensylvanica</i>	X	X	X	X
	<i>Dendroica petechia</i>	X	X	X	X
	<i>Geothlypis trichas</i>	X			X
	<i>Mniotilta varia</i>	X	X	X	X
	<i>Oporornis formosus</i>	X	X	X	X
	<i>Oporornis philadelphia</i>		X	X	X
	<i>Phaeothlypis fulvicauda</i>	X			X
	<i>Protonotaria citrea</i>	X	X	X	X
	<i>Seiurus aurocapillus</i>		X	X	
	<i>Seiurus motacilla</i>	X			X
	<i>Seiurus noveboracensis</i>	X	X	X	X
	<i>Setophaga ruticilla</i>		X	X	
	<i>Vermivora chrysoptera</i>				X
	<i>Vermivora peregrina</i>	X	X	X	X
	<i>Wilsonia canadensis</i>		X	X	
COEREBIDAE	<i>Coereba flaveola</i>	X			X
THRAUPIDAE	<i>Chlorophanes spiza</i>	X			X
	<i>Cyanerpes cyaneus</i>	X	X	X	X
	<i>Dacnis cayana</i>	X	X	X	X
	<i>Dacnis venusta</i>		X	X	X
	<i>Eucometis penicillata</i>	X	X	X	
	<i>Euphonia anneae</i>	X			X
	<i>Euphonia fulvicrissa</i>		X	X	
	<i>Euphonia gouldi</i>		X	X	
	<i>Euphonia laniirostris</i>	X	X	X	X
	<i>Euphonia luteicapilla</i>	X	X	X	X
	<i>Habia fuscicauda</i>	X	X	X	X
	<i>Habia rubica</i>				X
	<i>Mitrospingus cassinii</i>	X	X	X	X
	<i>Piranga flava</i>				X
	<i>Piranga olivacea</i>	X	X	X	
	<i>Piranga rubra</i>	X	X	X	X
	<i>Ramphocelus dimidiatus</i>	X	X	X	X
	<i>Ramphocelus flammigerus</i>	X	X	X	X
	<i>Rhodinocichla rosea</i>	X	X	X	
	<i>Tachyphonus delatrii</i>	X	X	X	X
	<i>Tachyphonus luctuosus</i>	X	X	X	X
	<i>Tachyphonus rufus</i>	X	X	X	
	<i>Tangara florida</i>				X
	<i>Tangara gyrola</i>				X
	<i>Tangara icterocephala</i>	X			X
	<i>Tangara inornata</i>	X	X	X	X
	<i>Tangara larvata</i>	X	X	X	X
	<i>Thraupis episcopus</i>	X	X	X	X

TAXON		Catchment Area of Lagarto River			Indio River
		Upper	Middle	Lower	
CLASS BIRDS					
	<i>Thraupis palmeri</i>	X	X	X	X
EMBEREZIDAE	<i>Amaurospiza concolor</i>	X			
	<i>Arremon aurantirostris</i>	X	X	X	X
	<i>Arremonops conirostris</i>	X	X	X	X
	<i>Buarremon brunneinucha</i>				X
	<i>Junco hyemalis</i>		X	X	
	<i>Oryzoborus angolensis</i>	X	X	X	
	<i>Oryzoborus funereus</i>	X			X
	<i>Sporophila americana</i>	X	X	X	X
	<i>Sporophila minuta</i>	X	X	X	
	<i>Sporophila nigricollis</i>	X	X	X	X
	<i>Tiaris olivacea</i>	X	X	X	X
	<i>Volatinia jacarina</i>	X	X	X	X
CARDINALIDAE	<i>Cyanocopsa cyanoides</i>	X	X	X	X
	<i>Saltator albicollis</i>	X	X	X	X
	<i>Saltator atriceps</i>	X			X
	<i>Saltator maximus</i>	X	X	X	X
	<i>Saltator striatipectus</i>	X			X
ICTERIDAE	<i>Amblycercus holosericeus</i>	X	X	X	X
	<i>Cacicus cela</i>	X	X	X	X
	<i>Cacicus uropygialis</i>	X	X	X	X
	<i>Icterus chrysater</i>	X	X	X	X
	<i>Icterus galbula</i>	X	X	X	X
	<i>Icterus mesomelas</i>	X	X	X	
	<i>Icterus spurius</i>	X	X	X	X
	<i>Molothrus aeneus</i>	X			
	<i>Molothrus oryzivorus</i>	X			X
	<i>Psarocolius decumanus</i>	X	X	X	
	<i>Psarocolius wagleri</i>	X	X	X	X
	<i>Quiscalus mexicanus</i>	X	X	X	
	<i>Sturnella magna</i>	X	X	X	
	<i>Sturnella militaris</i>	X	X	X	
FRINGILLIDAE	<i>Carduelis psaltria</i>	X			
Total	species for Río Lagarto = 355	275	293	292	235

Source: Tejera et al. 1995; TLBG, UP, STRI 1999; Aparicio 1997a, Garcés 1999, Samudio et al. 1999.

Table A4.2-7. Ecological characteristics and State of Conservation of the Species of Birds of the Catchment Area of the Lagarto River.

KEY: State of conservation: ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; EX=Exotic; M=migratory; I, II=CITES; AU=Threatened according to the UICN. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Fru=frugivore; Car=carnivore; Ins=insectivore; Nec=nectarivore; Ca=carion eating; Pis=piscivore; Her=herbivore. Behavior: T=terrestrial, SA=semiaquatic; Ar=arboreal or shrubby

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES							
ORDER TINAMIFORMES							
FAMILY TINAMIDAE							
<i>Tinamus major</i>	Fru	D	T				
<i>Crypturellus soui</i>	Fru	D	T				
ORDER PODICIPEDIFORMES							
FAMILY PODICIPEDIDAE							
<i>Podilymbus podiceps</i>	Pis	D	SA				
<i>Tachybaptus dominicus</i>	Pis	D	SA				
ORDER PELECANIFORMES							
FAMILY PELECANIDAE							
<i>Pelecanus occidentalis</i>	Pis	D	SA				
FAMILY PHALACROCORACIDAE							
<i>Phalacrocorax brasilianus</i>	Pis	D	SA				
FAMILY ANHINGIDAE							
<i>Anhinga anhinga</i>	Pis	D	SA				
FAMILY FREGATIDAE							
<i>Fregata magnificens</i>	Pis	D	SA				
ORDER CICONIIFORMES							
FAMILY ARDEIDAE							
<i>Ardea alba</i>	Pis	D	SA				
<i>Ardea herodias</i>	Pis	D	SA				
<i>Bubulcus ibis</i>	Pis/Ins	D	SA	EX			
<i>Butorides striatus</i>	Pis	D	SA				
<i>Casmerodius albus</i>	Pis	D	SA				
<i>Egretta caerulea</i>	Pis	D	SA				
<i>Egretta thula</i>	Pis	D	SA				
<i>Egretta tricolor</i>	Pis	D	SA				
<i>Ixobrychus exilis</i>	Pis	D	SA				
<i>Nyctanassa violacea</i>	Pis	D	SA				
<i>Nycticorax nycticorax</i>	Pis	D	SA				
<i>Pilherodius pileatus</i>	Pis	D	SA				
<i>Tigrisoma lineatum</i>	Pis	D	SA				
FAMILY CATHARTIDAE							
<i>Cathartes aura</i>	Ca	D	T/Ar				

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES								
	<i>Coragyps atratus</i>	Ca	D	T/Ar				
ORDER ANSERIFORMES								
FAMILY ANATIDAE								
	<i>Anas discors</i>	Her/Fru	D	SA				M
	<i>Cairina moschata</i>	Her/Fru	D	SA	T			
	<i>Nonyx dominicus</i>	Her/Fru	D	SA	T			
ORDER FALCONIFORMES								
FAMILY ACCIPITRIDAE								
	<i>Buteo magnirostris</i>	Car	D	T/Ar		II		
	<i>Buteo nitidus</i>	Car	D	T/Ar				
	<i>Buteo platypterus</i>	Car	D	T/Ar		II		M
	<i>Buteogallus anthracinus</i>	Car	D	T/Ar		II		
	<i>Buteogallus meridionalis</i>	Car	D	T/Ar		II		
	<i>Buteogallus urubitinga</i>	Car	D	T/Ar		II		
	<i>Elanoides forficatus</i>	Car	D	T/Ar		II		
	<i>Elanus leucurus</i>	Car	D	T/Ar		II		
	<i>Geranospiza caurulescens</i>	Car	D	T/Ar		II		
	<i>Harpagus bidentatus</i>	Car	D	T/Ar		II		
	<i>Ictinia plumbea</i>	Car	D	T/Ar		II		
	<i>Leucopternis albicollis</i>	Car	D	T/Ar		II		
	<i>Leucopternis semiplumbea</i>	Car	D	T/Ar	T	II		
	<i>Pandion haliaetus</i>	Car	D	T/Ar		II		M
	<i>Spizaetus tyrannus</i>	Car	D	T/Ar		II		
FAMILY FALCONIDAE								
	<i>Caracara cheriway</i>	Car	D	T/Ar				
	<i>Micrastur ruficollis</i>	Car	D	T/Ar		II		
	<i>Mivago chimachima</i>	Car	D	T/Ar		II		
ORDER GALLIFORMES								
FAMILY CRACIDAE								
	<i>Ortalis cinereiceps</i>	Fru	D	Ar				
	<i>Penelope purpurascens</i>	Fru	D	Ar	T			
FAMILY ODONTOPHORIDAE								
	<i>Colinus cristatus</i>	Fru	D	T				
ORDER GRUIFORMES								
FAMILY RALLIDAE								
	<i>Aramides axillaris</i>	Pis/Fru	D	SA	T			
	<i>Aramides cajanea</i>	Pis/Fru	D	SA				
	<i>Gallinula chloropus</i>	Pis/Fru	D	SA				
	<i>Laterallus albigularis</i>	Pis/Fru	D	SA				
	<i>Porphyrio martinica</i>	Pis/Fru	D	SA				
	<i>Porzana carolina</i>	Pis/Fru	D	SA				M

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES								
	<i>Porzana flaviventer</i>	Pis/Fru	D	SA				
FAMILY ARAMIDAE								
	<i>Aramus guarauna</i>	Car	D	SA				
ORDER CHARADRIIFORMES								
FAMILY JACANIDAE								
	<i>Jacana spinosa</i>	Car	D	SA				
	<i>Jacana jacana</i>	Car	D	SA				
FAMILY SCOLOPACIDAE								
	<i>Actitis macularia</i>	Car	D	SA				M
	<i>Bartramia longicauda</i>	Car	D	SA				M
	<i>Calidris minutilla</i>	Car	D	SA				M
	<i>Gallinago gallinago</i>	Car	D	SA				M
	<i>Numenius phaeopus</i>	Car	D	SA				M
ORDER COLUMBIFORMES								
FAMILY COLUMBIDAE								
	<i>Claravis pretiosa</i>	Fru	D	T/Ar				
	<i>Columba cayennensis</i>	Fru	D	T/Ar				
	<i>Columba livia</i>	Fru	D	T/Ar				
	<i>Columba nigrirostris</i>	Fru	D	T/Ar				
	<i>Columba speciosa</i>	Fru	D	T/Ar				
	<i>Columbina minuta</i>	Fru	D	T/Ar				
	<i>Columbina talpacoti</i>	Fru	D	T/Ar				
	<i>Geotrygon montana</i>	Fru	D	T				
	<i>Leptotila cassinii</i>	Fru	D	T/Ar				
	<i>Leptotila verreauxi</i>	Fru	D	T/Ar				
ORDER PSITTACIFORMES								
FAMILY PSITTACIDAE								
	<i>Amazona autumnalis</i>	Fru	D	Ar			II	
	<i>Amazona farinosa</i>	Fru	D	Ar			II	
	<i>Amazona onchrocephala</i>	Fru	D	Ar	T		II	
	<i>Brotogeris jugularis</i>	Fru	D	Ar			II	
	<i>Pionopsitta haematotis</i>	Fru	D	Ar			II	
	<i>Pionus menstruus</i>	Fru	D	Ar			II	
ORDER CUCULIFORMES								
FAMILY CUCULIDAE								
	<i>Coccyzus minor</i>	Fru/Ins	D	T/Ar				
	<i>Crotophaga ani</i>	Fru/Ins	D	T/Ar				
	<i>Crotophaga major</i>	Fru/Ins	D	T/Ar				
	<i>Crotophaga sulcirostris</i>	Fru/Ins	D	T/Ar				
	<i>Dromococcyx phasianellus</i>	Fru/Ins	D	T/Ar				
	<i>Piaya cayana</i>	Fru/Ins	D	T/Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES							
	<i>Tapera naevia</i>	Fru/Ins	T/Ar				
ORDER STRIGIFORMES		D					
FAMILY TYTONIDAE							
	<i>Tyto alba</i>	Car	T/Ar			II	
FAMILY STRIGIDAE							
	<i>Ciccaba virgata</i>	Car	T/Ar				
	<i>Otus choliba</i>	Car	T/Ar			II	
	<i>Otus guatemalae</i>	Car	T/Ar				
	<i>Pulsatrix perspicillata</i>	Car	T/Ar			II	
ORDER CAPRIMULGIFORMES							
FAMILY CAPRIMULGIDAE							
	<i>Nyctidromus albicollis</i>	Ins	T/Ar				
FAMILY NYCTIBIDAE							
	<i>Nyctibius grandis</i>	Ins	T/Ar				
	<i>Nyctibius griseus</i>	Ins	T/Ar				
ORDER APODIFORMES							
FAMILY APODIDAE							
	<i>Chaetura brachyura</i>	Ins	T/Ar				
	<i>Chaetura spinicauda</i>	Ins	T/Ar				
	<i>Chaetura vauxi</i>	Ins	T/Ar				
	<i>Panyptila cayennensis</i>	Ins	T/Ar				
	<i>Streptoprocne zonaris</i>	Ins	T/Ar				
FAMILY TROCHILIDAE							
	<i>Amazilia amabilis</i>	Nec	Ar				
	<i>Amazilia edward</i>	Nec	Ar	T			
	<i>Amazilia tzacatl</i>	Nec	Ar			II	
	<i>Anthracothorax nigricollis</i>	Nec	Ar			II	
	<i>Chalybura buffonii</i>	Nec	Ar			II	
	<i>Chalybura urochrysia</i>	Nec	Ar			II	
	<i>Chlorostilbon assimilis</i>	Nec	Ar	T			
	<i>Damophila julie</i>	Nec	Ar			II	
	<i>Eutoxeres aquila</i>	Nec	Ar			II	
	<i>Florisuga mellivora</i>	Nec	Ar			II	
	<i>Glaucis aenea</i>	Nec	Ar			II	
	<i>Glaucis hirsuta</i>	Nec	Ar			II	
	<i>Heliothryx barroti</i>	Nec	Ar			II	
	<i>Lepidopyga coeruleogularis</i>	Nec	Ar	T		II	
	<i>Phaeochroa cuvierii</i>	Nec	Ar				
	<i>Phaethornis guy</i>	Nec	Ar			II	
	<i>Phaethornis longuemareus</i>	Nec	Ar				
	<i>Phaethornis superciliosus</i>	Nec	Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES							
	<i>Thalaurania colombica</i>	Nec	Ar			II	
	<i>ThreNETES ruckeri</i>	Nec	Ar			II	
ORDER TROGONIFORMES							
FAMILY TROGONIDAE							
	<i>Trogon clathratus</i>	Fru/Ins	Ar	T			
	<i>Trogon massena</i>	Fru/Ins	Ar				
	<i>Trogon melanurus</i>	Fru/Ins	Ar				
	<i>Trogon rufus</i>	Fru/Ins	Ar				
	<i>Trogon violaceus</i>	Fru/Ins	Ar				
	<i>Trogon viridis</i>	Fru/Ins	Ar				
ORDER CORACIIFORMES							
FAMILY MOMOTIDAE							
	<i>Barythengus martii</i>	Ins	T/Ar				
	<i>Electron platyrhynchum</i>	Ins	T/Ar				
	<i>Momotus momota</i>	Ins	T/Ar				
FAMILY ALCEDINIDAE							
	<i>Ceryle alcyon</i>	Pis	SA				
	<i>Ceryle torquata</i>	Pis	SA				
	<i>Chloroceryle aenea</i>	Pis	SA				
	<i>Chloroceryle amazona</i>	Pis	SA				
	<i>Chloroceryle americana</i>	Pis	SA				
	<i>Chloroceryle inda</i>	Pis	SA				
ORDER PICIFORMES							
FAMILY BUCCONIDAE							
	<i>Malacoptila panamensis</i>	Ins	T/Ar				
	<i>Nonnula ruficapilla</i>	Ins	T/Ar				
	<i>Notharchus macrorhynchus</i>	Ins	T/Ar				
	<i>Notharchus pectoralis</i>	Ins	T/Ar				
	<i>Notharchus tectus</i>	Ins	T/Ar				
	<i>Nystalrus radiatus</i>	Ins	T/Ar				
FAMILY RAMPHASTIDAE							
	<i>Capito maculicoronatus</i>	Fru/Ins	Ar	T			
	<i>Pteroglossus torquatus</i>	Fru/Ins	Ar				
	<i>Ramphastos sulfuratus</i>	Fru/Ins	Ar			II	
	<i>Ramphastos swainsonii</i>	Fru/Ins	Ar				
FAMILY PICIDAE							
	<i>Campephilus melanoleucos</i>	Ins	Ar				
	<i>Dryocopus lineatus</i>	Ins	Ar				
	<i>Melanerpes pucherani</i>	Ins	Ar				
	<i>Melanerpes rubricapillus</i>	Ins	Ar				
ORDER PASSERIFORMES							

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES								
FAMILY FURNARIIDAE								
	<i>Automolus ochrolaemus</i>	Ins	D	T/Ar				
	<i>Sclerurus guatemalensis</i>	Ins	D	T/Ar				
	<i>Sclerurus mexicanus</i>	Ins	D	T/Ar				
	<i>Xenops minutus</i>	Ins	D	T/Ar				
FAMILY DENDROCOLAPTIDAE								
	<i>Campylorhynchus trochilirostris</i>	Ins	D	Ar				
	<i>Dendrocincla fuliginosa</i>	Ins	D	Ar				
	<i>Dendrocincla homochroa</i>	Ins	D	Ar				
	<i>Dendrocolaptes sanctithomae</i>	Ins	D	Ar				
	<i>Glyphorhynchus spirurus</i>	Ins	D	Ar				
	<i>Xiphorhynchus lachrymosus</i>	Ins	D	Ar				
	<i>Xiphorhynchus picus</i>	Ins	D	Ar				
	<i>Xiphorhynchus susurrans</i>	Ins	D	Ar				
FAMILY THAMNOPHILIDAE								
	<i>Cercomacra nigricans</i>	Ins	D	T/Ar				
	<i>Cercomacra tyrannina</i>	Ins	D	T/Ar				
	<i>Cymbilaimus lineatus</i>	Ins	D	T/Ar				
	<i>Dysithamnus mentalis</i>	Ins	D	T/Ar				
	<i>Dysithamnus puncticeps</i>	Ins	D	T/Ar				
	<i>Gymnocichla nudiceps</i>	Ins	D	T/Ar				
	<i>Gymnophis leucaspis</i>	Ins	D	T/Ar				
	<i>Hylophylax naevioides</i>	Ins	D	T/Ar				
	<i>Microrhopias quixensis</i>	Ins	D	T/Ar				
	<i>Myrmeciza exsul</i>	Ins	D	T/Ar				
	<i>Myrmeciza longipes</i>	Ins	D	T/Ar				
	<i>Myrmotherula axillaris</i>	Ins	D	T/Ar				
	<i>Myrmotherula fulviventris</i>	Ins	D	T/Ar				
	<i>Myrmotherula schisticolor</i>	Ins	D	T/Ar				
	<i>Myrmotherula surinamensis</i>	Ins	D	T/Ar				
	<i>Phaenostictus mcleannani</i>	Ins	D	T/Ar				
	<i>Taraba major</i>	Ins	D	T/Ar				
	<i>Thamophilus atrinucha</i>	Ins	D	T/Ar				
	<i>Thamophilus doliatus</i>	Ins	D	T/Ar				
	<i>Thamophilus punctatus</i>	Ins	D	T/Ar				
FAMILY FORMICARIIDAE								
	<i>Formicarius analis</i>	Ins	D	T/Ar				
	<i>Hyllopezus perspicillatus</i>	Ins	D	T/Ar				
FAMILY TYRANNIDAE								
	<i>Attila spadiceus</i>	Ins	D	Ar				
	<i>Camptostoma obsoletum</i>	Ins	D	Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES							
	<i>Capstempis flaveola</i>	D	AI				
	<i>Cnipodectes subbrunneus</i>	D	AI				
	<i>Colonia colonus</i>	D	AI				
	<i>Conopias albobittata</i>	D	AI				
	<i>Contopus cinereus</i>	D	AI				
	<i>Contopus virens</i>	D	AI				
	<i>Elaenia chiriquensis</i>	D	AI				
	<i>Elaenia flavogaster</i>	D	AI				
	<i>Empidonax traillii</i>	D	AI				
	<i>Empidonax virescens</i>	D	AI				
	<i>Legatus leucophaeus</i>	D	AI				
	<i>Lipaugus unirufus</i>	D	AI				
	<i>Lophotriccus pilaris</i>	D	AI				
	<i>Megarhynchus pitanga</i>	D	AI				
	<i>Mionectes oleagineus</i>	D	AI				
	<i>Mionectes olivaceus</i>	D	AI				
	<i>Myiarchus crinitus</i>	D	AI				
	<i>Myiarchus panamensis</i>	D	AI				
	<i>Myiarchus tuberculifer</i>	D	AI				
	<i>Myiobius atricaudus</i>	D	AI				
	<i>Myiobius sulphureipygius</i>	D	AI				
	<i>Myiodynastes luteiventris</i>	D	AI				
	<i>Myiodynastes maculatus</i>	D	AI				
	<i>Myiopagis viridicata</i>	D	AI				
	<i>Myiophobus fasciatus</i>	D	AI				
	<i>Myiozetetes cayanensis</i>	D	AI				
	<i>Myiozetetes granadensis</i>	D	AI				
	<i>Myiozetetes similis</i>	D	AI				
	<i>Oncostoma olivaceum</i>	D	AI	T			
	<i>Onychorhynchus coronatus</i>	D	AI				
	<i>Ornithion brunneicapillum</i>	D	AI				
	<i>Pachyrhamphus albogriseus</i>	D	AI	T			
	<i>Pachyrhamphus cinnamomeus</i>	D	AI				
	<i>Pachyrhamphus polychopterus</i>	D	AI				
	<i>Pachyrhamphus rufus</i>	D	AI				
	<i>Phaeomyias murina</i>	D	AI				
	<i>Pitangus licitor</i>	D	AI				
	<i>Pitangus sulphuratus</i>	D	AI				
	<i>Platyrinchus coronatus</i>	D	AI				
	<i>Platyrinchus mystaceus</i>	D	AI				
	<i>Rhynchocyclus olivaceus</i>	D	AI				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES							
	<i>Sublegatus arenarum</i>	Ins					
	<i>Terenotriccus erythrurus</i>	Ins	AR				
	<i>Tityra semifasciata</i>	Fru/Ins	AR				
	<i>Todirostrum cinereum</i>	Ins	AR				
	<i>Todirostrum nigriceps</i>	Ins	AR				
	<i>Tolmomyias sulphurescens</i>	Ins	AR				
	<i>Tyrannulus elatus</i>	Ins	AR				
	<i>Tyrannus dominicensis</i>	Ins	AR				
	<i>Tyrannus melancholicus</i>	Ins	AR				
	<i>Tyrannus savana</i>	Ins	AR				
	<i>Tyrannus tyrannus</i>	Ins	AR				
	<i>Zimmerius vilissimus</i>	Ins	AR				
	FAMILY COTINGIDAE						
	<i>Cotinga nattererii</i>	Fru	T/AR				
	<i>Querula purpurata</i>	Fru	T/AR				
	FAMILY PIPRIDAE						
	<i>Chiroxiphia lanceolata</i>	Fru/Ins	T/AR				
	<i>Corapipo altera</i>	Fru	T/AR				
	<i>Manacus vitellinus</i>	Fru	T/AR				
	<i>Pipra coronata</i>	Fru	T/AR				
	<i>Pipra mentalis</i>	Fru/Ins	T/AR				
	FAMILY HIRUNDINIDAE						
	<i>Hirundo pyrrhonota</i>	Ins	SA				
	<i>Hirundo rustica</i>	Ins	SA				
	<i>Progne chalybea</i>	Ins	SA				
	<i>Riparia riparia</i>	Ins	SA				
	<i>Stelgidopteryx ruficollis</i>	Ins	SA				
	<i>Stelgidopteryx serripennis</i>	Ins	SA				
	<i>Tachycineta albilineata</i>	Ins	SA				
	FAMILY CORVIDAE						
	<i>Cyanocorax affinis</i>	Fru/Ins	T/AR				
	FAMILY TROGLODYTIDAE						
	<i>Campylorhynchus albobrunneus</i>	Ins	T/AR	T			
	<i>Cyphorhinus phaeocephala</i>	Ins	T/AR				
	<i>Henicorhina leucophrys</i>	Ins	T/AR				
	<i>Henicorhina leucosticta</i>	Ins	T/AR				
	<i>Microcerculus marginatus</i>	Ins	T/AR				
	<i>Thryothorus fasciatoventris</i>	Ins	T/AR				
	<i>Thryothorus leucotis</i>	Ins	T/AR				
	<i>Thryothorus modestus</i>	Ins	T/AR				
	<i>Thryothorus nigricapillus</i>	Ins	T/AR				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES							
	<i>Thryothorus rufalbus</i>	Ins	T/Ar				
	<i>Thryothorus rutilus</i>	Ins	T/Ar				
	<i>Thryothorus thoracicus</i>	Ins	T/Ar				
	<i>Troglodytes aedon</i>	Ins	T/Ar				
	FAMILY SYLVIIDAE						
	<i>Microbates cinereiventris</i>	Ins	Ar				
	<i>Poliopitila plumbea</i>	Ins	Ar				
	<i>Ramphocaelus melanurus</i>	Ins	Ar				
	FAMILY TURDIDAE						
	<i>Catharus fuscescens</i>	Fru/Ins	T/Ar				
	<i>Catharus ustulatus</i>	Fru/Ins	T/Ar				
	<i>Hylocichla mustelina</i>	Fru/Ins	T/Ar				
	<i>Turdus grayi</i>	Fru/Ins	T/Ar				
	FAMILY MIMIDAE						
	<i>Dumetella carolinensis</i>	Fru					
	<i>Mimus gilvus</i>	Fru					
	FAMILY VIREONIDAE						
	<i>Hylophilus aurantiifrons</i>	Ins	T/Ar				
	<i>Hylophilus decurtatus</i>	Ins	T/Ar				
	<i>Hylophilus flavipes</i>	Ins	T/Ar				
	<i>Vireo flavifrons</i>	Ins	T/Ar				
	<i>Vireo flavoviridis</i>	Ins	T/Ar				
	<i>Vireo olivaceus</i>	Ins	T/Ar				
	<i>Vireolanus puichellus</i>	Ins	T/Ar				
	FAMILY PARULIDAE						
	<i>Basileuterus rufifrons</i>	Ins	T/Ar				
	<i>Dendroica castanea</i>	Ins	T/Ar				
	<i>Dendroica fusca</i>	Ins	T/Ar				
	<i>Dendroica magnolia</i>	Ins	T/Ar				
	<i>Dendroica pensylvanica</i>	Ins	T/Ar				
	<i>Dendroica petechia</i>	Ins	T/Ar				
	<i>Geothlypis trichas</i>	Ins	T/Ar				
	<i>Mniotilta varia</i>	Ins	T/Ar				
	<i>Oporornis formosus</i>	Ins	T/Ar				
	<i>Oporornis philadelphia</i>	Ins	T/Ar				
	<i>Phaeothlypis fulvicauda</i>	Ins	T/Ar				
	<i>Protonotaria citrea</i>	Ins	T/Ar				
	<i>Seiurus aurocapillus</i>	Ins	T/Ar				
	<i>Seiurus motacilla</i>	Ins	T/Ar				
	<i>Seiurus noveboracensis</i>	Ins	T/Ar				
	<i>Setophaga ruticilla</i>	Ins	T/Ar				

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES								
	<i>Vermivora peregrina</i>	Ins	D	T/Ar				
	<i>Wilsonia canadensis</i>	Ins	D	T/Ar				
	FAMILY COEREBIDAE							
	<i>Coereba flaveola</i>	Ins/Nec	D	T/Ar				
	FAMILY THRAUPIDAE							
	<i>Chlorophanes spiza</i>	Fru/Ins	D	T/Ar				
	<i>Cyanerpes cyaneus</i>	Fru/Ins	D	T/Ar				
	<i>Dacnis cayana</i>	Fru/Ins	D	T/Ar				
	<i>Dacnis venusta</i>	Fru/Ins	D	T/Ar				
	<i>Eucometis penicillata</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia anneeae</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia fulvicrissa</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia gouldi</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia lanirostris</i>	Fru/Ins	D	T/Ar				
	<i>Euphonia luteicapilla</i>	Fru/Ins	D	T/Ar				
	<i>Habia fuscicauda</i>	Fru/Ins	D	T/Ar				
	<i>Mitrospingus cassinii</i>	Fru/Ins	D	T/Ar				
	<i>Piranga olivacea</i>	Fru/Ins	D	T/Ar				
	<i>Piranga rubra</i>	Fru/Ins	D	T/Ar				
	<i>Ramphocelus dimidiatus</i>	Fru/Ins	D	T/Ar				
	<i>Ramphocelus flammigerus</i>	Fru/Ins	D	T/Ar				
	<i>Rhodinocichla rosea</i>	Fru/Ins	D	T/Ar				
	<i>Tachyphonus delatrii</i>	Fru/Ins	D	T/Ar				
	<i>Tachyphonus luctuosus</i>	Fru/Ins	D	T/Ar				
	<i>Tachyphonus rufus</i>	Fru/Ins	D	T/Ar				
	<i>Tangara icterocephala</i>	Fru/Ins	D	T/Ar				
	<i>Tangara inornata</i>	Fru/Ins	D	T/Ar				
	<i>Tangara larvata</i>	Fru/Ins	D	T/Ar				
	<i>Thraupis episcopus</i>	Fru/Ins	D	T/Ar				
	<i>Thraupis palmeri</i>	Fru/Ins	D	T/Ar	T			
	FAMILY EMBEREZIDAE							
	<i>Amaurospiza concolor</i>	Fru/Ins	D	T/Ar				
	<i>Arremon aurantiostris</i>	Fru/Ins	D	T/Ar				
	<i>Arremonops controstris</i>	Fru/Ins	D	T/Ar				
	<i>Junco hyemalis</i>	Fru/Ins	D	T/Ar	T			
	<i>Oryzoborus angolensis</i>	Fru/Ins	D	T/Ar				
	<i>Oryzoborus funereus</i>	Fru/Ins	D	T/Ar				
	<i>Sporophila americana</i>	Fru/Ins	D	T/Ar				
	<i>Sporophila minuta</i>	Fru/Ins	D	T/Ar				
	<i>Sporophila nigricollis</i>	Fru/Ins	D	T/Ar				
	<i>Tiaris olivacea</i>	Fru/Ins	D	T/Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS AVES							
<i>Volatinia jacarina</i>	Fru/Ins	D	T/Ar				
FAMILY CARDINALIDAE							
<i>Cyanocopsa cyanoides</i>	Fru	D	T/Ar				
<i>Saltator albicollis</i>	Fru	D	T/Ar				
<i>Saltator atriceps</i>	Fru	D	T/Ar				
<i>Saltator maximus</i>	Fru	D	T/Ar				
<i>Saltator striatipectus</i>	Fru	D	T/Ar				
FAMILIA ICTERIDAE							
<i>Amblycercus holosericeus</i>	Fru/Ins	D	T/Ar				
<i>Cacicus cela</i>	Fru/Ins	D	T/Ar				
<i>Cacicus uropygialis</i>	Fru/Ins	D	T/Ar				
<i>Icterus chrysater</i>	Fru/Ins	D	T/Ar				
<i>Icterus galbula</i>	Fru/Ins	D	T/Ar				
<i>Icterus mesomelas</i>	Fru/Ins	D	T/Ar				
<i>Icterus spurius</i>	Fru/Ins	D	T/Ar				
<i>Molothrus aeneus</i>	Fru/Ins	D	T/Ar				
<i>Molothrus oryzivorus</i>	Fru/Ins	D	T/Ar				
<i>Psarocolius decumanus</i>	Fru/Ins	D	T/Ar				
<i>Psarocolius wagleri</i>	Fru/Ins	D	T/Ar				
<i>Quiscalus mexicanus</i>	Fru/Ins	D	T/Ar				
<i>Sturnella magna</i>	Fru/Ins	D	T/Ar				
<i>Sturnella militaris</i>	Fru/Ins	D	T/Ar				
FAMILY FRINGILLIDAE							
<i>Carduelis psaltria</i>	Ins	D	T/Ar	EX			
			TOTAL	16A	2	39	9

Source: Karr 1990; Ridgely y Gwynne 1993; Tejera et al. 1995; ANAM 2000; CITES 2003.

Table A4.2-8. Richness of Species of Reptiles and his Distribution in Three Sections (Upper, Middle and Lower) of the Catchment Area of the Lagarto River compared with the species of Indio River.

TAXON		Catchment Area of Lagarto River			Indio River
		Upper	Middle	Lower	
CLASS REPTILIA					
CROCODYLIA					
ALLIGATORIDAE	<i>Caiman crocodilus</i>	X			X
CROCODYLIDAE	<i>Crocodylus acutus</i>	X			
LACERTILIA					
CORYTOPHANIDAE	<i>Basiliscus basiliscus</i>	X			X
	<i>Corytophanes cristatus</i>				X
GEKKONIDAE	<i>Gonatode albogularis</i>	X	X	X	X
	<i>Hemidactylus frenatus</i>	X			X
	<i>Lepidoblepharis xanthostigma</i>	X			X
	<i>Sphaerodactylus lineolatus</i>				X
	<i>Thecadactylus rapicauda</i>		X	X	
IGUANIDAE	<i>Ctenosaura similis</i>		X	X	
	<i>Iguana iguana</i>	X	X	X	X
GYMNOPHTHALMIDAE	<i>Echinosaura horrida</i>				X
	<i>Gymnophthalmus speciosus</i>	X			
	<i>Leposoma rugiceps</i>	X			
	<i>Leposoma southi</i>				X
POLYCHROTIDAE	<i>Anolis auratus</i>	X	X	X	X
	<i>Anolis biporcatus</i>		X	X	
	<i>Anolis capito</i>		X	X	X
	<i>Anolis frenatus</i>		X	X	X
	<i>Anolis humilis</i>				X
	<i>Anolis limifrons</i>	X	X	X	X
	<i>Anolis lionotus</i>				X
	<i>Anolis tropidogaster</i>	X	X	X	
	<i>Anolis vittigerus</i>				X
SCINCIDAE	<i>Mabuya unimarginata</i>		X	X	X
TEIIDAE	<i>Ameiva ameiva</i>	X	X	X	X
	<i>Ameiva festiva</i>		X	X	X
	<i>Ameiva leptophrys</i>	X			X
SERPENTES					
COLUBRIDAE	<i>Chironius grandisquamis</i>		X	X	
	<i>Dendrophidion sp.</i>		X	X	
	<i>Dryadophis melanolomus</i>	X			X
	<i>Drymarchon corais</i>	X			
	<i>Imantodes cenchoa</i>				X

TAXON		Catchment Area of Lagarto River			Indio River
		Upper	Middle	Lower	
	<i>Imantodes gemmistratus</i>	X			
	<i>Leptodeira annulata</i>		X	X	X
	<i>Leptophis ahaetulla</i>	X			X
	<i>Liophis epinephelus</i>		X	X	
	<i>Oxybelis aeneus</i>	X	X	X	
	<i>Oxybelis brevirostris</i>		X	X	
	<i>Rhadinaea sp.</i>		X	X	
	<i>Sibon argus</i>				X
	<i>Spilotes pullatus</i>				X
	<i>Urotheca euryzona</i>				X
	<i>Urotheca fulviceps</i>				X
	<i>Xenodon rabdocephalus</i>	X			X
ELAPIDAE	<i>Micrurus mipartitus</i>		X		X
	<i>Micrurus nigrocinctus</i>		X		
	<i>Micrurus stewarti</i>	X			X
VIPERIDAE	<i>Bothrops asper</i>	X	X	X	X
	<i>Bothriechis schlegelii</i>		X		
	<i>Bothrops nasuta</i>		X		
	<i>Lachesis stenophrys</i>		X		
BOIDAE	<i>Boa constrictor</i>		X	X	
	<i>Epicrates cenchria</i>		X		
TESTUDINES					
EMYDIDAE	<i>Rhynoclemmys annulata</i>	X			
	<i>Trachemys scripta</i>	X	X	X	
KINOSTERNIDAE	<i>Kinosternon leucostomum</i>	X	X	X	X
CHELYDRIDAE	<i>Chelydra serpentina</i>	X			
Total	species for Lagarto River= 46	26	30	24	34

Source: Tejera et al. 1995; ANCON y TNC 1996; TLBG, UP y STRI 1999.

Table A4.2-9. Ecological Characteristic and State of Conservation of the Species of Reptiles of the Catchment Area of the Lagarto River.

KEY: State of conservation: EN=endemic native; ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; I, II=CITES; TU=Threatened according to the IUCN. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Car=carnivore; Ins=insectivore; Fo=folivore; Om=omnivore. Behavior: T=terrestrial; SA=semiaquatic; Ar=arboreal or shrubby; Aq=aquatic.

TAXON	Nourishing Habit	Activity	Behavior	ANAM	IUCN	CITES
CLASS REPTILIA						
ORDER CROCODYLIA						
ALLIGATORIDAE						
<i>Caiman crocodilus</i>	Car	D/N	Aq	T		II
CROCODYLIDAE						
<i>Crocodylus acutus</i>	Car	D/N	Aq	T	TU	I, II
ORDER LACERTILIA						
CORYTOPHANIDAE						
<i>Basiliscus basiliscus</i>	Ins	D	SA			
GEKKONIDAE						
<i>Gonatode albogularis</i>	Ins	D	Ar			
<i>Hemidactylus frenatus</i>	Ins	D	Ar			
<i>Lepidoblepharis xanthostigma</i>	Ins	D	Ar	ER		
<i>Thecadactylus rapicauda</i>	Ins	D	Ar			
IGUANIDAE						
<i>Ctenosaura similis</i>	Fo	D	Ar	T		
<i>Iguana iguana</i>	Fo	D	Ar	T		II
GYMNOPHTHALMIDAE						
<i>Gymnophthalmus speciosus</i>	Ins	D	T			
<i>Leposoma rugiceps</i>	Ins	D	T			
POLYCHROTIDAE						
<i>Anolis auratus</i>	Ins	D	Ar			
<i>Anolis biporcatus</i>	Ins	D	Ar			
<i>Anolis capito</i>	Ins	D	Ar			
<i>Anolis frenatus</i>	Ins	D	Ar			
<i>Anolis limifrons</i>	Ins	D	Ar			
<i>Anolis tropidogaster</i>	Ins	D	Ar			
SCINCIDAE						
<i>Mabuia unimarginata</i>		D	T			
TEIIDAE						
<i>Ameiva ameiva</i>	Ins	D	T			
<i>Ameiva festiva</i>	Ins	D	T			
<i>Ameiva leptophrys</i>	Ins	D	T	ER		

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
CLASS REPTILIA						
ORDER SERPENTES						
COLUBRIDAE						
<i>Chironius grandisquamis</i>	Car	D	T/Ar			
<i>Dendrophidion</i> sp.	Car	D	T/Ar			
<i>Dryadophis melanolomus</i>	Car	D	T/Ar			
<i>Drymarchon corais</i>	Car	D	T/Ar			
<i>Imantodes gemmistratus</i>	Car	N	T/Ar			
<i>Leptodeira annulata</i>	Car	D	T/Ar			
<i>Leptophis ahaetulla</i>	Car	D	T/Ar			
<i>Liophis epinephelus</i>	Car	D	T/Ar			
<i>Oxybelis aeneus</i>	Car	D	T/Ar			
<i>Oxybelis brevirostris</i>	Car	D	T/Ar			
<i>Rhadinaea</i> sp.	Car	D	T/Ar			
<i>Xenodon rabdocephalus</i>	Car	D	T/Ar			
ELAPIDAE						
<i>Micrurus mipartitus</i>	Car	D/N	T			
<i>Micrurus nigrocinctus</i>	Car	D/N	T			
<i>Micrurus stewarti</i>	Car	D/N	T	EN		
VIPERIDAE						
<i>Bothrops asper</i>	Car	D/N	T			
<i>Bothriechis schlegelii</i>	Car	N	T			
<i>Bothrops nasuta</i>	Car	N	T			
<i>Lachesis stenophrys</i>	Car	N	T			
BOIDAE						
<i>Boa constrictor</i>	Car	D/N	Ar	T		I, II
<i>Epicrates cenchria</i>	Car	N	Ar	T		
ORDER TESTUDINES						
EMYDIDAE						
<i>Rhynoclemmys annulata</i>	Om	D	SA			
<i>Trachemys scripta</i>	Om	D	Aq			
KINOSTERNIDAE						
<i>Kinosternon leucostomum</i>	Om	N	Aq			
CHELYDRIDAE						
<i>Chelydra serpentina</i>	Om	D	Aq			
		TOTAL		1EN, 6A	1AU	4

Source: Rand y Myers 1990; Tejera et al. 1995; Young et al. 1999; ANAM 2000; CITES 2003.

Table A4.2-10. Richness of Species of Amphibians and his Distribution in Three Sections (Upper, Middle and Lower) of the Catchment Area of the Lagarto River. Compared with the species of Indio River.

TAXON		Catchment Area of Río Lagarto			Indio River
		Upper	Middle	Lower	
CLASS AMPHIBIA					
GYMNOPHIONA					
CAECILIAIDE	<i>Dermophis parviceps</i>	X			
	<i>Oascaecilia ochrocephala</i>				X
CAUDATA					
PLETHODONTIDAE	<i>Bolitoglossa biseriata</i>	X			X
	<i>Bolitoglossa cuna</i>		X	X	
	<i>Bolitoglossa schizodactyla</i>				X
	<i>Oedipina parvipes</i>		X	X	X
ANURA					
BUFONIDAE	<i>Atelopus varius</i>		X		
	<i>Bufo coniferus</i>				X
	<i>Bufo haematiticus</i>	X			X
	<i>Bufo marinus</i>	X	X		X
	<i>Bufo typhonius</i>	X	X	X	X
CENTROLENIDAE	<i>Centrolene ilex</i>				X
	<i>Centrolene prosoblepon</i>				X
	<i>Cochranella albomaculata</i>				X
	<i>Cochranella granulosa</i>				X
	<i>Cochranella spinosa</i>				X
	<i>Hyalinobatrachium fleischmanni</i>	X	X	X	X
	<i>Hyalinobatrachium pulveratum</i>	X			X
	<i>Hyalinobatrachium vireovittatum</i>				X
DENDROBATIDAE	<i>Colostethus flotator</i>	X			X
	<i>Colostethus inguinalis</i>				X
	<i>Colostethus nubicola</i>		X	X	X
	<i>Colostethus pratti</i>				X
	<i>Colostethus talamancae</i>		X	X	X
	<i>Dendrobates auratus</i>	X	X	X	
	<i>Dendrobates pumilio</i>		X		
	<i>Minyobates minutus</i>				X
	<i>Phyllobates lugubris</i>	X			X
HYLIDAE	<i>Agalychnis callidryas</i>	X	X	X	X
	<i>Gastrotheca cornuta</i>				X
	<i>Hyla crepitans</i>		X	X	X
	<i>Hyla ebraccata</i>	X	X	X	X
	<i>Hyla microcephala</i>	X	X	X	X
	<i>Hyla palmeri</i>				X
	<i>Hyla phlebodes</i>	X			X
	<i>Hyla rufitela</i>		X	X	X
	<i>Phrynohyas venulosa</i>		X	X	X
	<i>Scinax boulengeri</i>	X	X	X	X

TAXON	Catchment Area of Río Lagarto			Indio River	
	Upper	Middle	Lower		
	<i>Scinax rostrata</i>	X	X	X	X
	<i>Scinax rubra</i>	X			X
	<i>Smilisca phaeota</i>	X			X
	<i>Smilisca sila</i>	X			X
MICROHYLIDAE	<i>Chiasmocleis panamensis</i>	X			X
LEPTODACTYLIDAE	<i>Eleutherodactylus bransfordii</i>				X
	<i>Eleutherodactylus bufoniformis</i>				X
	<i>Eleutherodactylus caryophyllaceus</i>				X
	<i>Eleutherodactylus cerasinus</i>				X
	<i>Eleutherodactylus crassidigitus</i>	X	X	X	X
	<i>Eleutherodactylus cruentus</i>				X
	<i>Eleutherodactylus diastema</i>	X	X	X	X
	<i>Eleutherodactylus fitzingeri</i>	X	X	X	X
	<i>Eleutherodactylus gaigeae</i>	X	X	X	X
	<i>Eleutherodactylus gollmeri</i>				X
	<i>Eleutherodactylus megacephalus</i>				X
	<i>Eleutherodactylus museosus</i>				X
	<i>Eleutherodactylus pardalis</i>				X
	<i>Eleutherodactylus punctariolus</i>				X
	<i>Eleutherodactylus raniformis</i>		X	X	
	<i>Eleutherodactylus ridens</i>	X	X	X	X
	<i>Eleutherodactylus taeniatus</i>	X			X
	<i>Eleutherodactylus talamancae</i>				X
	<i>Eleutherodactylus vocator</i>	X			X
	<i>Leptodactylus insularum</i>	X			X
	<i>Leptodactylus labialis</i>	X			X
	<i>Leptodactylus melanonotus</i>	X			X
	<i>Leptodactylus pentadactylus</i>	X	X	X	X
	<i>Leptodactylus poecilochilus</i>		X	X	X
	<i>Physalaemus pustulosus</i>	X			X
RANIDAE	<i>Rana vaillanti</i>	X			X
	<i>Rana warszewitschii</i>		X	X	X
Total	species for Río Lagarto = 45	33	27	24	64

Source: Tejera et al. 1995; ANCON y TNC 1996; TLBG, UP y STRI 1999.

Table A4.2-11. Ecological Characteristics and State of Conservation of the Species of Amphibians of the Catchment Area of Lagarto River.

KEY: State of conservation: EN=endemic native; ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; I, II=CITES. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Car=carnivore; Ins=insectivore. Behavior: T=terrestrial; SA=semiaquatic; Ar=arboreal or shrubby; Fos=fosorio.

TAXON	Nourishing Habit	Activity	Behavior	ANAM	CITES	
CLASS AMPHIBIA						
ORDER GYMNOPIHONA						
FAMILY CAECILIAE						
	<i>Dermophis parviceps</i>	Ins	D	Fos	ER	
	<i>Oascaecilia ochrocephala</i>	Ins	D	Fos	ER	
ORDER CAUDATA						
FAMILY PLETHODONTIDAE						
	<i>Bolitoglossa biseriata</i>	Ins	D	T	ER	
	<i>Bolitoglossa cuna</i>	Ins	D	T	EN, T	
	<i>Oedipina parvipes</i>	Ins	N	T	ER	
ORDER ANURA						
FAMILY BUFONIDAE						
	<i>Atelopus varius</i>	Ins	D	T	ER, T	
	<i>Bufo haematiticus</i>	Ins	N	T		
	<i>Bufo marinus</i>	Ins	N	T		
	<i>Bufo typhonius</i>	Ins	N	T		
FAMILY CENTROLENIDAE						
	<i>Hyalinobatrachium fleischmanni</i>	Ins	N	Ar		
	<i>Hyalinobatrachium pulveratum</i>	Ins	N	Ar	ER	
FAMILY DENDROBATIDAE						
	<i>Colostethus flotator</i>	Ins	D	T	ER	
	<i>Colostethus nubicola</i>	Ins	D	T	ER	
	<i>Colostethus talamancae</i>	Ins	D	T	ER	
	<i>Dendrobates auratus</i>	Ins	D	T	ER, T	II
	<i>Dendrobates pumilio</i>	Ins	D	T	ER, T	II
	<i>Phyllobates lugubris</i>	Ins	D	T	ER, T	II
FAMILY HYLIDAE						
	<i>Agalychnis callidryas</i>	Ins	N	T	T	
	<i>Hyla crepitans</i>	Ins	N	Ar		
	<i>Hyla ebraccata</i>	Ins	N	Ar		
	<i>Hyla microcephala</i>	Ins	N	Ar	T	
	<i>Hyla phlebodes</i>	Ins	N	Ar	ER	
	<i>Hyla rufitela</i>	Ins	N	Ar	ER	
	<i>Phrynohyas venulosa</i>	Ins	N	T		
	<i>Scinax boulengeri</i>	Ins	N	T/Ar		
	<i>Scinax rostrata</i>	Ins	N	T/Ar		
	<i>Scinax rubra</i>	Ins	N	T/Ar		
	<i>Scinax staufferi</i>	Ins	N	T/Ar		
	<i>Smilisca phaeota</i>	Ins	N	T/Ar		
	<i>Smilisca sila</i>	Ins	N	T/Ar	ER	
FAMILY MICROHYLIDAE						
	<i>Chiasmocleis panamensis</i>	Ins	N	T	ER	
FAMILY LEPTODACTYLIDAE						
	<i>Eleutherodactylus crassidigitus</i>	Ins	N	T/Ar	ER	
	<i>Eleutherodactylus diastema</i>	Ins	N	T		
	<i>Eleutherodactylus fitzingeri</i>	Ins	N	T/Ar	ER	
	<i>Eleutherodactylus gaigeae</i>	Ins	N	T	ER	
	<i>Eleutherodactylus raniformis</i>	Ins	N	T	ER	
	<i>Eleutherodactylus ridens</i>	Ins	N	T/Ar		
	<i>Eleutherodactylus taeniatus</i>	Ins	N	T/Ar	ER	
	<i>Eleutherodactylus vocator</i>	Ins	N	T/Ar	ER	
	<i>Leptodactylus insularum</i>	Ins	N	T		
	<i>Leptodactylus labialis</i>	Ins	N	T		
	<i>Leptodactylus melanonotus</i>	Ins	N	T		
	<i>Leptodactylus pentadactylus</i>	Car	N	T		
	<i>Leptodactylus poecilochilus</i>	Ins	N	T		
	<i>Physalaemus pustulosus</i>	Ins	N	T		
FAMILY RANIDAE						
	<i>Rana vaillanti</i>	Ins	N	SA		
	<i>Rana warszewitschii</i>	Ins	N	SA	ER	
				TOTAL	1EN, 7A	3

Source: Rand y Myers 1990; Tejera et al. 1995; Young et al. 1999; ANAM 2000; CITES 2003.

Table A4.2-12. Species of Aquatic Invertebrates (Crustaceans and Molluscs) According to his Value of Conservation, Habitat, Distribution and Localization.

TAXON	EIE	Area of Interes		Aquatic Habitat				High	Catchement Area
		AIG	AIE	HWS	FFLWS	SFLWS	EWS		
Molluscos									
Acmaeidae									
<i>Acmaea</i> sp.								L	L
Arcidae									
<i>Anadara</i> sp.	1							L	L
Corbiculidae									
<i>Corbicula fluminea</i>	1		1		1			L	J,L
Neritidae									
<i>Nerita</i> sp.								L	L
Olividae									
<i>Oliya</i> sp.								L	L
Pilidae									
<i>Pomacea</i> sp.			1					M,L	J,C,L
<i>Pomacea cummingsi</i>	1							L	J
Tellinidae									
<i>Tellina</i> sp.								L	L
Thiaridae									
<i>Melanooides tuberculata</i>			1	1	1	1		U,M,L	J,C,L
Trochidae									
<i>Calliostoma</i> sp.	1							L	L
Turridae									
<i>Monilispira</i> sp.								L	L
SUBTOTALS	4	0	3	1	2	2	9		
Crustaceans									
Palaemonidae									
<i>Macrobrachium amazonicum</i>			1						J
<i>Macrobrachium carcinus</i>	1	1	1	1	1	1	1	U,M,L	J,C,L
<i>Macrobrachium crenulatum</i>	1	1	1	1	1	1	1	U,M,L	J,C,L
<i>Macrobrachium acanthurus</i>	1	1	1	1	1	1	1	U,M,L	J,C,L
Atyidae									
<i>Atya scabra</i>	1	1	1	1	1	1	1	U,M	C,I
<i>Potimirin glabra</i>		1	1	1	1	1	1	M	C,I
Portunidae									
<i>Callinectes</i> sp.	1	1	1	1	1	1	1	L	L
Pseudoscorpionidae									
<i>Pseudoscorpion americana</i>	1	1	1	1	1	1	1	M	J,C,I
Grapsidae									
<i>Sesarma</i> sp.	1	1	1	1	1	1	1	L	I
SUBTOTALS	7	8	6	5	6	6	5		
Total of Invertebrates	11	8	9	6	8	8	14		

Legend: EIE: species of special interest; AIG: areas of general interest; AIE: areas of specific interest HWS:Highland water system; FFLWS: Fast Flowing Lowland Water System;SFLWS: Slow Flowing Lowland Water System ; EWS: Estuarine Water system; U: Upper; M:Middle; L:Lower; J: Alhajuela, C: Ciri, La: Lagarto, I: Indio

Table A4.2-13: List of Fish by his Physiological Classification, Habitat and Distribution for Catchment Area

Family	Specie	Common Name	Physiologic Classification	Type of Habitat	Distribution	SUB-BASIN											
						Ciri			Lagarto			Alhajuela					
						U	M	L	U	M	L	U	M	L			
Anguillidae																	
	<i>Anguilla rostrata</i>	anguila	periferic	SHE	SI									1			
Astroblepidae																	
	<i>Astroblepus trifasciatum</i>	s/n	Primary		GI									1			
Atherinidae																	
	<i>Atherinella chagresi</i>	sardina	periferic	FFLWS	SI, SI	1	1	1	1	1	1			1			
Carangidae																	
	<i>Caranx latus</i>	jurel	periferic	SHE, FFLWS	GI, SI									1			
	<i>Oligopites palometa</i>	s/n	periferic	SHE	GI, SI									1			
Centropomidae																	
	<i>Centropomus parallelus</i>	robalo	periferic	SHE	GI, SI								1	1			
	<i>Centropomus pectinatus</i>	robalo	periferic	SHE	GI, SI									1			
	<i>Centropomus undecimalis</i>	robalo	periferic	SHE	GI, SI									1			
Characidae																	
	<i>Astyanax aeneus</i>	sardina de río	Primary	SFLWS, FFLWS, HWS	SI, GI, PE	1	1	1	1	1	1			1			
	<i>Astyanax ruberrimus</i>	sardina de río	Primary	SFLWS, FFLWS	SI, GI									1			
	<i>Brycon chagrensis</i>	sábalo pipón	Primary	SFLWS, FFLWS, HWS	SI, GI									1			
	<i>Brycon petrosus</i>	sábalo pipón	Primary	SFLWS, FFLWS	SI, PE									1			
	<i>Bryconamericus emperador</i>	sardina de río	Primary	SFLWS, FFLWS, HWS	SI, GI	1								1			
	<i>Compsura gorgonae</i>	sardina de río	Primary	SFLWS, FFLWS	SI, GI									1			
	<i>Compsura mitoptera</i>	sardina de río	Primary	SFLWS, FFLWS	SI, GI									1			
	<i>Gephyrocharax atricaudata</i>	sardina de río	Primary	SFLWS, FFLWS, HWS	SI, GI	1								1			
	<i>Hypfessobrycon panamensis</i>	sardina de río	Primary	SFLWS, FFLWS	SI, GI									1			
	<i>Pseudocheirodon affinis</i>	sardina de río	Primary	SFLWS, FFLWS	SI, GI									1			
	<i>Roeboides guatemalensis</i>	choveca	Primary	SFLWS, FFLWS, HWS	SI, GI, PE	1	1	1	1	1	1			1			
Cichlidae																	
	<i>Aequidens coeruleopunctatus</i>	chogorro	Secondary	SFLWS, FFLWS, HWS	SI, GI, PE	1	1	1	1	1	1			1			
	<i>Archocentrus panamensis</i>		Secondary											1			
	<i>Astronotus ocellatus*</i>	oscar	Secondary	SFLWS	SI									1			
	<i>Cichla monoculus*</i>	sargento	Secondary	SFLWS	SI									1			
	<i>Geophagus crassilabis</i>		Secondary		SI									1			
	<i>Oreochromis niloticus*</i>	tilapia	Secondary	SFLWS	SI									1			
	<i>Parachromis managuensis*</i>	guapote tigre	Secondary	SFLWS, FFLWS	SI, PE	1	1	1	1	1	1			1			
Cichlidae																	
	<i>Vieja maculicauda</i>	vieja	Secondary	SFLWS, FFLWS	SI, PE									1			
Eleotridae																	
	<i>Dormitator maculatus</i>	guapote	periferic	SHE	GI									1			

Family	Specie	Common Name	Physiologic Classification	Type of Habitat	Distribution	SUB-BASIN											
						Ciri			Lagarto			Alhajucla					
						U	M	L	U	M	L	U	M	L			
	<i>Eleotris ambyloypsis</i>	s/n	periferic	SFLWS													
	<i>Eleotris pisonis</i>	s/n	periferic	SFLWS+E90													
	<i>Gobiomorus dormitor</i>	guabina de rio	periferic	SFLWS, FFLWS	SI, PE	1	1							1			
Engraulidae																	
	<i>Anchoviella elongata</i>	s/n	periferic	SHE	GI									1			
Erythrinidae																	
	<i>Hoplias microlepis</i>	pejeperro	Primary	SFLWS	SI, PE	1	1	1	1	1	1			1			
Gobiidae																	
	<i>Awaous banana</i>	s/n	periferic	SFLWS, FFLWS	SI				1	1	1			1			
	<i>Sycidium altum</i>	chupapietra	periferic	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1			1			
Gobiesocidae																	
	<i>Gobiesox nudus</i>	s/n	periferic	SFLWS, SHBL	SI, EG								1	1			
Haemulidae																	
	<i>Pomadasys croco</i>	roncador	periferic	FFLWS, SHE	SI, GI									1			
Hypopomidae																	
	<i>Brachyhypopomus occidentalis</i>	cabuya	Primary	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1			1			
Lebiasinidae																	
	<i>Piabucina panamensis</i>	domicandela	Primary	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1			1			
Loricariidae																	
	<i>Ancistrus chagresi</i>	chupapalo	Primary	SFLWS, FFLWS	SI, GI								1	1			
	<i>Chaetostoma fischeri</i>	chupapalo	Primary	SFLWS, FFLWS	SI, GI				1	1	1			1			
	<i>Hypostomus panamensis</i>	cococha	Primary	SFLWS, FFLWS	SI, GI, PE				1	1	1			1			
	<i>Leptoancistrus canensis</i>	chupapalo	Primary	SFLWS, FFLWS, HWS	SI, GI	1	1		1	1				1			
	<i>Rineloricaria uracantha</i>	chupapalo	Primary	SFLWS, FFLWS	SI, GI				1	1	1			1			
Mugilidae																	
	<i>Agonostomus monticola</i>	dajao	periferic	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1			1			
	<i>Joturus pichardi</i>	bocachico	periferic	SFLWS, FFLWS	SI				1	1	1			1			
Pimelodidae																	
	<i>Pimelodella chagresi</i>	barbudito	Primary	SFLWS, FFLWS	SI				1	1	1			1			
	<i>Rhamdia quelen</i>	barbudo	Primary	SFLWS, HWS	SI, GI, PE	1	1		1	1	1			1			
	<i>Brachyrhaphis cascajalensis</i>	parivivo	Secondary	SFLWS, FFLWS	SI, PE								1	1			
	<i>Brachyrhaphis episcopi</i>	parivivo	Secondary	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1			1			
	<i>Neoheterandria tridentiger</i>	parivivo	Secondary	SFLWS, HWS	SI, GI	1	1	1	1	1	1			1			
	<i>Poecilia gillii</i>	parivivo	Secondary	SFLWS, FFLWS, HWS	SI, GI, PE	1	1	1	1	1	1			1			
Rivulidae																	
	<i>Rivulus brunneus</i>	s/n	Secondary		SI									1			
	<i>Rivulus</i> sp.	sp.	Secondary	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1			1			

Family	Specie	Common Name	Physiologic Classification	Type of Habitat	Distribution	SUB-BASIN											
						Ciri		Lagarto			Alhajucla						
						U	M	L	U	M	L	U	M	L			
Synbranchidae	<i>Synbranchus marmoratus</i>	culebra de agua	Secondary	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1	1	1	1			
Synathidae	<i>Microphis brachyurus</i>	s/n	periferic	FFLWS						1	1						
	<i>Pseudophallus mindii</i>	s/n	periferic	SHE	GI									1			
Trichomycteridae	<i>Trichomycterus striatus</i>	s/n	Primary	SFLWS, FFLWS, HWS	SI, GI				1	1	1	1	1	1			
TOTALS: Family: 23; species:58; Periferic:20; Primary:23; Secondary: 15						Subtotals by											
TOTALS: HWS: 18; SFLWS: 43; FFLWS: 37; ES: 10						Catchment						17 38 33 30 40 49 34					

* Genera y specie introduced

HWS: Highland Water System

FFLWS: Fast Flowing Lowlands Water System

SFLWS: Slow Flowing Lowland Water System

EWS: Estuarine Water System

GI: area of general interes

SI: area of specific interes

PE: Periferic

U:Upper Catchment Area

M:Middle Catchment Area

L:Lower Catchment Area

Source: Louis Berger (1999).

Table A4.2-14: Species of Terrestrial Insects by Distribution and Location.

TAXON	Section of the Catchment Area			Catchment Area
	Upper	Middle	Lower	
Tabanidae				
<i>Catachlorps fulmineus</i>	+			C
<i>Dicleracera fasiata</i>	+	+	+	C,L
<i>Dicleracera hartmanni</i>			+	C,L
<i>Philopatabanus magnificus</i>	+	+	+	C,L
<i>Philopatabanus nigrinubilus</i>	+			C,L
<i>Tabanus albocirculus</i>		+	+	C,L
<i>Tabanus surifer</i>	+			C
<i>Tabanus unistriatus</i>		+	+	C,L
<i>Tabanus occidentalis</i>	+	+	+	C,L
<i>Tabanus puntipleura</i>			+	C,L
<i>Tabanus pungens</i>	+			C
<i>Chrysops melaenus</i>	+	+	+	C,L
<i>Chrysops nexosus</i>		+	+	C,L
<i>Chrysops variegatus</i>		+	+	C,L
<i>Chrysops calogaster</i>			+	C
<i>Esenbeckia parasineventris</i>		+	+	C,L
<i>Leucotabanus exaestuans</i>		+	+	C,L
<i>Fifena flavipennis</i>		+	+	C,L
<i>Stibasoma flaviventre</i>	+			C
<i>Poeciloderas quadripunctatus</i>	+			C
Culicidae				
<i>Culex coronatus</i>			+	C,L
<i>Culex (Melanoconium) sp.</i>	+	+	+	C,L
<i>Culex vomerifer</i>	+	+	+	C,L
<i>Culex quinquefasciatus</i>		+	+	C,L
<i>Psoropha feraz</i>		+	+	C,L
<i>Psoropha lineata</i>	+			C
<i>Wyeomyia arthrostigma</i>	+	+	+	C,L
<i>Anopheles punctimacula</i>	+	+	+	C,L
<i>Anopheles pseudopuntipennis</i>		+	+	C,L
<i>Aedes taeniorhynchus</i>		+	+	C,L
<i>Aedes septentriatus</i>	+			C
<i>Coquillettidia venezuelensis</i>			+	C,L
<i>Mansonia titillans</i>			+	C,L
<i>Haemagogus indicoler</i>	+	+		C
<i>Sabathes chloropterus</i>	+	+	+	C,L
<i>Sabathes undosus</i>	+			C
Psychodidae				
<i>Lutzomyia adyifera</i>	+		+	C
<i>Lutzomyia camposi</i>	+	+	+	C,L
<i>Lutzomyia carpenteri</i>	+	+	+	C,L
<i>Lutzomyiap panamensis</i>	+	+	+	C,L
<i>Lutzomyia sanguinaria</i>	+		+	C,L
<i>Lutzomyia trapidoi</i>			+	C,L

TAXON	Section of the Catchment Area			Catchment Area
	Upper	Middle	Lower	
<i>Lutzomyia triramula</i>	+	+	+	C,L
<i>Lutzomyia gomezi</i>	+	+	+	C,L
<i>Lutzomyia ylephiletor</i>	+			C,L
<i>Lutzomyia shannoni</i>			+	C,L
<i>Lutzomyia hartmanni</i>	+			C
<i>Lutzomyia vespertilionis</i>	+			C
Ceratopogonidae				
<i>Culicoides furens</i>	+	+	+	C,L
<i>Culicoides insignis</i>		+	+	C,L
Simuliidae				
<i>Simulium sanguineum</i>	+	+	+	C,L
<i>Simulium quadrivittatum</i>	+	+	+	C,L
<i>Simulium ochraceatum</i>		+	+	C,L
<i>Simulium metallicum</i>		+	+	C,L
<i>Simulium mexicanum</i>	+		+	C,L
Triatominae				
<i>Rhodnius pallescens</i>	+	+	+	C
<i>Pastrongylus geniculatus</i>	+			C
<i>Pastrongylus humeralis</i>	+			C
<i>Pastrongylus rufotuberculatus</i>	+			C

Legend: C: Ciri, L: Lagarto.

Source: Louis Berger (1999)

TABLE A4.2-15

Species of Aquatic Insects According its Distribution for Catchment Area

TAXON	Catchment Area		
	Ciri	Indio	Lagarto
Aeshenidae	X	X	X
Athericidae	X	X	X
Baetidae	X	X	X
Caenidae	X	X	X
Calamoceratidae	X	X	X
Calopterygidae	X	X	X
Ceratopogonidae	X	X	X
Chiromonidae	X	X	X
Coenagrionidae	X	X	X
Corydalidae	X	X	X
Dixidae	X	X	X
Dolichopodidae	X	X	X
Dysticidae	X	X	X
Elmidae	X	X	X
Empididae	X	X	X
Entomobrydae	X	X	X
Ephydriidae	X	X	X
Glossomatidae	X	X	X
Gomphidae	X	X	X
Gyrinidae	X	X	X
Hebridae	X	X	X
Heptageniidae	X	X	X
Hydrophilidae	X	X	X
Hydropsychidae	X	X	X
Hydroptilidae	X	X	X
Leptoceridae	X	X	X
Leptohiphidae	X	X	X
Leptophlebiidae	X	X	X
Libellulidae	X	X	X
Megapodagrionidae	X	X	X
Naucoridae	X	X	X
Perlidae	X	X	X
Philopotamidae	X	X	X
Polithoridae	X	X	X
Polycentropodidae	X	X	X
Psephenidae	X	X	X
Psychodidae	X	X	X
Ptylodatilidae	X	X	X
Pyralidae	X	X	X
Reduviidae	X	X	X
Scarbidae	X	X	X
Scirtidae	X	X	X
Simulidae	X	X	X
Stratiomyidae	X	X	X
Tupilidae	X	X	X
Vellidae	X	X	X

Source: Louis Berger (1999)

Table A4.2-16: Statistics of the Changes of Use of the Soil for the Catchment Area of Lagarto River

CHANGE USE OF THE SOIL FOR Catchment Area AND AREA OF SPECIFIC INTEREST												
USE OF THE SOIL	Total of the Catchment			Option of water			Buffer in Lower Catchment			Tunnel of Transference		
	2000	1990	Change Use	2000	1990	Change Use	2000	1990	Change Use	2000	1990	Change Use
	Surf/ha	Surf/ha	Surf/ha %	Surf/ha	Surf/ha	Surf/ha %	Surf/ha	Surf/ha	Surf/ha %	Surf/ha	Surf/ha	Surf/ha %
Mature forest	0.0	139.9	-139.9	0.0	16.0	-16.0	0.0	0.0	0.0	0.0	0.0	0.0
Secondary forest	3284.2	4382.6	-1098.4	210.725	382.4	-171.7	-44.9	197.4	383.2	-185.9	11.8	0.3
Pasture	2058.4	1587.3	471.1	29.7	494.915	392.5	26.1	367.3	365.9	1.5	86.9	74.8
Bushes and Stubble	5522.6	4797.3	725.4	15.1	1125.08	100.3	9.8	616.0	451.6	164.4	40.1	-74.8
Temporary agriculture	89.7	47.0	42.7	90.9	24.7	-15.3	-61.9	20.0	0.0	20.0	0.0	0.0
Agriculture Permanent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	10955.0	10955.0	0.9	1840.13	1840.4	-0.2	-70.9	1200.7	1200.7	0.0	138.83	0.28

CHANGE USE FOR AREA OF SPECIFIC INTEREST					
Category of Use	Area of specific Interest		Area of General Interest		
	2000	Change Use	2000	1990	Change Use
	Surf/ha	Surf/ha %	Surf/ha	Surf/ha	Surf/ha %
Mature forest	0.0	16.0	0.0	123.9	-123.9
Secondary forest	408.1	765.6	2876.2	3617.0	-740.8
Pasture	376.7	390.6	-13.8	829.0	367.1
Bushes and Stubble	1110.9	844.1	266.8	3321.9	459.6
Temporary agriculture	1145.0	1024.8	120.2	22.3	38.0
TOTAL	3041	3041	-0.3	7914	108.0

CHANGE USE FOR UPPER, MIDDLE AND LOWER CATCHMENT AREA												
Category of Use	Upper Catchment Area			Middle Catchment Area			Lower Catchment Area					
	2000	1990	Change Use	2000	1990	Change Use	2000	1990	Change Use			
	Surf/ha	Surf/ha	Surf/ha %	Surf/ha	Surf/ha	Surf/ha %	Surf/ha	Surf/ha	Surf/ha %			
Mature forest	0.0	16.0	-16.0	0.0	123.9	-123.9	0.0	0.0	0.0			
Secondary forest	408.1	765.6	-357.5	2876.2	3617.0	-740.8	1852.9	2630.9	-778.1			
Pasture	376.7	390.6	-13.8	1196.1	829.0	367.1	927.3	933.7	-6.4			
Bushes and Stubble	1110.9	844.1	266.8	3781.5	3321.9	459.6	2802.3	2045.6	756.6			
Temporary agriculture	1145.0	1024.8	120.2	60.3	22.3	38.0	36.5	7.6	28.9			
TOTAL	3041	3041	-0.3	7914	7914	108.0	5618	5618	1.03			

Source:GIS-URS, Holdings with ACP DATA.

Table A4.2-17
Statistic for the Change Use of the Soil
Catchment Area of Lagarto River

Zone name: Mature Forest

Class Name	Count	%	Hectares
0 fondo	0	0.00	0.000
1 Mature Forest	8234	42.99	741.060
2 Secondary Forest	8529	44.53	767.610
3 Shrub Land	1429	7.46	128.610
4 Pasture	324	1.69	29.160
5 commercial agriculture	0	0.00	0.000
6 subsistence agriculture	638	3.33	57.420
7	0	0.00	0.000
Total	19154	100.00	1723.860

Zone name: Secondary Forest

Class Name	Count	%	Hectares
0 fondo	231	0.14	20.790
1 Mature Forest	9	0.01	0.810
2 Secondary Forest	126862	77.71	11417.580
3 Shrub Land	28261	17.31	2543.490
4 Pasture	6716	4.11	604.440
5 Commercial Agriculture	1	0.00	0.090
6 Subsistence Agriculture	1164	0.71	104.760
7	16	0.01	1.440
Total	163260	100.00	14693.400

Zone name: Shrub Land

Class Name	Count	%	Hectares
0 fondo	311	0.13	27.990
1 Mature Forest	3	0.00	0.270
2 Secondary Forest	539	0.22	48.510
3 Shrub Land	191636	79.34	17247.240
4 Pasture	43105	17.85	3879.450
5 Commercial Agriculture	509	0.21	45.810
6 Subsistence Agriculture	5430	2.25	488.700
7	1	0.00	0.090
Total	241534	100.00	21738.060

Table A4.2-17
Statistic for the Change Use of the Soil
Catchment Area of Lagarto River

Zone name: Shrub Land

Class Name	Count	%	Hectares
0 fondo	140	0.13	12.600
1 Mature Forest	6	0.01	0.540
2 Secondary Forest	97	0.09	8.730
3 Shrub Land	3870	3.52	348.300
4 Pasture	105915	96.23	9532.350
5 Commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	33	0.03	2.970
7	1	0.00	0.090
Total	110062	100.00	9905.580

Zone name: Commercial agriculture

Class Name	Count	%	Hectares
0 fondo	0	0.00	0.000
1 Mature Forest	0	0.00	0.000
2 Secondary Forest	0	0.00	0.000
3 Shrub Land	0	0.00	0.000
4 Pasture	0	0.00	0.000
5 Commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	0	0.00	0.000
7	0	0.00	0.000
Total	0	0.00	0.000

Zone name: Subsistence agriculture

Class Name	Count	%	Hectares
0 fondo	0	0.00	0.000
1 Mature Forest	0	0.00	0.000
2 Secondary Forest	509	19.77	45.810
3 Shrub Land	982	38.15	88.380
4 Pasture	948	36.83	85.320
5 Commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	135	5.24	12.150
7	0	0.00	0.000
Total	2574	100.00	231.660

Table A4.2-17
Statistic for the Change Use of the Soil
Catchment Area of Lagarto River

Zone name: Palms

Class Name	Count	%	Hectares
0 fondo	0	0.00	0.000
1 Mature Forest	0	0.00	0.000
2 Secondary Forest	37	-0.33	3.330
3 Shrub Land	2	0.02	0.180
4 Pasture	2	0.02	0.180
5 Commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	0	0.00	0.000
7	11335	99.64	1020.150
Total	11376	100.00	1023.840

**TABLE A4.2-18
INSTALLATIONS OF HEALTH ACCORDING TO,
SPECIFIC AREA OF INTEREST OF THE SUB-BASIN OF LAGARTO RIVER**

Location	Type
Palmas Bellas	Centro de Salud
El Guabo	Puesto de Salud
Santa Fé del Guabo (*)	Puesto de Salud

Legend: (*) Closed

Source: MINSA. Colón Planificación Regional. Dec. 2003.

**TABLE A4.2-19
INSTALLATIONS OF HEALTH ACCORDING TO THE GENERAL AREA
OF INTEREST OF THE SUB-BASIN OF LAGARTO RIVER**

Location	Type
El Achiote	Puesto de Salud
La Tagua	Puesto de Salud
Icacal	Centro de Salud
Nueva Sevilla	Puesto de Salud
El Limón N°1	Puesto de Salud(*)
La Encantada	Puesto de Salud
Santa Rosa de Rió Indio	Puesto de Salud

Legend: (*) Closed

Source: MINSA. Colon Regional Planning Department. Dec. 2003.

**TABLE A4.2-20
HUMAN RESOURCE OF HEALTH ACCORDING TO INSTALLATION
OF HEALTH IN THE GENERAL AREA OF INTEREST OF THE SUB-BASIN OF
THE LAGARTO RIVER**

Type of Official	Installation						
	Puesto de Salud						Centro de Salud
	Achiote	Tagua	Nueva Sevilla	El Limón N° 1	La Encantada	Sta. Rosa de Río Indio	Icacal
Assistant of Health	1	1	1	1	1	1	1
Internal Medical							1
Nurses							2
Pharmaceutical							1
Aux. of Statistics							1

Source: Colon Regional Planning Department, Ministry of Health. Dec. 2003.

TABLE A4.2-21
MAIN MORTALITIES BY DISTRICTS INVOLVED
IN THE SUB-BASIN OF THE LAGARTO RIVER. YEAR 2002.

Cause	Total	District of Chagres					District of Colón
		Achiote	El Guabo	La Encantada	Palmas Bellas	Salud	Ciricito
Total	46	3	3	11	8	9	12
Tuberculosis	2	1	--	1	--	--	--
VIHS	5	--	1	1	1	--	2
Harmful Tumors	7	--	1	1	2	2	1
Diabetes Mellitus	2	--	--	1	--	--	1
Undernourishment	1	--	--	--	--	1	--
Other illnesses Of the Hear	2	--	1	--	--	--	1
Brain-vascular illnesses	4	1	--	1	2	--	--
Pneumonia	3	--	--	1	1	1	--
Chronic illnesses of the Lower respiratory ways	5	1	--	1	1	2	--
others Obstetrics direct causes							
Accidents,aggressions and other violence's	1	--	--	1	--	--	--
Diarrhea and Gastroenteritis	3	--	--	--	--	1	2
Izquemics illnesses of the Heart	1	--	--	--	--	--	1
Certain affections originated in prenatal period	1	--	--	--	--	--	1
Congenital malformations	1	--	--	--	--	--	1
The other causes	1	--	--	--	--	--	1
	7			3	1	2	1

Source: Contraloria General de la República. Dirección de Estadística y Censo. Dec. 2003

TABLE A4.2-22
MORE COMMON MORBIDITIES FOR GROUP ETAREO IN THE CORREGIMIENTO OF GUABO, IN
THE FIELD OF SPECIFIC INTEREST IN THE SUBBASIN OF LAGARTO RIVER

Group by Age	Cause	Number
Less than 1 year	Cold	8
	Flu	2
	Parasitosis	6
1-4 year	Dental caries	23
	Cold	11
	Low undernourishment	10
	Parasitosis	9
	Flu	7
	Faringoamigdalitis	2
5- 9 year	Cold	29
	Parasitosis	9
	Faringoamigdalitis	7
	Low undernourishment	5
	Escabiasis	4
	Flu	2
	I.V.U.	2
10-14 year	Cold	13
	Faringoamigdalitis	13
	Dental Caries	10
	Flu	4
	Parasitosis	3
	Escabiasis	3
15- 19 year	Cold	11
	Escabiasis	5
	Faringoamigdalitis	1
	I.V.U.	1
20- 59 year	H.T.A.	45
	Artralgia	27
	I.V.U.	25
	Acute Pelvic Inflammatory illnesses	23
	Cold	20
60 and more	H.T.A.	18
	Cold	11
	I.V.U.	6
	Low undernourishment	3

Source: Statistical and Medical Records from the province of Colon, Dec. 2003

TABLE A4.2-23
MAIN CHRONIC ILLNESSES BY INSTALLATION. IN THE SPECIFIC
AREA OF INTEREST OF THE SUB-BASIN OF THE LAGARTO RIVER,
YEARS 2002- 2003

Corregimiento del Guabo. Año 2002	Centro de Salud De La Encantada
H.T.A	H.T.A.
Artralgia	Diabetes

Source: Statistical and Medical Records of Colon and Palmas Bellas. Dec. 2003

TABLE A4.2-24
MORE COMMON MORBIDITIES FOR GROUP ETÁREO IN THE CORREGIMIENTO
OF LA ENCANTADA IN THE AREA OF INTEREST GENERAL
OF THE SUBBASIN OF THE LAGARTO RIVER

Group by Age	Cause	Number
Less than 1 year	Cold	10
	Parasitic	2
	Piodermatitis	3
	Dermatomicosis	1
	Faringoamigdalitis	1
1-4 year	Cold	67
	Piodermatitis	28
	Low Undernourishment	23
	Bronchial asthma	8
	Dermatomicosis	7
	Faringoamigdalitis	6
5- 9 year	Cold	45
	Dental caries	40
	Parasitosis	34
	Piodermatitis	14
	Dermatomicosis	12
	Faringoamigdalitis	11
	Bronchial asthma	11
10-14 year	Cold	23
	Parasitosis	14
	Dental caries	13
	Dermatomicosis	8
	Bronchial asthma	5
15- 19 year	Cold	16
	Dermatomicosis	6
	Faringoamigdalitis	6
	Migraine	5
	I.V.U.	4
20- 59 year	Lumbalgia	43
	I.V.U.	38

Group by Age	Cause	Number
	Cold	36
	H.T.A.	32
	Migraine	26
60 and more	H.T.A.	9
	Cold	5
	Lumbalgia	2

TABLE A4.2-25
MAIN MORBIDITIES BY TYPE OF INFECTIONS
REPORTED IN THE CENTROS DE SALUD DE LIMON AND
LA ENCANTADA IN THE AREA OF INTEREST GENERAL.
SUB-BASIN OF LAGARTO RIVER. YEAR

Cause	Number	Rate
Cold	137	77.13
Estados febriles Feverish states	38	21.3
Piodermitis	34	19.1
Enfermedad diarreica Illness diarreica	26	14.1
Leishmaniasis	25	14

Source: Statistical Records and medical field trip, Region de Salud of Colon.
July 2001

TABLE A4.2-26
MAIN MORBIDITIES BY TYPE OF INFECTIONS REPORTED IN THE CORREGIMIENTO
OF LA ENCANTADA .IN THE GENERAL AREA OF INTEREST OF THE SUB-BASIN OF
LAGARTO RIVER

Cause	Position
Cold	1
Parasitosis	2
Piodermitis	3
I.V.U	4
Dermatomicosis	5
Farinfoamigdalitis	6

Source: Statistical and Medical Records the province of Colon.
Dec. 2003

TABLE A4.2-27
PRINCIPAL CHRONIC ILLNESSES IN THE CORREGIMIENTO OF LA ENCANTADA IN
THE AREA OF INTEREST GENERAL DE THE SUB-BASIN
OF LAGARTO RIVER. COLON

Cause	Number
Lumbalgia	46
H.T.A.	41
Bronchial asthma	29

Source: Statistical and Medical Records, province of Colon.
Dec. 2003

ANNEX - 3

Table A4.3-1 Species of Flora for Type of Habitat

TAXON		UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
ACANTHACEAE		X							
	<i>Aphelandra campanensis</i>	X				X	X		
	<i>Blechnum pyramidatum</i>		X	X	X				
ACTINIDACEAE									
	<i>Saurauia yasicae</i>	X				X	X		
ANACARDIACEAE									
	<i>Anacardium occidentale</i>	X	X	X	X	X		X	X
	<i>Astronium graveolens</i>		X	X	X				
ANNONACEAE									
	<i>Anaxagorea sp.</i>	X				X	X		
	<i>Annona montana</i>	X	X			X	X		
	<i>Annona pittieri</i>	X				X	X		
	<i>Annona spraguei</i>		X	X	X			X	X
	<i>Rollinia mucosa</i>	X				X	X		
APOCYNACEAE									
	<i>Aspidosperma spruceanum</i>	X	X	X	X	X			
	<i>Lacmellea speciosa</i>	X	X	X	X		X		
	<i>Stemmadenia alfari</i>	X				X	X		
ARALIACEAE									
	<i>Dendropanax arboreus</i>	X	X	X	X	X	X		
	<i>Dendropanax sessiliflorus</i>	X				X	X		
ARECACEAE									
	<i>Aiphanes hirsuta</i>	X				X	X		
	<i>Attalea butyracea</i>		X	X	X				
	<i>Chamaedorea tepejilote</i>	X				X	X		
	<i>Cryosophila warscewiczii</i>	X	X			X	X		
	<i>Euterpe precatoria</i>	X				X	X		
	<i>Geonoma cuneata</i>	X	X			X	X		
	<i>Socratea exorrhiza</i>	X	X	X		X	X		
	<i>Welfia regia</i>	X	X	X	X				
ASCLEPIADACEAE									
	<i>Asclepias curassavica</i>	X	X	X		X	X	X	
ASTERACEAE									
	<i>Verbesina lanata</i>	X				X	X		
BIGNONIACEAE									
	<i>Amphitecna isthmica</i>	X				X	X		
	<i>Amphitecna spathicalyx</i>	X				X	X		
	<i>Tabebuia rosea</i>		X	X	X		X	X	
	<i>Tabebuia guayacan</i>		X	X			X	X	
BOMBACACEAE									
	<i>Matisia exaltata</i>	X				X	X		
	<i>Matisia sanblasensis</i>	X							
	<i>Pachira aquatica</i>	X	X	X	X	X			
	<i>Pachira sessilis</i>		X	X	X	X			
	<i>Quararibea asterolepis</i>	X	X	X		X			
	<i>Quararibea obliquifolia</i>	X				X			
BORAGINACEAE									
	<i>Cordia alliodora</i>	X	X	X	X			X	

TAXON	UCA	MCA	LCA	bpot	bpts	bpotm	rast	past
<i>Cordia cymosa</i>	X				X	X		
<i>Cordia lucidula</i>	X	X			X	X		
BURSERACEAE								
<i>Protium aff.guianense</i>	X	X		X				
<i>Protium tenuifolium</i>	X			X				
<i>Tetragastris panamensis</i>	X	X	X	X				
CAPARIDACEAE								
<i>Capparis antonensis</i>	X				X	X		
<i>Capparis discolor</i>					X	X		
<i>Capparis pittieri</i>	X				X	X	X	
CECROPIACEAE								
<i>Cecropia garciae</i>	X			X				
<i>Cecropia insignis</i>	X	X	X		X	X		
<i>Cecropia obtusifolia</i>	X	X	X	X	X	X	X	X
CELASTRACEAE								
<i>Maytenus schippii</i>	X	X	X	X				
CHLORANTHACEAE								
<i>Hedyosmum bonplandianum</i>	X				X	X		
<i>Hedyosmum scaberrimum</i>	X				X	X		
CHRYSOBALANACEAE								
<i>Hirtella latifolia</i>	X	X	X	X		X	X	
<i>Hirtella triandra</i>	X	X	X		X	X		
<i>Hirtella tubiflora</i>	X			X				
<i>Licania macrocarpa</i>	X			X				
CLETHRACEAE								
<i>Clethra lanata</i>	X				X	X		
CLUSIACEAE								
<i>Calophyllum brasiliense</i>	X	X	X	X	X	X		
<i>Calophyllum longifolium</i>	X				X			
<i>Chrysochlamys grandifolia</i>	X	X			X			
<i>Clusia divaricata</i>	X				X	X		
<i>Dystovomita paniculata</i>	X			X	X	X		
<i>Marila laxiflora</i>	X	X	X	X	X			
<i>Marila pluricostata</i>	X			X				
<i>Symphonia globulifera</i>	X	X	X		X	X		
<i>Tovomita longifolia</i>	X			X				
<i>Vismia baccifera</i>	X			X				
<i>Vismia billbergiana</i>	X	X	X	X	X	X		
<i>Vismia macrophylla</i>	X			X	X	X		
COMBRETACEAE								
<i>Terminalia amazonia</i>	X	X	X	X	X	X	X	
CYATHEACEAE								
<i>Cyathea petiolata</i>	X				X	X		
ELAEOCARPACEAE					X	X		
<i>Sloanea aff.meianthera</i>	X							
ERYTHROXYLACEAE								
<i>Erythroxylum macrophyllum</i>	X				X	X		
EUPHORBIACEAE								
<i>Acalypha diversifolia</i>	X				X	X		
<i>Alchornea costaricensis</i>				X	X			

TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
<i>Alchornea latifolia</i>	X			X	X			
<i>Conceveiba pleiostemona</i>	X	X		X				
<i>Croton draco</i>	X	X	X	X	X			
<i>Croton lanjouwensis</i>	X			X	X			
<i>Drypetes sp.aff.amazonica</i>	X	X		X	X			
<i>Hieronyma oblonga</i>	X			X	X			
<i>Maprounea guianensis</i>	X	X		X				
<i>Pera arborea</i>	X	X	X	X		X	X	
<i>Sapium glandulosum</i>	X			X	X			
<i>Tetrorchidium gorgonae</i>	X			X	X			
FABACEAE								
<i>Dussia macropphyllata</i>	X			X	X			
<i>Dussia munda</i>	X	X		X	X			
<i>Dussia tessmannii</i>	X							
<i>Erythrina costaricensis</i>	X	X			X			
<i>Inga ciliata ss:subcapitata</i>	X			X	X			
<i>Inga laurina</i>	X	X	X		X			
<i>Inga filiformis</i>	X				X			
<i>Inga marginata</i>	X	X		X	X			
<i>Inga oerstediana</i>	X			X	X			
<i>Inga punctata</i>		X	X	X				
<i>Inga sapindoides</i>	X	X	X					
<i>Inga sertulifera</i>	X				X	X		
<i>Inga sierrae</i>	X			X	X	X		
<i>Inga urceolata</i>	X			X	X	X		
<i>Iriartea deltoidea</i>	X	X						
<i>Lonchocarpus oliganthus</i>	X			X				
<i>Ormosia amazonica</i>	X	X	X	X	X			
<i>Platymiscium pinnatum</i>	X		X	X				
<i>Sclerolobium costaricense</i>	X			X				
<i>Senna dariensis</i>	X		X	X				
<i>Swartzia simplex var.ochnacea</i>	X	X	X	X	X			
<i>Tachigali versicolor</i>	X	X	X		X			
FLACOURTIACEAE								
<i>Casearia arborea</i>	X			X				
<i>Casearia commersoniana</i>	X	X	X		X			
<i>Casearia sylvestris</i>	X			X	X			
<i>Laetia thamnia</i>	X	X	X	X	X			
<i>Lunania piperoides</i>	X			X	X			
<i>Mayna odorata</i>	X	X		X	X			
<i>Ryania speciosa</i>	X			X				
<i>Xylosma oligandra</i>	X				X			
GESNERIACEAE								
<i>Besleria formicaria</i>	X				X	X		
HERNANDIACEAE								
<i>Hernandia stenura</i>	X				X	X		
HIPPOCRATEACEAE								
<i>Salacia petenensis</i>	X				X			
HUMIRIACEAE								
<i>Humiriastrum diguense</i>	X			X	X	X		

TAXON		UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
ICACINACEAE									
	<i>Calatola costaricensis</i>	X			X	X	X		
LACISTEMATACEAE									
	<i>Lacistema aggregatum</i>	X	X	X	X				
	<i>Lozania pittieri</i>	X			X				
LAURACEAE									
	<i>Cinnamomum paratriplinerve</i>	X				X	X		
	<i>Licaria excelsa</i>	X				X	X		
	<i>Ocotea dendrodaphne</i>	X			X	X			
	<i>Ocotea meziana</i>	X	X			X	X		
	<i>Ocotea tonduzii</i>	X				X	X		
	<i>Pleurothyrium aff.hexaglandulosa</i>	X				X	X		
LECYTHIDACEAE									
	<i>Eschweilera sp.aff.angustifolia</i>	X	X		X				
	<i>Eschweilera calyculata</i>	X	X		X				
	<i>Gustavia dubia</i>	X	X		X				
	<i>Gustavia superba</i>	X	X	X	X		X	X	
MALPIGHIACEAE									
	<i>Bunchosia dwyeri</i>	X				X			
MALVACEAE									
	<i>Hampea albipetala</i>		X		X				
	<i>Hampea appendiculata</i>	X			X	X			
MELASTOMATACEAE									
	<i>Aciotis indecora</i>	X				X			
	<i>Clidemia octona</i>	X				X			
	<i>Conostegia rufescens</i>	X				X			
	<i>Conostegia xalapensis</i>	X				X			
	<i>Graffenrieda galeottii</i>	X	X			X			
	<i>Henriettella tuberculosa</i>		X	X	X				
	<i>Miconia argentea</i>	X	X			X		X	
	<i>Miconia minutiflora</i>	X	X	X		X			
	<i>Miconia dorsiloba</i>	X				X	X		
	<i>Miconia elata</i>	X				X			
	<i>Miconia ligulata</i>	X				X			
	<i>Miconia simplex</i>	X			X	X			
	<i>Miconia sp.aff.umbriensis</i>	X						X	
	<i>Mouriri sp.aff.exilis</i>		X	X	X				
MELIACEAE									
	<i>Carapa guianensis</i>	X			X	X			
	<i>Guarea kunthiana</i>	X	X		X	X			
MONIMIACEAE									
	<i>Mollinedia pinchotiana</i>	X				X	X		
	<i>Siparuna conica</i>	X				X	X		
	<i>Siparuna pauciflora</i>	X	X	X	X	X			
MORACEAE									
	<i>Brösimum guianense</i>	X				X	X		
	<i>Clarisia biflora</i>	X	X		X				

TAXON	UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
<i>Panopsis suaveolens</i>	X				X			
PTERIDACEAE								
<i>Adiantum lucidum</i>	X	X		X	X			
<i>Adiantum villosum</i>	X	X		X				
RHIZOPHORACEAE								
<i>Cassipourea elliptica</i>	X	X	X	X	X			
RUBIACEAE								
<i>Allenanthus erythrocarpus</i>	X				X			
<i>Chimarrhis latifolia</i>	X				X			
<i>Cosmibuena macrocarpa</i>	X				X			
<i>Coutarea hexandra</i>	X	X		X				
<i>Elaeagia auriculata</i>	X				X			
<i>Faramea eurycarpa</i>	X				X			
<i>Genipa americana</i>		X	X	X		X	X	
<i>Genipa williamsii</i>	X				X			
<i>Gonzalagunia rudis</i>	X	X			X			
<i>Guettarda crispiflora</i>	X				X			
<i>Ladenbergia brenesii</i>	X				X	X		
<i>Palicourea guianensis</i>	X	X	X	X		X		
<i>Palicourea triphylla</i>	X				X			
<i>Psychotria acuminata</i>	X		X		X	X		
<i>Psychotria allenii</i>	X				X	X		
<i>Psychotria capitata</i>	X	X	X		X			
<i>Psychotria chagrensis</i>	X	X	X	X	X			
<i>Psychotria correae</i>	X				X			
<i>Psychotria deflexa</i>	X	X	X	X	X			
<i>Psychotria elata</i>	X	X	X	X	X			
<i>Psychotria luxurians</i>	X	X	X		X			
<i>Psychotria marginata</i>	X	X	X	X	X			
<i>Psychotria pittieri</i>	X				X			
<i>Psychotria poeppigiana</i>	X				X			
<i>Randia lasiantha</i>	X				X			
<i>Rondeletia buddleioides</i>	X	X			X			
RUTACEAE								
<i>Stauranthus perforatus</i>	X				X			
<i>Zanthoxylum juniperinum</i>	X				X			
SABIACEAE								
<i>Meliosma grandiflora</i>	X				X			
<i>Meliosma occidentalis</i>	X				X			
SAPINDACEAE								
<i>Allophylus gentryi</i>	X				X			
<i>Allophylus psilospermus</i>	X			X	X			
<i>Cupania cinerea</i>	X	X		X	X			

TAXON		UCA	MCA	LCA	bpot	bpots	bpotm	rast	past
SAPOTACEAE									
	<i>Chrysophyllum brenesii</i>	X				X			
	<i>Chrysophyllum venezuelanense</i>	X	X		X	X			
	<i>Pouteria calistophylla</i>	X				X			
	<i>Pouteria congestifolia</i>	X				X			
	<i>Pouteria silvestris</i>	X				X			
	<i>Sarcaulus brasiliensis</i>	X			X	X			
SIMAROUBACEAE									
	<i>Simarouba amara</i>	X			X	X			
SOLANACEAE									
	<i>Solanum hayesii</i>	X	X		X	X			
STAPHILIACEAE									
	<i>Turpinia occidentalis</i>	X			X	X			
STERCULIACEAE									
	<i>Sterculia recordiana</i>	X	X		X	X			
	<i>Theobroma simiarum</i>	X			X				
TEOPHRASTACEAE									
	<i>Clavija mezii</i>	X	X		X	X			
THEACEAE									
	<i>Gordonia brandegeei</i>	X			X	X			
	<i>Laplacea fruticosa</i>	X							
THYMELACEAE									
	<i>Daphnopsis americana</i>	X			X				
TILIACEAE									
	<i>Apeiba membranacea</i>	X	X	X	X	X			
	<i>Heliocarpus americanus</i>	X	X	X	X	X			
ULMACEAE									
	<i>Celtis schippii</i>	X	X		X	X			
VERBENACEAE									
	<i>Aegiphila anomala</i>	X				X			
	<i>Aegiphila panamensis</i>				X	X			
	<i>Vitex cooperi</i>	X			X	X			
VIOLACEAE									
	<i>Gloeospermum blakeanum</i>	X	X	X	X	X			
	<i>Hybanthus denticulatus</i>	X			X	X			
	<i>Rinorea dasyadena</i>	X			X	X			
VOCHYSIACEAE									
	<i>Vochysia ferruginea</i>	X			X	X			
	<i>Vochysia hondurensis</i>	X				X	X		
Total of Families: 71	Total of species: 256								

UCA=Upper Catchment Area ;MCA=Middle Catchment Area;LCA=Lower Catchment Area

bpot= Tropical Evergreen Ombrophilous Lowlands Forests <500m

bpots=Tropical Evergreen Ombrophilous Submontane Forest

bpotm=Tropical Evergreen Ombrophilous Montane Forest

rast=Shrublands or Productive System with Significant Natural Woody or Spontaneous Vegetation (10-50%)

past=Pasture land or Productive System with Significant Natural Woody or Spontaneous Vegetation (<10%)

Source: Louis Berger (1999); PMCC (2000); CTFS (2003)

**Table A4.3-2
List of Species and According to Categories of Conservation**

FAMILY	SPECIE	Categories of Conservation				CATHCMENT AREAS		
		ANAM*	UICN	CITES	CHCKLIST	Lagarto	Alhajueta	Ciri
ACANTHACEAE								
	<i>Aphelandra deppeana</i>							X
	<i>Aphelandra B456panamensis</i>		LRnT					X
	<i>Aphelandra sinclairiana</i>					X		
	<i>Aphelandra campanensis</i>				ED			X
	<i>Trichanthera gigantea</i>					X		
ACTINIDIACEAE								
	<i>Saurauia yasicae</i>	VU	LRnT			X		
ANACARDIACEAE								
	<i>Anacardium excelsum</i>					X	X	X
	<i>Astronium graveolens</i>	VU				X		
	<i>Mangifera indica</i>				CU	X		
	<i>Mosquitoxylum jamaicense</i>							X
	<i>Spondias cytherea</i>				CU			X
	<i>Spondias mombin</i>				CU	X		
	<i>Spondias radlkoferi</i>					X		
	<i>Tapirira guianensis</i>					X	X	
ANNONACEAE								
	<i>Anaxagorea panamensis</i>	VU				X	X	
	<i>Anaxagorea alleni</i>						X	
	<i>Annona acuminata</i>		VU			X		
	<i>Annona hayesii</i>		VU			X	X	
	<i>Annona purpurea</i>							
	<i>Annona spraguei</i>	VU	END			X	X	X
	<i>Annona glabra</i>					X		
	<i>Crematosperma panamense</i>	VU				X		
	<i>Cymbopetalum lanugipetalum</i>					X		
	<i>Desmopsis panamensis</i>		LRnT			X		
	<i>Duguetia panamensis</i>	VU	LRnT				X	
	<i>Guatteria amplifolia</i>					X		
	<i>Guatteria dumetorum</i>					X		
	<i>Guatteria sessilicarpa</i>		EN				X	
	<i>Malmea garwood</i>					X		
	<i>Oxandra longipetala</i>		VU			X		
	<i>Oxandra panamensis</i>		VU				X	
	<i>Rollinia pittieri</i>						X	
	<i>Unonopsis floribunda</i>						X	
	<i>Unonopsis panamensis</i>		END			X		X
	<i>Unonopsis pittieri</i>					X		X
	<i>Unonopsis theobromifolia</i>						X	
	<i>Xylopiya bocatorena</i>					X		
	<i>Xylopiya frutescens</i>						X	X
	<i>Xylopiya macrantha</i>					X		
	<i>Xylopiya aromatica</i>		LRnT					X
APOCYNACEAE								
	<i>Aspidosperma cruenta</i>		LRnT			X	X	
	<i>Aspidosperma megalocarpon</i>					X		
	<i>Lacmellea panamensis</i>					X		
	<i>Macoubea sprucei</i>						X	X
	<i>Malouetia guatemalensis</i>						X	
	<i>Plumeria acutifolia</i>						X	
	<i>Rauvolfia littoralis</i>					X		X
	<i>Stemmadenia alfari</i>					X		X
	<i>Stemmadenia grandiflora</i>							X

	SPECIE	ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Tabernaemontana arborea</i>					X	X	
	<i>Tabernaemontana sananho</i>							X
	<i>Tabernaemontana undulata</i>						X	
	<i>Thevetia ahouai</i>					X		
ARALIACEAE								
	<i>Dendropanax arboreus</i>					X	X	X
	<i>Dendropanax sessiliflorus</i>		VU				X	
	<i>Dendropanax arboreus</i>					X	X	X
	<i>Oreopanax capitatus</i>		VU			X		
	<i>Schefflera morototoni</i>					X		
	<i>Sciadodendron excelsum</i>							X
ARECACEAE								
	<i>Astrocaryum alatum</i>	VU	LRnT					X
	<i>Astrocaryum standleyanum</i>		VU			X	X	X
	<i>Attalea butyraceae</i>		LRnT			X		
	<i>Bactris barronis</i>		END		EN	X	X	X
	<i>Bactris coloniata</i>					X		
	<i>Bactris coloradonis</i>		LRnT			X		X
	<i>Bactris major</i>					X	X	
	<i>Bactris panamensis</i>				EN	X		
	<i>Calyptrogyne costatifrons</i>	VU	VU					X
	<i>Chamaedorea tepejilote</i>		LRnT			X		
	<i>Cryosophila warscewiczii</i>					X	X	X
	<i>Elaeis oleifera</i>		LRnT			X		
	<i>Euterpe precatoria</i>					X		X
	<i>Geonoma congesta</i>					X		
	<i>Geonoma cuneata</i>	VU				X		X
	<i>Geonoma interrupta</i>		LRnT			X		
	<i>Geonoma deversa</i>					X		X
	<i>Iriartea deltoidea</i>						X	X
	<i>Oenocarpus mapora</i>	VU	VU			X	X	
	<i>Phytelephas seemannii</i>	END	END			X		
	<i>Socratea exorrhiza</i>	VU				X	X	X
	<i>Synechanthus warscewiczianus</i>	VU				X		
	<i>Welfia regia</i>		LRnT				X	X
	<i>Wettinia panamensis</i>	VU					X	
ASTERACEAE								
	<i>Koanophyllon wetmorei</i>		VU			X		X
	<i>Verbesina lanata</i>						X	X
BIGNONIACEAE								
	<i>Amphitecna isthmica</i>		R					X
	<i>Amphitecna latifolia</i>						X	
	<i>Amphitecna spathicalyx</i>		END		EN			X
	<i>Bourreria costaricensis</i>						X	
	<i>Godmania aesculifolia</i>		LRnT					X
	<i>Jacaranda caucana</i>		VU				X	
	<i>Jacaranda copaia</i>					X		X
	<i>Parmentiera cereifera</i>		END, EN			X		
	<i>Tabebuia guayacan</i>	VU	VU			X	X	
	<i>Tabebuia rosea</i>	VU	VU			X		X
	<i>Tabebuia ochracea</i>					X		
BOMBACACEAE								
	<i>Cavanillesia platanifolia</i>		LRnT			X		
	<i>Ceiba pentandra</i>					X		X
	<i>Gyneria darienensis</i>		EN				X	
	<i>Matisia exalata</i>		EN				X	
	<i>Matisia jefensis</i>		EN				X	X

	SPECIE	ANAM ²	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Ochroma pyramidale</i>					X		
	<i>Pachira aquatica</i>						X	
	<i>Pachira quinata</i>		VU			X		
	<i>Pachira sessilis</i>	VU	LRnT			X	X	
	<i>Pseudobombax septenatum</i>					X		
	<i>Quararibea asterolepis</i>					X		
	<i>Quararibea obliquifolia</i>						X	X
	<i>Quararibea platyphylla</i>	VU				X		
	<i>Quararibea pterocalyx</i>					X		
BORAGINACEAE								
	<i>Cordia alliodora</i>		LRnT			X		
	<i>Cordia bicolor</i>					X		
	<i>Cordia dwyeri</i>	VU					X	
	<i>Cordia lasiocalyx</i>	VU				X		X
	<i>Cordia lucidula</i>		LRnT				X	X
	<i>Cordia panamensis</i>					X		
	<i>Cordia porcata</i>	VU						X
BURSERACEAE								
	<i>Bursera simaruba</i>					X		X
	<i>Protium costaricense</i>					X		
	<i>Protium glabrum</i>					X		
	<i>Protium inconforme</i>	VU	END				X	
	<i>Protium panamense</i>		LRnT			X	X	X
	<i>Protium correae</i>					X		
	<i>Protium tenuifolium</i>					X		
	<i>Tetragastris panamensis</i>					X	X	X
	<i>Trattinnickia aspera</i>		LRnT			X	X	
CACTACEAE								
	<i>Pereskia bleo</i>		VU					X
CAPPARIDACEAE								
	<i>Capparis frondosa</i>					X		
	<i>Capparis pittieri</i>						X	X
	<i>Capparis antonensis</i>							X
CARICACEAE								
	<i>Carica cauliflora</i>					X		
	<i>Jacaratia spinosa</i>					X		X
	<i>Jacaratia dolichaula</i>							X
CECROPIACEAE								
	<i>Cecropia garciae</i>							X
	<i>Cecropia insignis</i>					X		X
	<i>Cecropia longipes</i>		END			X	X	
	<i>Cecropia obtusifolia</i>					X	X	X
	<i>Cecropia peltata</i>					X		
	<i>Pourouma bicolor</i>					X	X	X
CELASTRACEAE								
	<i>Crossopetalum parviflorum</i>		LRnT			X		
	<i>Maytenus schippii</i>					X		X
	<i>Quetzalia occidentalis</i>						X	
CHLORANTHACEAE								
	<i>Hedyosmum scaberrimum</i>							X
CHRYSOBALANACEAE								
	<i>Hirtella americana</i>						X	X
	<i>Hirtella latifolia</i>						X	X
	<i>Hirtella racemosa</i>		LRnT			X		
	<i>Hirtella triandra</i>					X		X
	<i>Licania affinis</i>	VU					X	
	<i>Licania cruegeriana</i>						X	

	SPECIE	ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Licania fassiculata</i>		END, EN					
	<i>Licania hypoleuca</i>					X		
	<i>Licania morii</i>		END, EN				X	
	<i>Licania platypus</i>					X		
	<i>Licania arborea</i>							X
	<i>Maranthes panamensis</i>	VU				X	X	
CLETHRACEAE								
	<i>Clethra lanata</i>							X
CLUSIACEAE								
	<i>Calophyllum brasiliensis</i>						X	X
	<i>Calophyllum longifolium</i>		VU			X	X	X
	<i>Chrysochlamys eclipses</i>		END		EN	X	X	
	<i>Clusia divaricata</i>							X
	<i>Dystovomita paniculata</i>						X	X
	<i>Garcinia intermedia</i>		LRnT			X	X	
	<i>Garcinia madruno</i>		LRnT			X	X	X
	<i>Mammea immansueta</i>		EN,END			X	X	
	<i>Marila domingensis</i>						X	
	<i>Marila lactogena</i>		VU				X	
	<i>Marila laxiflora</i>					X	X	X
	<i>Marila pluricostata</i>		VU				X	
	<i>Symphonia globulifera</i>		VU			X	X	X
	<i>Tovomita longifolia</i>					X	X	X
	<i>Tovomita stylosa</i>					X		
	<i>Tovomita weddelliana</i>						X	
	<i>Tovomitopsis myrcioides</i>							X
	<i>Vismia baccifera</i>					X		
	<i>Vismia billbergiana</i>					X		
	<i>Vismia jefensis</i>	VU					X	
	<i>Vismia macrophylla</i>					X		X
COCHLOSPERMACEAE								
	<i>Cochlospermum vitifolium</i>				CU	X		
COMBRETACEAE								
	<i>Terminalia amazonia</i>	VU				X		
	<i>Terminalia oblonga</i>						X	
CYATHEACEAE								
	<i>Cyathea petiolata</i>	VU				X	X	X
CYCADACEAE								
	<i>Zamia skinnerii</i>					X	X	
CYCLANTHACEAE								
	<i>Cyclanthus bipartitus</i>		VU			X	X	X
	<i>Carludovica drudei</i>					X		X
DICHAPETALACEAE								
	<i>Tapura cubensis</i>		VU				X	
DILLENACEAE								
	<i>Curatella americana</i>							X
EBENACEAE								
	<i>Diospyros artanthifolia</i>		LRnT			X		X
ELAEOCARPACEAE								
	<i>Sloanea meianthera</i>					X		X
	<i>Sloanea megaphylla</i>	VU					X	
	<i>Sloanea terniflora</i>					X		
	<i>Sloanea zuliaensis</i>					X	X	X
ERYTHROXYLACEAE								
	<i>Erythroxylum citrifolium</i>					X		
	<i>Erythroxylum macrophyllum</i>					X		

	SPECIE	ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Erythroxylum panamense</i>					X		X
EUPHORBIACEAE								
	<i>Acalypha diversifolia</i>					X	X	X
	<i>Acalypha macrostachya</i>						X	
	<i>Adelia triloba</i>					X		X
	<i>Alchornea costaricensis</i>					X	X	X
	<i>Alchornea latifolia</i>					X		X
	<i>Conceveiba pleiostemona</i>							X
	<i>Croton billbergianus</i>		LRnT			X		
	<i>Croton pachypodus</i>				EN			X
	<i>Croton draco</i>							X
	<i>Croton schiedeianus</i>		LRnT			X		
	<i>Drypetes standleyi</i>	END	LRnT			X		
	<i>Euphorbia elata</i>						X	
	<i>Garcia nutans</i>					X		
	<i>Hevea brasiliensis</i>				CU	X		
	<i>Hura crepitans</i>					X		
	<i>Hyeronima alchorneoides</i>					X		
	<i>Hyeronima oblonga</i>						X	X
	<i>Mabea occidentalis</i>						X	
	<i>Maprounea guianensis</i>						X	
	<i>Margaritaria nobilis</i>					X		X
	<i>Pera arborea</i>					X		
	<i>Phyllanthus acuminatus</i>					X		
	<i>Sapium glandulosum</i>					X		
	<i>Tetrorchidium euryphyllum</i>							X
	<i>Tetrorchidium gorgonae</i>					X		
FABACEAE:CAESALPINOIDE								
	<i>Cassia moschata</i>		LRnT				X	
	<i>Copaifera aromatica</i>	VU					X	
	<i>Cynometra bauhiniaefolia</i>					X		
	<i>Dialium guianense</i>					X		
FABACEAE:CAESALPINOIDE								
	<i>Hymenaea courbaril</i>					X	X	X
	<i>Prioria copaifera</i>		END			X		
	<i>Schizolobium parahybum</i>					X		
	<i>Senna dariensis</i>						X	
	<i>Swartzia panamensis</i>	VU				X		
	<i>Swartzia simplex v. grandiflora</i>					X		
	<i>Swartzia simplex var. ochracea</i>					X	X	X
	<i>Tachigali versicolor</i>	VU				X		
FABACEAE:FABOIDEAE.								
	<i>Andira inermis</i>					X	X	X
	<i>Dalbergia retusa</i>		LRnT			X	X	
	<i>Diphysa robinoides</i>					X	X	X
	<i>Dipteryx panamensis</i>	VU				X	X	
	<i>Dussia macrophyllata</i>							X
	<i>Dussia munda</i>							X
	<i>Eritrina costaricensis</i>					X		X
	<i>Eritrina fusca</i>					X		X
	<i>Fissicalyx fendleri</i>		LRnT			X		X
	<i>Gliricidia sepium</i>		LRnT		CU	X		
	<i>Lonchocarpus latifolius</i>					X	X	
	<i>Lonchocarpus velutinus</i>					X		X
	<i>Myrospermum frutescens</i>					X		
	<i>Ormosia amazonica</i>		VU			X		X
	<i>Ormosia croatii</i>					X		

	SPECIE	ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajúela	Ciri
	<i>Ormosia macrocalyx</i>					X		
	<i>Ormosia panamensis</i>		LRnT			X		
	<i>Platymiscium pinnatum</i>	VU	VU			X		
	<i>Platypodium elegans</i>		LRnT			X		
	<i>Pterocarpus belizensis</i>		LRnT			X		
	<i>Pterocarpus rohrii</i>					X		
	<i>Pterocarpus officinalis</i>					X		X
	<i>Vatairea lundellii</i>						X	
FABACEAE:MIMOSOIDEAE.								
	<i>Abarema barbouriana</i>		EN			X	X	X
	<i>Abarema macradenium</i>		LRnT			X	X	
	<i>Acacia melanoceras</i>					X	X	X
	<i>Acacia riparia</i>					X		
	<i>Albizia adinocephala</i>				CU	X		X
	<i>Albizia procera</i>				CU		X	
	<i>Cojoba rufescens</i>					X		X
	<i>Enterolobium cyclocarpum</i>					X	X	X
	<i>Enterolobium schomburgkii</i>							X
	<i>Inga cocleensis</i>		LRnT			X		
	<i>Inga laurina</i>						X	X
	<i>Inga goldmanii</i>					X		
	<i>Inga hayesii</i>	VU					X	
	<i>Inga mucuna</i>	VU				X		
	<i>Inga marginata</i>					X		
	<i>Inga oerstediana</i>					X		
	<i>Inga pauciflora</i>	VU	END					X
	<i>Inga pezizifera</i>					X	X	
	<i>Inga portobellensis</i>		END				X	
	<i>Inga punctata</i>					X		
	<i>Inga nobilis</i>					X		
	<i>Inga ruiziana</i>					X		
	<i>Inga acuminata</i>					X		
	<i>Inga sapindoides</i>					X		
	<i>Inga sertulifera</i>							X
	<i>Inga spectabilis</i>					X		
	<i>Inga thibaudiana</i>						X	
	<i>Inga umbellifera</i>					X		
	<i>Inga vera</i>					X		
	<i>Inga multijuga</i>					X		
	<i>Leucaena multicapitula</i>				CU	X		
	<i>Marmaroxylon dinizii</i>					X		
	<i>Pithecellobium hymenaeifolium</i>							X
	<i>Pseudosamanea guachapele</i>					X		X
	<i>Samanea saman</i>		LRnt				X	X
FLACOURTIACEAE								
	<i>Banara guianensis</i>					X		X
	<i>Cusearia aculeata</i>					X		
	<i>Casearia arborea</i>					X	X	X
	<i>Casearia commersoniana</i>					X	X	X
	<i>Casearia guianensis</i>					X		
	<i>Casearia sylvestris</i>					X		X
	<i>Casearia coronata</i>					X		
	<i>Hasseltia floribunda</i>					X		X
	<i>Lacistema aggregatum</i>					X		
	<i>Laetia procera</i>					X		
	<i>Laetia hannia</i>					X	X	X
	<i>Lindaekeria laurina</i>					X		

	SPECIE	ANAM ^a	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Lozania pittieri</i>					X		
	<i>Mayna grandifolia</i>						X	X
	<i>Prockia crucis</i>							X
	<i>Ryania speciosa</i>							X
	<i>Tetrathylacium johansenii</i>					X	X	
	<i>Xylosma oligandrum</i>					X		
	<i>Xylosma chloranthum</i>					X		
	<i>Zuelania guidonia</i>					X		
HERNANDIACEAE								
	<i>Hernandia didymantha</i>							X
	<i>Hernandia stenura</i>		LRnt				X	X
HIPPOCASTANACEAE								
	<i>Billia columbianum</i>						X	X
HIPPOCRATEACEAE								
	<i>Cheiloclinium cognatum</i>						X	X
	<i>Salacia gigantea</i>						X	
HUMIRIACEAE								
	<i>Humirastrum diguense</i>	VU				X	X	X
	<i>Sacoglottis ovicarpa</i>	VU					X	
	<i>Sacoglottis trichogyna</i>	VU					X	
	<i>Vantanea depleta</i>	VU				X	X	
ICACINACEAE								
	<i>Calatola costaricensis</i>							X
	<i>Discophora guianensis</i>					X		
LAURACEAE								
	<i>Beilschmiedia pendula</i>					X		X
	<i>Caryodaphnopsis burgeri</i>					X		
	<i>Nectandra cissiflora</i>					X		
	<i>Nectandra lineata</i>					X		
	<i>Nectandra martinicensis</i>							X
	<i>Nectandra purpurea</i>					X		
	<i>Nectandra cuspidata</i>					X		
	<i>Ocotea cernua</i>					X		X
	<i>Ocotea dendrodaphne</i>					X		X
	<i>Ocotea endresiana</i>						X	
	<i>Ocotea ira</i>		LRnT			X	X	
	<i>Ocotea oblonga</i>					X		
	<i>Ocotea paulii</i>							X
	<i>Ocotea puberula</i>					X		
	<i>Ocotea rubrinervis</i>						X	
	<i>Ocotea veraguensis</i>						X	
	<i>Ocotea whitei</i>					X		X
	<i>Phoebe cinnamomifolia</i>		LRnT			X		X
LECYTHIDACEAE								
	<i>Couratari guianensis</i>						X	
	<i>Eschweilera amplexifolia</i>		END				X	
	<i>Eschweilera calyculata</i>						X	X
	<i>Eschweilera jacquelyniae</i>	VU					X	
	<i>Eschweilera panamensis</i>						X	
	<i>Eschweilera pittieri</i>						X	
	<i>Grias cauliflora</i>					X		
	<i>Gustavia dubia</i>						X	X
	<i>Gustavia fosteri</i>		VU,END			X		
	<i>Gustavia superba</i>					X		X
	<i>Lecythis ampla</i>						X	
LEPIDOBOTRYACEAE								
	<i>Ruptilocarpon caracolito</i>		VU				X	

	SPECIE	ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
LYTHRACEAE								
	<i>Lafoensia puniceifolia</i>					X		
MAGNOLIACEAE								
	<i>Talauma gloriensis</i>						X	
	<i>Talauma sambuensis</i>		EN, END				X	
MALPHIGIACEAE								
	<i>Byrsonima nemoralis</i>		EN				X	
	<i>Bunchosia odorata</i>		LRnT					
	<i>Bunchosia cornifolia</i>					X		
	<i>Byrsonima crassifolia</i>				CU	X		X
	<i>Byrsonima spicata</i>					X		X
	<i>Malpighia romeroana</i>					X		
	<i>Spachea membranacea</i>	END				X		
	<i>Spachea correae</i>	VU				X		
MALVACEAE								
	<i>Hampea appendiculata</i>	VU				X		X
	<i>Lopimia dasypetala</i>							X
MELASTOMATACEAE								
	<i>Bellucia pentamera</i>							X
	<i>Clidemia densiflora</i>					X		X
	<i>Clidemia dentata</i>					X		X
	<i>Clidemia octona</i>					X		X
	<i>Clidemia septuplinerva</i>					X		X
	<i>Conostegia bracteata</i>		LRnT			X		X
	<i>Conostegia cinnamomea</i>		LRnT			X		
	<i>Conostegia rufescens</i>							X
	<i>Conostegia xalapensis</i>						X	X
	<i>Henriettella fascicularis</i>							X
	<i>Henriettella succosa</i>					X		
	<i>Henriettella trachyphylla</i>						X	
	<i>Leandra dichotoma</i>					X		
	<i>Leandra granatensis</i>					X		
	<i>Miconia affinis</i>					X		X
	<i>Miconia argentea</i>					X		X
	<i>Miconia centronioides</i>						X	
	<i>Miconia curvipetiolata</i>	VU						X
	<i>Miconia dorsiloba</i>		LRnT					X
	<i>Miconia elata</i>					X		X
	<i>Miconia holosericea</i>							X
	<i>Miconia hondurensis</i>					X		
	<i>Miconia impetiolepis</i>					X		X
	<i>Miconia lacera</i>					X		X
	<i>Miconia ligulata</i>					X		
	<i>Miconia lonchophylla</i>					X		
	<i>Miconia minutiflora</i>	VU				X		X
	<i>Miconia nervosa</i>					X		X
	<i>Miconia prasina</i>					X		X
	<i>Miconia reducens</i>						X	
	<i>Miconia serrulata</i>					X		
	<i>Miconia shattuckii</i>		LRnT			X		
	<i>Miconia simplex</i>					X		
	<i>Mouriri completens</i>						X	
	<i>Mouriri myrtilloides</i>					X		
	<i>Mouriri panamensis</i>		VU				X	
	<i>Tococa acuminata</i>		VU				X	
MELIACEAE								
	<i>Carapa guianensis</i>	VU	LRnT			X	X	X

	SPECIE	ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Cederla odorata</i>	VU				X		
	<i>Guarea glabra</i>					X		
	<i>Guarea grandifolia</i>					X		X
	<i>Guarea guidonia</i>					X		
	<i>Guarea kunthiana</i>						X	
	<i>Guarea pterorhachis</i>					X		
	<i>Guarea rhopalocarpa</i>						X	
	<i>Swietenia macrophylla</i>	VU	VU				X	X
	<i>Trichilia hirta</i>					X		
	<i>Trichilia pallida</i>					X		
MELIACEAE								
	<i>Trichilia pleeana</i>					X		
	<i>Trichilia quadrijuga</i>						X	
	<i>Trichilia martiana</i>	VU					X	
	<i>Trichilia tuberculata</i>	VU				X		X
MONIMIACEAE								
	<i>Mollinedia darienensis</i>	VU	END			X		
	<i>Mollinedia pinchotiana</i>							X
	<i>Siparuna guianensis</i>	VU				X		
	<i>Siparuna pauciflora</i>	VU				X		
	<i>Siparuna tonduzii</i>							X
MORACEAE								
	<i>Artocarpus altilis</i>				CU	X		
	<i>Brosimum alicastrum</i>					X		
	<i>Brosimum costaricanum</i>	VU				X		
	<i>Brosimum guianense</i>	VU				X	X	X
	<i>Brosimum lactescens</i>						X	
	<i>Brosimum utile</i>	VU				X	X	
	<i>Castilla elastica</i>					X		X
	<i>Chlorophora tinctoria</i>	VU				X		
	<i>Ficus brevibracteata</i>						X	
	<i>Ficus bullenei</i>	VU				X		
	<i>Ficus colubrinae</i>					X		
	<i>Ficus costaricana</i>					X		
	<i>Ficus citrifolia</i>					X		
	<i>Ficus insipida</i>					X		
	<i>Ficus maxima</i>					X		
	<i>Ficus nymphaeifolia</i>					X		X
	<i>Ficus obtusifolia</i>					X		
	<i>Ficus pertusa</i>					X		
	<i>Ficus petenesis</i>							X
	<i>Ficus popenoei</i>					X		
	<i>Ficus tonduzii</i>					X		
	<i>Ficus trigonata</i>					X		
	<i>Ficus yoponensis</i>					X		
	<i>Ficus dugandii</i>		LRnT			X		
	<i>Ficus perforata</i>					X		
	<i>Ficus paraensis</i>					X		
	<i>Helicostylis towarensis</i>							X
	<i>Maquira costaricana</i>					X		X
	<i>Naucleopsis capirensis</i>							X
	<i>Naucleopsis ulei</i>						X	
	<i>Perebea angustifolia</i>						X	
	<i>Perebea xanthochyma</i>					X	X	X
	<i>Poulsenia armata</i>					X	X	X
	<i>Pseudolmedia laevigata</i>						X	
	<i>Pseudolmedia spuria</i>					X	X	

	SPECIE	ANAM ^a	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Sorocea affinis</i>					X		
	<i>Sorocea pubivena</i>	VU						X
	<i>Trophis racemosa</i>					X		
	<i>Trophis caucana</i>					X		X
MYRISTICACEAE								
	<i>Compsoeura capitellata</i>		LRnT				X	
	<i>Compsoeura sprucei</i>						X	
	<i>Osteophloeum platyspermum</i>						X	X
	<i>Otoba acuminata</i>		LRnT				X	X
	<i>Otoba novagranatensis</i>	VU					X	X
	<i>Otoba parvifolia</i>						X	
	<i>Virola elongata</i>		EN			X		
	<i>Virola koschnyi</i>						X	
	<i>Virola sebifera</i>					X	X	X
	<i>Virola surinamensis</i>		VU			X	X	
	<i>Virola multiflora</i>					X	X	
MYRSINACEAE								
	<i>Ardisia bartlettii</i>					X		
	<i>Ardisia fendleri</i>					X		X
	<i>Ardisia guianensis</i>					X		
	<i>Ardisia revoluta</i>						X	
	<i>Stylogyne standleyi</i>					X		
MYRTACEAE								
	<i>Calycolpus warszewiczianus</i>		LRnT			X		X
	<i>Calyptanthus tumidonodia</i>	VU			EN		X	
	<i>Chamguava schippii</i>		LRnT			X		
	<i>Eugenia coloradensis</i>					X		
	<i>Eugenia galalonensis</i>					X		
	<i>Eugenia nesiotica</i>	VU						X
	<i>Eugenia oerstediana</i>					X		
	<i>Eugenia venezuelensis</i>							X
	<i>Eugenia uniflora</i>				CU	X		X
	<i>Myrcia gatumensis</i>		LRnT			X		X
	<i>Myrcia fosteri</i>	VU				X		X
	<i>Plinia povedae</i>							X
	<i>Psidium friedrichsthalianum</i>		LRnT			X		
	<i>Syzygium malaccense</i>				CU	X	X	
NYCTAGINACEAE								
	<i>Guapira costaricana</i>						X	X
	<i>Guapira standleyana</i>		LRnT			X		
	<i>Neea amplifolia</i>					X		
	<i>Neea delicatula</i>		LRnT					
OCHNACEAE								
	<i>Cespedezia macrophylla</i>					X		X
	<i>Ouratea lucens</i>					X		X
OLACACEAE								
	<i>Heisteria acuminata</i>		LRnT			X	X	
	<i>Heisteria concinna</i>					X		X
	<i>Minuartia guianensis</i>						X	
	<i>Chionanthus panamensis</i>							X
PICRAMNIACEAE								
	<i>Picramnia latifolia</i>					X	X	X
PIPERACEAE								
	<i>Piper arboreum</i>					X		X
	<i>Piper augustum</i>					X		

	SPECIE	ANAM	UICN	CITES	CHKLIST	Lagarto	Alhajuela	Ciri
	<i>Piper aequale</i>					X		
	<i>Piper auritum</i>					X		
	<i>Piper colonense</i>					X		X
	<i>Piper schiedeanum</i>						X	
	<i>Piper cordulatum</i>		LRnT					X
	<i>Piper culebratum</i>	VU						X
	<i>Piper grande</i>		LRnT					X
	<i>Piper hispidum</i>		LRnT					X
	<i>Piper imperiale</i>		LRnT			X		
	<i>Piper aequale</i>	VU				X		
	<i>Piper reticulatum</i>					X		
POLYGONACEAE								
	<i>Coccoloba acapulcensis</i>					X		
	<i>Coccoloba ascendens</i>					X		X
	<i>Coccoloba coronata</i>					X		
	<i>Coccoloba manzanillensis</i>	VU	END			X		X
	<i>Coccoloba obovata</i>					X		
	<i>Coccoloba acuminata</i>					X		
	<i>Triplaris umingiana</i>					X		X
PROTEACEAE								
	<i>Panopsis suaveolens</i>							X
	<i>Roupala montana</i>					X		X
QUIINACEAE								
	<i>Lacunaria panamensis</i>		END				X	
	<i>Quina schippii</i>					X	X	X
RHAMNACEAE								
	<i>Colubrina glandulosa</i>					X		
	<i>Colubrina heteroneura</i>					X		
RHIZOPHORACEAE								
	<i>Cassipourea elliptica</i>					X	X	X
RUBIACEAE								
	<i>Alibertia edulis</i>					X	X	X
	<i>Alseis blackiana</i>		R			X	X	X
	<i>Amaioua corymbosa</i>		END			X	X	X
	<i>Amaioua magnicarpa</i>		VU		EN		X	
	<i>Antirrhoea trichantha</i>	VU	END			X		X
	<i>Appunia seibertii</i>	VU				X		
	<i>Bertiera guianensis</i>					X		
	<i>Borojoa panamensis</i>		LRnT			X		
	<i>Calycophyllum candidissimum</i>					X		
	<i>Chimarrhis parviflora</i>					X		X
	<i>Chomelia spinosa</i>							X
	<i>Coutarea hexandra</i>							X
	<i>Elaeagia nitidifolia</i>						X	
	<i>Faramea luteovirens</i>					X		X
	<i>Faramea multiflora</i>	VU				X		
	<i>Faramea occidentalis</i>					X		
	<i>Genipa americana</i>		LRnT			X		
	<i>Genipa williamsii</i>							X
	<i>Gonzalagunia rosea</i>					X		
	<i>Guettarda foliacea</i>					X		X
	<i>Hamelia axillaris</i>					X		
	<i>Hamelia patens</i>					X		X
	<i>Isertia haenkeana</i>					X		
	<i>Isertia laevis</i>					X	X	
	<i>Ixora floribunda</i>					X		X

	SPECIE	ANAM ¹	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Macrocnemum roseum</i>					X	X	X
	<i>Palicourea guianensis</i>		LRnT			X		X
	<i>Palicourea triphylla</i>	VU						X
	<i>Pentagonia macrophylla</i>					X	X	X
	<i>Pentagonia parvifolia</i>						X	
	<i>Pogonopus speciosus</i>					X		
	<i>Posoqueria latifolia</i>					X		
	<i>Psychotria acuminata</i>							X
	<i>Psychotria allenii</i>						X	X
	<i>Psychotria brachiata</i>					X		X
	<i>Psychotria capitata</i>					X		X
	<i>Psychotria chagrensis</i>					X		X
	<i>Psychotria deflexa</i>					X		X
	<i>Psychotria elata</i>					X		X
	<i>Psychotria erecta</i>					X		
	<i>Psychotria graciliflora</i>					X		
	<i>Psychotria tenuifolia</i>					X		
	<i>Psychotria grandis</i>					X		
	<i>Psychotria horizontalis</i>					X		X
	<i>Psychotria limonensis</i>					X		
	<i>Psychotria luxurians</i>						X	X
	<i>Psychotria marginata</i>					X		X
	<i>Psychotria micrantha</i>							X
	<i>Psychotria pittieri</i>					X		
	<i>Psychotria poeppigiana</i>					X		X
	<i>Psychotria pubescens</i>							X
	<i>Psychotria racemosa</i>							X
	<i>Psychotria suerrensis</i>					X		X
	<i>Psychotria brachybotrya</i>							X
	<i>Psychotria carthagenensis</i>					X		X
	<i>Randia armata</i>					X		
	<i>Randia grandifolia</i>	VU				X		
	<i>Rosenbergiodendron formosum</i>					X		
	<i>Rudgea cornifolia</i>					X		
	<i>Rudgea pittieri</i>	VU					X	
	<i>Tocoyena pittieri</i>					X		
	<i>Warszewiczia coccinea</i>							X
	RUTACEAE							
	<i>Citrus sinensis</i>				CU			X
	<i>Hortia colombiana</i>	VU					X	
	<i>Zanthoxylum ekmanii</i>	VU				X		
	<i>Zanthoxylum panamense</i>		LRnT			X		
	<i>Zanthoxylum juniperinum</i>					X		
	<i>Zanthoxylum setulosum</i>		LRnT			X		
	SABIACEAE							
	<i>Meliosma glabrata</i>		LRnT			X		
	SABIACEAE							
	<i>Meliosma idiopoda</i>						X	
	<i>Meliosma occidentalis</i>							X
	<i>Meliosma subcordata</i>						X	
	SAPINDACEAE							
	<i>Allophyllus psilospermus</i>					X		X
	<i>Cupania cinerea</i>							X
	<i>Cupania hirsuta</i>						X	
	<i>Cupania latifolia</i>					X		
	<i>Cupania rufescens</i>							X

	SPECIE	ANAM	UICN	CITES	CHCKLIST	Lagarto	Alhajuela	Ciri
	<i>Cupania scrobiculata</i>					X		
	<i>Cupania sylvatica</i>					X	X	X
	<i>Cupania latifolia</i>					X		
	<i>Matayba apetala</i>	END				X	X	
	<i>Matayba glaberrima</i>							
	<i>Matayba scrobiculata</i>					X		
	<i>Sapindus saponaria</i>						X	
	<i>Talisia nervosa</i>					X		
	<i>Talisia princeps</i>					X		
SAPOTACEAE								
	<i>Chrysophyllum argenteum</i>					X		
	<i>Chrysophyllum cainito</i>				CU	X		
	<i>Manilkara bidentata</i>					X	X	
	<i>Manilkara zapota</i>				CU	X		
	<i>Pouteria buenaventurensis</i>		LRnT					X
	<i>Pouteria campechiana</i>						X	
	<i>Pouteria cuspidata</i>						X	
	<i>Pouteria fossicola</i>					X		
	<i>Pouteria leptopedicellata</i>	END					X	
	<i>Pouteria multiflora</i>							X
	<i>Pouteria reticulata</i>					X		
	<i>Pouteria stipitata</i>					X		X
	<i>Pouteria torta</i>		LRnT				X	
	<i>Pouteria sapota</i>				CU	X		
	<i>Pouteria austin-smithii</i>						X	
	<i>Pouteria calistophylla</i>	END					X	
	<i>Pouteria foveolata</i>						X	
SIMAROUBACEAE								
	<i>Quassia amara</i>					X		
	<i>Simarouba amara</i>					X		X
SOLANACEAE								
	<i>Cestrum megalophyllum</i>					X		X
	<i>Cyphomandra hartwegii</i>							X
	<i>Solanum arboreum</i>					X		X
	<i>Solanum asperum</i>						X	
	<i>Solanum hayesii</i>							X
	<i>Solanum steyemarkii</i>					X	X	
	<i>Solanum nudum</i>					X		
	<i>Solanum rudepannum</i>					X		
STAPHYLEACEAE								
	<i>Turpinia occidentalis</i>					X		X
STERCULIACEAE								
	<i>Guazuma ulmifolia</i>					X		
	<i>Herrania purpurea</i>					X		
	<i>Sterculia apetala</i>					X	X	X
	<i>Sterculia costaricana</i>						X	
	<i>Sterculia glauca</i>						X	X
	<i>Sterculia recordiana</i>					X		X
	<i>Theobroma bernoullii</i>		LRnT			X	X	
	<i>Theobroma cacao</i>				CU	X		
THEACEAE								
	<i>Ternstroemia tepezapote</i>					X	X	
THEOPHRASTACEAE								
	<i>Clavija costaricana</i>		LRnT			X		
	<i>Clavija mezii</i>						X	
THYMELEACEAE								
	<i>Daphnopsis correae</i>				EN		X	X

	SPECIE	ANAM ^a	UICN	CITES	CHCKLIST	Lagarto	Alhajueta	Ciri
TILIACEAE								
	<i>Apeiba aspera</i>					X	X	X
	<i>Apeiba tibourbou</i>					X	X	
	<i>Heliocarpus popayanensis</i>					X		X
	<i>Luehea seemannii</i>					X		
	<i>Luehea speciosa</i>					X		X
	<i>Mortoni dendron anisophyllum</i>		VU			X		X
	<i>Trichospermum galeottii</i>					X		X
TURNERACEAE								
	<i>Turnera panamensis</i>		VU			X		
ULMACEAE								
	<i>Celtis schippii</i>	VU				X		X
	<i>Trema micrantha</i>					X		
URTICACEAE								
	<i>Myriocarpa longipes</i>					X		
	<i>Urera baccifera</i>					X		
	<i>Urera caracasana</i>							X
VERBENACEAE								
	<i>Aegiphila anomala</i>							X
	<i>Aegiphila panamensis</i>	VU				X	X	X
	<i>Vitex cooperi</i>		EN					X
	<i>Vitex cymosa</i>						X	
VIOLACEAE								
	<i>Gloespermum sphaerocarpum</i>						X	
	<i>Hybanthus prunifolius</i>					X		X
	<i>Leonia glycyarpa</i>						X	
	<i>Rinorea brachythrix</i>	END			EN			
	<i>Rinorea dasyadena</i>						X	
	<i>Rinorea lindeniana</i>						X	
	<i>Rinorea squamata</i>					X		X
	<i>Rinorea sylvatica</i>					X		
VOCHYSIACEAE								
	<i>Erisma blancoa</i>	VU					X	
	<i>Qualea polychroma</i>	VU					X	
	<i>Vochysia hondurensis</i>						X	X
	<i>Vochysia ferruginea</i>					X		
Total of Families: 82								
Total of Species: 681						0	0	0
ANAM: 6 species endangered; 77 Vulnerable.								
UICN: 19 species endangered; 89 near threatened; 32 Vulnerables; 2 Rare species								

VU= Vulnerable;LRnt= near threatened (UICN);CU= Cultivated ;EN=Endemic;END= endangered; R: Rare
CHECKLIST: Flora of Panamá Check List.
ANAM: Environmental National Authority
Source : Panama Canal Watershed Monitoring Project (1999); Center for Tropical Forest Science (2003)
Louis Berger (1999).

Table A4.3-3
Aquatic Macrophytes for Catchment Areas

Family/Specie	CATCHMENT AREAS			HABIT		
	Ciri	Lagarto	Alhajuela			
ALISMATACEAE						
<i>Sagittaria platyphylla</i>		M, L				Sum
ARACEAE						
<i>Montrichardia arborescens</i>	M, L	M, L			Mar	
<i>Pistia stratiotes</i>		M, L		Fl		
<i>Spatiphyllum friedrichsthali</i>		U, M, L			Mar	
<i>Spatiphyllum quindiuense</i>		U, M			Mar	
ASTERACEAE						
<i>Ambrosia cumanensis</i>			L		Mar	
AZOLLACEAE						
<i>Azolla sp.</i>	M, L	M, L	L	Fl		
CABOMBACEAE						
<i>Cabomba piauhyensis</i>	M, L	U, M				Sum
CERATOPHYLLACEAE						
<i>Ceratophyllum demersum</i>	M, L	M, L				Sum
CHARACEAE						
<i>Chara sp.</i>	M, L	M, L	L			Sum
COMMELINACEAE						
<i>Commelina elegans</i>	M, L	U, M, L	L		Mar	
CYCLANTHACEAE						
<i>Dicranopigyum crinitum</i>		U, M			Mar	
CYPERACEAE						
<i>Cyperus giganteus</i>	M, L	U, M, L			Mar	
<i>Eleocharis elegans</i>	M, L	U, M		Em		
<i>Fuirena umbellata</i>	M, L	U, M, L			Mar	
FABACEAE						
<i>Mimosa pigra</i>			L		Mar	
<i>Senna alata</i>	M, L		L		Mar	
<i>Sesbania emerus</i>	M, L		L		Mar	
HYDROCHARITACEAE						
<i>Hydrilla verticillata</i>	M, L	M, L	L			Sum
JUNCACEAE						
<i>Juncus sp.</i>	M, L	U, M, L		Em		
LEMNACEAE						
<i>Lemna minor</i>	M, L	M	L	Fl		
LENTIBULARIACEAE						
<i>Utricularia sp.</i>	M, L	U, M		Fl		Sum
LIMNOCAHARITACEAE						
<i>Limnocharis flava</i>	M, L	U, M, L		Em		
MARSILEACEAE						
<i>Marsilea policarpa</i>	M, L	U, M		Em		
MAYACACEAE						
<i>Mayaca sp.</i>	M, L	U, M				Sum
MENYANTHACEAE						
<i>Nymphoides indica</i>	M, L	U, M		Em		
NYMPHAEACEAE						
<i>Nymphaea ampla</i>		U, M		Em		
<i>Nymphaea sp.</i>	M, L	U, M		Em		
ONAGRACEAE						
<i>Jussiaea natans</i>	M, L	U, M, L	L		Mar	
<i>Ludwigia helminthorrhiza</i>		U, M, L			Mar	

Family/Specie	CATCHMENT AREAS			HABIT		
	Ciri	Lagarto	Alhajuela			
POACEAE						
<i>Gynerium sagittatum</i>	M, L	U, M, L	L			Mar
<i>Hymenachne amplexicaulis</i>	M, L	U, M, L	L			Mar
<i>Luziola subintegra</i>	M, L	U, M, L				Mar
<i>Panicum grande</i>	M, L	U, M, L				Mar
<i>Panicum maximum</i>	M, L	U, M, L				Mar
<i>Panicum purpurascens</i>	M, L	U, M, L	L			Mar
<i>Paspalidium geminatum</i>	M, L	U, M, L				Mar
<i>Paspalum repens</i>	M, L	U, M, L	L			Mar
PODOSTEMACEAE						
<i>Maratrum</i> sp.						
POLYGONACEAE						
<i>Polygonum acuminatum</i>	M, L	U, M, L	L			Mar
<i>Polygonum hypsidum</i>	M, L	U, M, L	L			Mar
<i>Polygonum punctatum</i>	M, L	U, M, L				Mar
PONTEDERIACEAE						
<i>Eichhornia azurea</i>	M, L	U, M, L		Em		
<i>Eichhornia crassipes</i>	M, L	U, M, L			Fl	
<i>Pontederia rotundifolia</i>	M, L	U, M, L				Mar
PTERIDACEAE						
<i>Acrostichum aureum</i>	M, L	U, M, L				Mar
<i>Ceratopteris pteridioides</i>			L		Fl	
SALVINEACEAE						
<i>Salvinia</i> sp.	M, L	U, M, L			Fl	
TYPHACEAE						
<i>Typha</i> sp.	M, L	U, M, L		Em		Mar

Source: Lois Berger (1999); Biological Inventory of the Panama Canal Watershed (1994)

U=Upper catchment area ;M=Middle catchment area ; L= Lower catchment area
 Li=littoral band; Em=Emergent; Fl=Floating; Mar=Marginal;Sum=Sumerged

Table A4.3-4. Richness of Species of Mammals and his Distribution in Three Sections (Upper, Middle and lower) of the Alhajuella Lake compared with the species of Indio River.

TAXON		Catchment Area of Alhajuella Lake			Indio River
		Upper	Middle	Lower	
CLASE MAMMALIA					
DIDELPHIMORPHIA					
DIDELPHIDAE	<i>Chironectes minimus</i>	X	X	X	
	<i>Didelphis marsupialis</i>	X	X	X	X
	<i>Metachirus nudicaudatus</i>	X	X	X	
	<i>Philander opossum</i>	X	X	X	
CALUROMYIDAE					
	<i>Caluromys derbianus</i>		X	X	
MARMOSIDAE					
	<i>Marmosa robinsoni</i>			X	
VERMILINGUA					
MYRMECOPHAGIDAE	<i>Cyclopes didactylus</i>	X	X	X	
	<i>Myrmecophaga tridactyla</i>	X	X		
	<i>Tamandua mexicana</i>	X	X	X	X
PHYLLOPHAGA					
BRADYPODIDAE	<i>Bradypus variegatus</i>	X	X	X	X
MEGALONYCHIDAE					
	<i>Choloepus hoffmanni</i>	X	X	X	
CINGULATA					
DASYPODIDAE	<i>Cabassous centralis</i>	X	X	X	
	<i>Dasybus novemcinctus</i>	X	X	X	X
CHIROPTERA					
EMBALLONURIDAE	<i>Cormura brevirostris</i>		X	X	
	<i>Rynchonycteris naso</i>	X	X		
	<i>Saccopterix bilineata</i>		X	X	
NOCTILIONIDAE					
	<i>Noctilio albiventris</i>			X	
	<i>Noctilio leporinus</i>	X	X	X	
MORMOOPIDAE					
	<i>Pteronotus parnellii</i>	X	X	X	X
PHYLLOSTOMIDAE					
	<i>Micronycteris minuta</i>	X			
	<i>Micronycteris hirsuta</i>	X		X	
	<i>Micronycteris nicefori</i>			X	
	<i>Micronycteris schmidtorum</i>			X	
	<i>Lampronnycteris branchyotis</i>		X	X	
	<i>Phylloderma stenops</i>	X			
	<i>Phyllostomus hastatus</i>	X			X
	<i>Phyllostomus discolor</i>	X			X
	<i>Lonchorhina aurita</i>		X		
	<i>Tonatia silvicola</i>	X	X	X	X
	<i>Tonatia brasiliense</i>				X
	<i>Tonatia bidens</i>			X	
	<i>Mimon crenulatum</i>		X		
	<i>Trachops cirrhosus</i>	X		X	
	<i>Vampyrum spectrum</i>			X	
	<i>Glossophaga comissarisi</i>	X	X		X
	<i>Glossophaga soricina</i>	X	X	X	X
	<i>Lonchophylla robusta</i>	X	X		X
	<i>Carollia castanea</i>	X	X	X	X

TAXON		Catchment Area of Alhajuella Lake			Indio River
		Upper	Middle	Lower	
	<i>Carollia perspicillata</i>	X	X	X	X
	<i>Carollia brevicauda</i>				X
	<i>Sturnira lilium</i>	X			X
	<i>Uroderma bilobatum</i>	X	X	X	X
	<i>Platyrrhinus helleri</i>	X	X	X	X
	<i>Vampyroides caraccioli</i>			X	
	<i>Vampyressa pusilla</i>		X	X	X
	<i>Chiroderma salvini</i>				X
	<i>Chiroderma villosum</i>	X	X		
	<i>Artibeus jamaicensis</i>	X	X	X	X
	<i>Artibeus intermedius</i>				X
	<i>Artibeus lituratus</i>	X	X	X	X
	<i>Artibeus phaeotis</i>	X	X	X	X
	<i>Artibeus watsoni</i>	X	X	X	X
	<i>Enchisthenes hartii</i>				X
	<i>Centurio senex</i>		X		
	<i>Desmodus rotundus</i>	X	X	X	X
NATALIDAE	<i>Natalus stramineus</i>	X			
THYROPTERIDAE	<i>Thyroptera tricolor</i>	X			
VESPERTILIONIDAE	<i>Myotis albescens</i>	X			
	<i>Myotis nigricans</i>		X		
	<i>Rhogeessa tumida</i>			X	
MOLOSSIDAE	<i>Molossus bondae</i>			X	
	<i>Promops centralis</i>				X
FURIPTERIDAE	<i>Furipterus horrens</i>			X	
PRIMATES					
CEBIDAE	<i>Aotus lemurinus</i>	X	X	X	X
	<i>Cebus capucinus</i>	X	X	X	
	<i>Saguinus geoffroyi</i>	X	X	X	X
ATELIDAE	<i>Alouatta palliata</i>	X	X	X	
	<i>Ateles geoffroyi</i>	X	X		
CARNIVORA					
PROCYONIDAE	<i>Bassaricyon gabbii</i>	X	X	X	
	<i>Nasua narica</i>	X	X	X	
	<i>Potos flavus</i>	X	X	X	
	<i>Procyon cancrivorus</i>	X	X	X	
	<i>Procyon lotor</i>	X	X	X	X
MUSTELIDAE	<i>Conepatus semistriatus</i>				X
	<i>Eira barbara</i>	X	X	X	
	<i>Galictis vittata</i>		X		
	<i>Lontra longicaudis</i>	X	X	X	X
	<i>Mustela frenata</i>	X	X		
FELIDAE	<i>Herpailurus yaguaroundi</i>	X	X	X	
	<i>Leopardus pardalis</i>	X	X	X	X
	<i>Leopardus wiedii</i>	X	X	X	
	<i>Panthera onca</i>	X	X	X	
	<i>Puma concolor</i>	X	X	X	X

TAXON		Catchment Area of Alhajuela Lake			Indio River
		Upper	Middle	Lower	
CANIDAE	<i>Speothos venaticus</i>	X	X	X	
	<i>Urocyon cinereoargenteus</i>			X	
ARTIODACTYLA					
TAYASSUIDAE	<i>Tayassu pecari</i>	X	X		
	<i>Tayassu tajacu</i>	X	X	X	X
CERVIDAE	<i>Mazama americana</i>	X	X	X	
	<i>Odocoileus virginianus</i>	X		X	X
PERISSODACTYLA					
TAPIRIDAE	<i>Tapirus bairdii</i>	X	X	X	
RODENTIA					
SCIURIDAE	<i>Microsciurus alfari</i>		X	X	
	<i>Microsciurus mimulus</i>	X	X		X
	<i>Sciurus granatensis</i>	X	X	X	X
	<i>Sciurus variegatoides</i>	X	X	X	X
AGOUTIDAE	<i>Agouti paca</i>	X	X	X	X
DASYPROCTIDAE	<i>Dasyprocta punctata</i>	X	X	X	X
HYDROCHAERIDAE	<i>Hydrochaeris isthmus</i>	X	X	X	X
ECHIMYIDAE	<i>Diplomys labilis</i>			X	
	<i>Haplomys gymnurus</i>	X	X	X	
	<i>Proechimys semispinosus</i>	X	X	X	X
ERETHIZONTIDAE	<i>Coendou rothschildi</i>	X	X	X	X
HETEROMYIDAE	<i>Heteromys desmarestianus</i>	X	X	X	X
MURIDAE	<i>Melanomys caliginosus</i>				X
	<i>Mus musculus</i>			X	
	<i>Oecomys bicolor</i>			X	
	<i>Oecomys trinitatis</i>			X	
	<i>Oligoryzomys fulvescens</i>		X	X	
	<i>Oryzomys bolivaris</i>	X	X		
	<i>Oryzomys talamancae</i>			X	
	<i>Rattus rattus</i>			X	X
	<i>Sigmodon hispidus</i>			X	
	<i>Sigmodontomys alfari</i>				X
	<i>Tylomys watsoni</i>	X			
	<i>Zygodontomys brevicauda</i>			X	
LAGOMORPHA					
LEPORIDAE	<i>Sylvilagus brasiliensis</i>	X	X	X	X
SIRENIA					
TRICHECHIDAE	<i>Trichechus manatus</i>			X	
Total	species for Alhajuela = 107	75	75	83	50

Source: Glanz 1990; Tejera et al. 1995; Gallardo y Jimenez 1993; Moreno y Gallardo 1997bcde; Tomblin 1997bcde.

Table A4.3-5. Ecological characteristics and State of Conservation of the Species of Mammals of the Catchment Area of the Alhajuela Lake. KEY: State of conservation: EN=endémic native; A=Treatened; EX=Exotic; I, II=CITES; AU=Threatened according to the UICN. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Fru=frugivore; Car=carnivore; Ins=insectivore; Fo=folivore; Nec=nectarivore; Pis=piscivore; Her=herbivore; Hem=hematofague; Gra=granivore; Om=omnivore. Behavior: T=terrestrial; SA=semiaquatic; F=flying; Ar=arboreal or shrubby; Aq=aquatic.

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
CLASS MAMMALIA						
ORDER DIDELPHIMORPHIA						
FAMILY DIDELPHIDAE						
	<i>Chironectes minimus</i>	Car	N	SA		
	<i>Didelphis marsupialis</i>	Om	N	T/Ar		
	<i>Metachirus nudicaudatus</i>	Fru/Car	N	T		
	<i>Philander opossum</i>	Car	N	Ar		
FAMILY CALUROMYIDAE						
	<i>Caluromys derbianus</i>	Fru	N	Ar		
FAMILY MARMOSIDAE						
	<i>Marmosa robinsoni</i>	Fru/Ins	N	Ar		
ORDER VERMILINGUA						
FAMILY MYRMECOPHAGIDAE						
	<i>Cyclopes didactylus</i>	Ins	N	Ar	A	
	<i>Myrmecophaga tridactyla</i>	Ins	D	T	A	AU II
	<i>Tamandua mexicana</i>	Ins	D/N	T/Ar	A	
ORDER PHYLLOPHAGA						
FAMILY BRADYPODIDAE						
	<i>Bradypus variegatus</i>	Fo	D	Ar		II
FAMILY MEGALONYCHIDAE						
	<i>Choloepus hoffmanni</i>	Fo	D	Ar		
ORDER CINGULATA						
FAMILY DASYPODIDAE						
	<i>Cabassous centralis</i>	Ins	N	SF	A	AU
	<i>Dasybus novemcinctus</i>	Ins	N	SF	A	
ORDEN CHIROPTERA						
FAMILY EMBALLONURIDAE						
	<i>Rynchonycteris naso</i>	Ins	N	V		
	<i>Saccopterix bilineata</i>	Ins	N	V		
FAMILY NOCTILIONIDAE						
	<i>Noctilio albiventris</i>	Ins	N	V		
	<i>Noctilio leporinus</i>	Car	N	V		
FAMILY MORMOOPIDAE						
	<i>Pteronotus gymnotus</i>	Ins	N	V		
	<i>Pteronotus parnellii</i>	Ins	N	V		
FAMILY PHYLLOSTOMIDAE						
	<i>Micronycteris minuta</i>	Ins	N	V		
	<i>Micronycteris microtis</i>	Ins	N	V		
	<i>Micronycteris hirsuta</i>	Ins	N	V		
	<i>Micronycteris nicefori</i>	Ins	N	V		
	<i>Micronycteris schmidtorum</i>	Ins	N	V		
	<i>Lampronnycteris branchyotis</i>	Ins	N	V		
	<i>Phylloderma stenops</i>	Fru	N	V		
	<i>Phyllostomus hastatus</i>	Fru/Car	N	V		
	<i>Phyllostomus discolor</i>	Fru/Ins	N	V		
	<i>Lonchorhina aurita</i>	Fru/Ins	N	V		
	<i>Tonatia silvicola</i>	Ins	N	V		
	<i>Tonatia bidens</i>	Ins	N	V		
	<i>Mimon crenulatum</i>	Ins	N	V		
	<i>Trachops cirrhosus</i>	Car	N	V		
	<i>Vampyrum spectrum</i>	Car	N	V		
	<i>Glossophaga comissarisi</i>	Nec	N	V		
	<i>Glossophaga soricina</i>	Nec	N	V		
	<i>Lonchophylla robusta</i>	Nec	N	V		

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES
<i>Carollia castanea</i>	Fru	N	V			
<i>Carollia perspicillata</i>	Fru	N	V			
<i>Sturnira lilium</i>	Fru	N	V			
<i>Uroderma bilobatum</i>	Fru	N	V			
<i>Platyrrhinus helleri</i>	Fru	N	V			
<i>Vampyroides caraccioli</i>	Fru	N	V			
<i>Artibeus intermedius</i>	Fru	N	V			
<i>Artibeus lituratus</i>	Fru	N	V			
<i>Artibeus phaeotis</i>	Fru	N	V			
<i>Artibeus watsoni</i>	Fru	N	V			
<i>Centurio senex</i>	Fru	N	V			
<i>Desmodus rotundus</i>	Hem	N	V			
FAMILY NATALIDAE						
<i>Natalus stramineus</i>	Ins	N	V			
FAMILY THYROPTERIDAE						
<i>Thyroptera tricolor</i>	Ins	N	V			
FAMILY VESPERTILIONIDAE						
<i>Myotis albescens</i>	Ins	N	V			
<i>Myotis nigricans</i>	Ins	N	V			
<i>Rhogeessa tumida</i>	Ins	N	V			
FAMILY MOLOSSIDAE						
<i>Molossus bondae</i>	Ins	N	V			
FAMILY FURIPTERIDAE						
<i>Furipterus horrens</i>	Ins	N	V			
ORDER PRIMATES						
FAMILY CEBIDAE						
<i>Aotus lemurinus</i>	Fru/Fo	N	Ar	A	AU	II
<i>Cebus capucinus</i>	Fru/Car	D	Ar	A		II
<i>Saguinus geoffroyi</i>	Ins/Fru	D	Ar	A		I
FAMILY ATELIDAE						
<i>Alouatta palliata</i>	Fru/Fo	D	Ar	A		I
<i>Ateles geoffroyi</i>	Fru	D	Ar	A	AU	I, II
ORDER CARNIVORA						
FAMILY PROCYONIDAE						
<i>Bassaricyon gabbii</i>	Fru	N	Ar		AU	
<i>Nasua narica</i>	Fru/Car	D	T/Ar	A		
<i>Potos flavus</i>	Fru	N	Ar			
<i>Procyon cancrivorus</i>	Om	N	T	A		
<i>Procyon lotor</i>	Om	N	T	A		
FAMILY MUSTELIDAE						
<i>Eira barbara</i>	Om	D	T			
<i>Galictis vittata</i>	Om	D/N	T/Ar			
<i>Lontra longicaudis</i>	Car	D	SA	A		I
<i>Mustela frenata</i>	Car	D	T			
FAMILY FELIDAE						
<i>Herpailurus yagouaroundi</i>	Car	D	T	A		I
<i>Leopardus pardalis</i>	Car	N	T	A		I
<i>Leopardus wiedii</i>	Car	N	T/Ar	A		I
<i>Panthera onca</i>	Car	D/N	T	A	AU	I
<i>Puma concolor</i>	Car	D/N	T	A		I, II
FAMILY CANIDAE						
<i>Speothos veneticus</i>	Car	D	T	A	AU	I
<i>Urocyon cinereoargenteus</i>	Car	N	T	A		
ORDER ARTIODACTYLA						
FAMILY TAYASSUIDAE						
<i>Tayassu pecari</i>	Fru	D	T	A		II
<i>Tayassu tajacu</i>	Fru	D	T	A		II
FAMILY CERVIDAE						
<i>Mazama americana</i>	Fru	D	T	A		
<i>Odocoileus virginianus</i>	Fru	D	T	A		
ORDER PERISSODACTYLA						
FAMILY TAPIRIDAE						

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	
	<i>Tapirus bairdii</i>	Fru	D/N	T	A	AU	I	
ORDER RODENTIA								
FAMILY SCIURIDAE								
	<i>Microsciurus alfari</i>	Fru	D	Ar				
	<i>Microsciurus mimulus</i>	Fru	D	Ar				
	<i>Sciurus granatensis</i>	Fru	D	Ar				
	<i>Sciurus variegatoides</i>	Fru	D	Ar				
FAMILY AGOUTIDAE								
	<i>Agouti paca</i>	Fru	N	T	A			
FAMILY DASYPROCTIDAE								
	<i>Dasyprocta punctata</i>	Fru	D	T	A			
FAMILY HYDROCHAERIDAE								
	<i>Hydrochaeris isthmus</i>	Her	N	SA	A			
FAMILY ECHIMYIDAE								
	<i>Diplomys labilis</i>	Fru	N	T				
	<i>Haplomys gymnurus</i>	Fru	N	T				
	<i>Proechimys semispinosus</i>	Fru	N	T				
FAMILY ERETHIZONTIDAE								
	<i>Coendou rothschildi</i>	Fru/Fo	N	Ar	EN			
FAMILY HETEROMYIDAE								
	<i>Heteromys desmarestianus</i>	Gra/Fru	N	T				
FAMILY MURIDAE								
	<i>Mus musculus</i>	Ins/Gra	N	T	EX			
	<i>Oecomys bicolor</i>	Fru	N	T				
	<i>Oecomys trinitatis</i>	Fru	N	T				
	<i>Oligoryzomys fulvescens</i>	Fru	N	T				
	<i>Oryzomys bolivaris</i>	Fru	N	T				
	<i>Oryzomys talamancae</i>	Fru	N	T				
	<i>Rattus rattus</i>	Om	N	T	EX			
	<i>Sigmodon hispidus</i>	Om	N	T				
	<i>Tylomys watsoni</i>	Fru	N	T				
	<i>Zygodontomys brevicauda</i>	Om	N	T				
ORDER LAGOMORPHA								
FAMILY LEPORIDAE								
	<i>Sylvilagus brasiliensis</i>	Her	D	T				
ORDER SIRENIA								
FAMILY TRICHECHIDAE								
	<i>Trichechus manatus</i>	Her		Ac	A	AU	I	
					TOTAL	1EN, 30A	9	18

Source: Tejera et al. 1995; Kalko et al. 1996; Samudio 2002; ANAM 2000, CITES 2003.

Table A4.3-6. Richness of Species of Birds and his Distribution in Three Sections (Upper, Middle and Lower) of the Catchment Area of the Alhajuela Lake compared with the species of Indio River.

TAXON		Catchment Area of Alhajuela Lake			Indio River
		Upper	Middle	Lower	
CLASS BIRDS					
TINAMIFORMES					
TINAMIDAE	<i>Tinamus major</i>	X	X	X	X
	<i>Crypturellus soui</i>	X	X	X	X
PODICIPEDIFORMES					
PODICIPEDIDAE	<i>Podilymbus podiceps</i>	X	X	X	
	<i>Tachybaptus dominicus</i>		X	X	
PELECANIFORMES					
SULIDAE	<i>Sula leucogaster</i>			X	
PELECANIDAE	<i>Pelecanus occidentalis</i>		X	X	
PHALACROCORACIDAE	<i>Phalacrocorax brasilianus</i>		X	X	
ANHINGIDAE	<i>Anhinga anhinga</i>	X	X	X	
FREGATIDAE	<i>Fregata magnificens</i>		X	X	
CICONIIFORMES					
ARDEIDAE	<i>Agamia agami</i>			X	
	<i>Ardea alba</i>				X
	<i>Ardea cocoi</i>	X	X		
	<i>Ardea herodias</i>	X	X	X	
	<i>Bubulcus ibis</i>	X	X	X	X
	<i>Butorides striatus</i>	X	X	X	
	<i>Casmerodius albus</i>	X	X	X	
	<i>Cochlearius cochlearius</i>		X	X	
	<i>Egretta caerulea</i>	X	X	X	X
	<i>Egretta thula</i>	X	X	X	X
	<i>Egretta tricolor</i>	X	X	X	
	<i>Ixobrychus exilis</i>			X	
	<i>Nyctanassa violacea</i>	X	X		
	<i>Nycticorax nycticorax</i>	X	X	X	
	<i>Tigrisoma fasciatum</i>	X	X		
	<i>Tigrisoma lineatum</i>	X	X	X	
THRESKIORNITHIDAE	<i>Mesembrinibis ceynensis</i>			X	
CICONIIDAE	<i>Mycteria americana</i>	X	X	X	
CATHARTIDAE	<i>Cathartes aura</i>	X	X	X	X
	<i>Coragyps atratus</i>	X	X	X	X
	<i>Sarcoramphus papa</i>	X	X	X	
ANSERIFORMES					
ANATIDAE	<i>Anas americana</i>			X	
	<i>Anas discors</i>		X	X	
	<i>Aythya affinis</i>			X	
	<i>Aythya collaris</i>			X	
	<i>Cairina moschata</i>			X	
	<i>Dendrocygna autumnalis</i>	X	X	X	
	<i>Dendrocygna bicolor</i>		X	X	

TAXON		Catchment Area of Alhajuela Lake			Indio River
		Upper	Middle	Lower	
	<i>Dendrocygna viduata</i>			X	
	<i>Nomonyx dominicus</i>			X	
FALCONIFORMES					
ACCIPITRIDAE					
	<i>Accipiter superciliosus</i>			X	
	<i>Buteo albicaudatus</i>			X	
	<i>Buteo albonotatus</i>			X	
	<i>Buteo brachyurus</i>			X	
	<i>Buteo magnirostris</i>			X	X
	<i>Buteo nitidus</i>	X	X	X	
	<i>Buteo platypterus</i>	X	X	X	
	<i>Buteo swainsoni</i>	X	X	X	
	<i>Buteogallus anthracinus</i>			X	
	<i>Buteogallus meridionalis</i>			X	
	<i>Buteogallus urubitinga</i>		X	X	
	<i>Chondrohierax uncinatus</i>			X	
	<i>Circus cyaneus</i>			X	
	<i>Elanoides forficatus</i>	X	X	X	X
	<i>Elanus leucurus</i>	X	X	X	
	<i>Gampsonyx swainsonii</i>	X	X		
	<i>Geranospiza caurulescens</i>			X	
	<i>Harpagus bidentatus</i>		X	X	X
	<i>Harpia harpyja</i>	X		X	
	<i>Ictinia mississippiensis</i>			X	
	<i>Ictinia plumbea</i>		X	X	X
	<i>Leptodon cayanensis</i>			X	
	<i>Leucopternis albicollis</i>	X	X	X	X
	<i>Leucopternis plumbea</i>			X	
	<i>Leucopternis princeps</i>	X			
	<i>Leucopternis semiplumbea</i>		X	X	
	<i>Morphnus guianensis</i>			X	
	<i>Pandion haliaetus</i>	X	X	X	
	<i>Spizaetus ornatus</i>			X	
	<i>Spizaetus tyrannus</i>	X	X	X	X
FALCONIDAE					
	<i>Caracara cheriway</i>	X		X	
	<i>Falco femoralis</i>	X	X	X	
	<i>Falco peregrinus</i>			X	
	<i>Falco rufifularis</i>	X	X	X	
	<i>Falco sparverius</i>			X	
	<i>Herpotheres cachinnans</i>	X			
	<i>Ibycter americanus</i>	X		X	
	<i>Micrastur mirandollei</i>	X	X	X	
	<i>Micrastur ruficollis</i>	X		X	X
	<i>Micrastur semitorquatus</i>			X	
	<i>Milvago chimachima</i>	X	X	X	X
GALLIFORMES					
CRACIDAE					
	<i>Chamaepetes unicolor</i>				X
	<i>Crax rubra</i>		X	X	
	<i>Ortalis cinereiceps</i>	X	X	X	X
	<i>Penelope purpurascens</i>	X	X	X	
ODONTOPHORIDAE					
	<i>Odontophorus melanotis</i>	X	X		
	<i>Odontophorus gujanensis</i>	X	X	X	
	<i>Rhynchortyx cinctus</i>		X	X	
GRUIFORMES					

TAXON		Catchment Area of Alhajuella Lake			Indio River
		Upper	Middle	Lower	
RALLIDAE	<i>Aramides axillaris</i>		X		
	<i>Aramides cajanea</i>	X	X	X	X
	<i>Fulica americana</i>			X	
	<i>Gallinula chloropus</i>	X	X	X	
	<i>Laterallus albigularis</i>			X	
	<i>Porphyryla martinica</i>	X	X	X	
	<i>Porzana flaviventer</i>			X	
HELIORNITHIDAE	<i>Heliornis fulica</i>			X	
EURYPYGIDAE	<i>Eurypyga helias</i>	X	X	X	
CHARADRIIFORMES					
CHARADRIIDAE	<i>Charadrius collaris</i>			X	
	<i>Vanellus chilensis</i>		X		
JACANIDAE	<i>Jacana spinosa</i>	X	X		
	<i>Jacana jacana</i>	X	X	X	X
SCOLOPACIDAE	<i>Actitis macularia</i>	X	X	X	
	<i>Arenaria interpres</i>		X		
	<i>Gallinago gallinago</i>			X	
	<i>Tringa flavipes</i>			X	
	<i>Tringa solitaria</i>			X	
LARIDAE	<i>Anous stolidus</i>			X	
	<i>Chlidonias niger</i>			X	
	<i>Larus argentatus</i>			X	
	<i>Larus atricilla</i>			X	
	<i>Larus delawarensis</i>			X	
	<i>Larus pipixcan</i>			X	
	<i>Stercorarius parasiticus</i>			X	
	<i>Sterna albifrons</i>			X	
	<i>Sterna fuscata</i>			X	
	<i>Sterna hirundo</i>			X	
	<i>Sterna maxima</i>		X	X	
	<i>Sterna nilotica</i>			X	
	<i>Sterna sandvicensis</i>			X	
	COLUMBIFORMES				
COLUMBIDAE	<i>Claravis pretiosa</i>	X	X	X	
	<i>Columba cayennensis</i>	X	X	X	
	<i>Columba livia</i>				X
	<i>Columba nigrirostris</i>	X	X	X	X
	<i>Columba speciosa</i>		X	X	X
	<i>Columba subvinacea</i>				X
	<i>Columbina minuta</i>		X	X	
	<i>Columbina talpacoti</i>	X	X	X	X
	<i>Geotrygon chiriquensis</i>				X
	<i>Geotrygon goldmani</i>		X		
	<i>Geotrygon lawrencii</i>	X			
	<i>Geotrygon montana</i>		X	X	X
	<i>Geotrygon veraguensis</i>	X		X	
	<i>Geotrygon violacea</i>			X	
	<i>Leptotila cassinii</i>	X	X	X	X
	<i>Leptotila verreauxi</i>	X	X	X	X

TAXON		Catchment Area of Alhajuela Lake			Indio River
		Upper	Middle	Lower	
PSITTACIFORMES					
PSITTACIDAE	<i>Amazona autumnalis</i>	X	X	X	X
	<i>Amazona farinosa</i>	X	X	X	
	<i>Amazona onchrocephala</i>			X	X
	<i>Ara ambigua</i>			X	
	<i>Ara chloropterus</i>			X	
	<i>Ara macao</i>			X	
	<i>Ara severa</i>			X	
	<i>Brotogeris jugularis</i>	X	X	X	X
	<i>Pionopsitta haematotis</i>	X	X	X	
	<i>Pionus menstruus</i>	X	X	X	X
	<i>Touit dilectissima</i>		X		
CUCULIFORMES					
CUCULIDAE	<i>Coccyzus americanus</i>			X	
	<i>Coccyzus erythrophthalmus</i>			X	
	<i>Crotophaga ani</i>	X	X	X	X
	<i>Crotophaga major</i>	X	X	X	
	<i>Dromococcyx phasianellus</i>	X		X	
	<i>Neomorphyus geoffroyi</i>			X	
	<i>Piaya cayana</i>	X	X	X	X
	<i>Piaya minuta</i>		X	X	
	<i>Tapera naevia</i>	X	X	X	X
STRIGIFORMES					
TYTONIDAE	<i>Tyto alba</i>	X	X		
STRIGIDAE	<i>Ciccaba nigrolineata</i>			X	
	<i>Ciccaba virgata</i>	X		X	X
	<i>Glaucidium minutissimum</i>			X	
	<i>Lophotrix cristata</i>	X		X	
	<i>Otus choliba</i>	X	X	X	X
	<i>Otus guatemalae</i>	X	X	X	
	<i>Pseudoscops clamator</i>			X	
	<i>Pulsatrix perspicillata</i>	X		X	
CAPRIMULGIFORMES					
CAPRIMULGIDAE	<i>Caprimulgus carolenensis</i>			X	
	<i>Caprimulgus rufus</i>			X	
	<i>Chordeiles acutipennis</i>		X	X	
	<i>Chordeiles minor</i>	X	X		
	<i>Lurocalis semitorquatus</i>		X	X	
	<i>Nyctidromus albicollis</i>	X	X	X	X
NYCTIBIIDAE	<i>Nyctibius grandis</i>	X	X	X	
	<i>Nyctibius griseus</i>		X	X	X
STEATORNITHIDAE	<i>Steatornis caripensis</i>			X	
APODIFORMES					
APODIDAE	<i>Chaetura brachyura</i>	X	X	X	
	<i>Chaetura pelagica</i>			X	
	<i>Chaetura spinicauda</i>	X	X	X	X
	<i>Chaetura vauxi</i>	X	X		
	<i>Panyptila cayennensis</i>	X	X	X	
	<i>Streptoprocne zonaris</i>	X	X	X	X

TAXON		Catchment Area of Alhajuela Lake			Indio River
		Upper	Middle	Lower	
TROCHILIDAE	<i>Amazilia amabilis</i>	X	X	X	X
	<i>Amazilia edward</i>	X	X	X	X
	<i>Amazilia tzacatl</i>	X	X	X	X
	<i>Anthracothorax nigricollis</i>	X	X	X	X
	<i>Anthracothorax prevostii</i>	X			
	<i>Chalybura buffonii</i>	X	X	X	X
	<i>Chalybura urochrysia</i>	X	X		X
	<i>Chlorostilbon assimilis</i>	X	X	X	X
	<i>Damophila julie</i>	X	X	X	X
	<i>Eutoxeres aquila</i>	X	X	X	X
	<i>Florisuga mellivora</i>	X	X	X	X
	<i>Glaucis aenea</i>	X	X		
	<i>Glaucis hirsuta</i>	X	X	X	X
	<i>Goldmania violiceps</i>	X	X		
	<i>Heliodoxa jacula</i>	X	X		X
	<i>Heliomaster longirostris</i>	X	X	X	
	<i>Heliiothryx barroti</i>	X	X	X	
	<i>Klais guimeti</i>	X	X	X	
	<i>Lepidopyga coeruleogularis</i>	X	X	X	
	<i>Lophornis delattrei</i>	X	X	X	
<i>Phaeochroa cuvierii</i>	X	X	X		
<i>Phaethornis guy</i>	X	X	X	X	
<i>Phaethornis longuemareus</i>	X	X	X	X	
<i>Phaethornis superciliosus</i>	X	X	X	X	
<i>Thalurania colombica</i>	X	X	X	X	
<i>Threnetes ruckeri</i>	X	X	X	X	
TROGONIFORMES					
TROGONIDAE	<i>Trogon aurantiiventris</i>				X
	<i>Trogon clathratus</i>				X
	<i>Trogon massena</i>	X	X	X	X
	<i>Trogon melanurus</i>			X	
	<i>Trogon rufus</i>	X	X	X	X
	<i>Trogon violaceus</i>	X	X	X	X
	<i>Trogon viridis</i>	X	X	X	X
CORACIIFORMES					
MOMOTIDAE	<i>Baryphthengus martii</i>	X	X	X	X
	<i>Electron platyrhynchum</i>	X	X	X	X
	<i>Momotus momota</i>	X	X	X	X
ALCEDINIDAE	<i>Ceryle alcyon</i>			X	
	<i>Ceryle torquata</i>	X	X	X	X
	<i>Chloroceryle aenea</i>	X	X	X	
	<i>Chloroceryle amazona</i>	X	X	X	
	<i>Chloroceryle americana</i>	X	X	X	X
	<i>Chloroceryle inda</i>	X	X	X	
PICIFORMES					
BUCCONIDAE	<i>Malacoptila panamensis</i>	X	X	X	X
	<i>Monasa morphoeus</i>		X	X	
	<i>Nonnula ruficapilla</i>			X	X
	<i>Notharchus macrorhynchus</i>			X	
	<i>Notharchus pectoralis</i>	X	X		X
	<i>Notharchus tectus</i>			X	
	<i>Nystalus radiatus</i>				X
GALBULIDAE	<i>Jacamerops aurea</i>		X	X	

TAXON		Catchment Area of Alhajuela Lake			Indio River
		Upper	Middle	Lower	
RAMPHASTIDAE	<i>Aulacorhynchus prasinus</i>	X			X
	<i>Capito maculicoronatus</i>		X	X	X
	<i>Pteroglossus torquatus</i>	X	X	X	X
	<i>Ramphastos sulfuratus</i>	X	X	X	X
	<i>Ramphastos swainsonii</i>	X	X	X	
	<i>Selenidera spectabilis</i>	X	X	X	X
PICIDAE	<i>Campephilus haematogaster</i>	X	X	X	
	<i>Campephilus melanoleucos</i>	X	X	X	X
	<i>Celeus loricatus</i>	X	X	X	
	<i>Dryocopus lineatus</i>	X	X	X	X
	<i>Melanerpes formicivorus</i>	X	X		
	<i>Melanerpes pucherani</i>	X	X	X	X
	<i>Melanerpes rubricapillus</i>	X	X	X	X
	<i>Piculus callopterus</i>		X	X	
	<i>Piculus chrysochloros</i>			X	
	<i>Picumnus olivaceus</i>	X	X		
PASSERIFORMES					
FURNARIIDAE	<i>Automolus ochrolaemus</i>	X	X	X	X
	<i>Automolus rubiginosus</i>		X		
	<i>Cranioleuca erythrops</i>			X	
	<i>Hyloctistes subulatus</i>	X	X		
	<i>Phylidor fuscipennis</i>	X	X		
	<i>Phylidor rufus</i>		X		
	<i>Premnoplex brunnescens</i>	X	X		
	<i>Sclerurus guatemalensis</i>	X	X	X	
	<i>Sclerurus mexicanus</i>	X		X	
	<i>Synallaxis albescens</i>		X		
	<i>Synallaxis brachyura</i>	X	X		
	<i>Syndactyla subalaris</i>	X	X		
	<i>Xenops minutus</i>	X	X	X	X
	<i>Xenops rutilans</i>				X
DENDROCOLAPTIDAE	<i>Campylorhamphus pusillus</i>	X	X		
	<i>Campylorhamphus trochilirostris</i>			X	
	<i>Deconychura longicauda</i>	X	X	X	
	<i>Dendrocincla fuliginosa</i>	X	X	X	X
	<i>Dendrocincla homochroa</i>			X	
	<i>Dendrocolaptes sanctiithomae</i>			X	
	<i>Glyphorhynchus spirurus</i>	X	X	X	X
	<i>Lepidocolaptes affinis</i>	X	X		
	<i>Lepidocolaptes souleyetii</i>	X	X	X	
	<i>Xiphorhynchus erythropygius</i>	X	X		
	<i>Xiphorhynchus lachrymosus</i>	X	X	X	
	<i>Xiphorhynchus susurrans</i>	X	X	X	X
THAMNOPHILIDAE	<i>Cercomacra nigricans</i>				X
	<i>Cercomacra tyrannina</i>	X	X	X	X
	<i>Cymbilaimus lineatus</i>	X	X	X	X
	<i>Dysithamnus mentalis</i>	X			X
	<i>Dysithamnus puncticeps</i>	X	X	X	
	<i>Gymnocichla nudiceps</i>	X	X	X	
	<i>Gymnopathys leucaspis</i>	X	X	X	X
	<i>Hylophylax naevioides</i>	X	X	X	X

TAXON	Catchment Area of Alhajuela Lake			Indio River	
	Upper	Middle	Lower		
	<i>Microrhopias quixensis</i>	X	X	X	X
	<i>Myrmeciza exsul</i>	X	X	X	X
	<i>Myrmeciza laemosticta</i>	X		X	
	<i>Myrmeciza longipes</i>			X	X
	<i>Myrmornis torquata</i>			X	
	<i>Myrmotherula axillaris</i>	X	X	X	X
	<i>Myrmotherula brachyura</i>	X	X	X	
	<i>Myrmotherula fulviventris</i>	X	X	X	X
	<i>Myrmotherula schisticolor</i>	X	X		X
	<i>Myrmotherula surinamensis</i>	X	X	X	
	<i>Phaenostictus mcleannani</i>	X	X	X	
	<i>Taraba major</i>	X		X	X
	<i>Thamnistes anabatinus</i>		X	X	
	<i>Thamnophilus atrinucha</i>				X
	<i>Thamnophilus doliatus</i>	X	X	X	X
	<i>Thamnophilus punctatus</i>	X	X	X	
	<i>Xenornis setifrons</i>	X	X		
FORMICARIIDAE	<i>Formicarius analis</i>	X	X	X	X
	<i>Formicarius nigricapillus</i>	X	X		
	<i>Hylopezus perspicillatus</i>	X	X	X	
	<i>Pittasoma michleri</i>			X	
TYRANNIDAE	<i>Attila spadiceus</i>	X	X	X	X
	<i>Camptostoma obsoletum</i>	X	X	X	X
	<i>Capsiempis flaveola</i>	X	X	X	X
	<i>Cnipodectes subbrunneus</i>			X	X
	<i>Colonia colonus</i>	X	X	X	X
	<i>Conopias albovittata</i>	X	X	X	
	<i>Contopus borealis</i>	X	X	X	
	<i>Contopus cinereus</i>	X	X	X	X
	<i>Contopus sordidulus</i>			X	
	<i>Contopus virens</i>	X	X	X	X
	<i>Elaenia chiriquensis</i>	X	X	X	X
	<i>Elaenia flavogaster</i>	X	X	X	X
	<i>Elaenia frantzii</i>				X
	<i>Empidonax alnorum</i>			X	
	<i>Empidonax flaviventris</i>			X	
	<i>Empidonax traillii</i>				X
	<i>Empidonax virescens</i>	X	X	X	X
	<i>Laniocera rufescens</i>		X	X	
	<i>Legatus leucophaeus</i>	X	X	X	
	<i>Lipaugus unirufus</i>	X	X	X	
	<i>Lophotriccus pilaris</i>	X	X		
	<i>Lophotriccus pileatus</i>	X	X		X
	<i>Megarhynchus pitanga</i>	X	X	X	
	<i>Mionectes oleagineus</i>	X	X	X	X
	<i>Mionectes olivaceus</i>	X	X	X	X
	<i>Myiarchus crinitus</i>	X	X	X	X
	<i>Myiarchus panamensis</i>	X	X	X	X
	<i>Myiarchus tuberculifer</i>	X	X	X	X
	<i>Myiobius atricaudus</i>	X	X	X	X
	<i>Myiobius barbatus</i>	X	X		
	<i>Myiobius sulphureipygius</i>			X	
	<i>Myiodynastes luteiventris</i>	X	X	X	
	<i>Myiodynastes maculatus</i>	X	X	X	X
	<i>Myiopagis caniceps</i>			X	

TAXON	Catchment Area of Alhajuela Lake			Indio River
	Upper	Middle	Lower	
			X	
<i>Myiopagis gaimardii</i>			X	
<i>Myiopagis viridicata</i>	X	X	X	
<i>Myiophobus fasciatus</i>	X	X	X	
<i>Myiornis atricapillus</i>			X	
<i>Myiozetetes cayanensis</i>	X	X	X	X
<i>Myiozetetes granadensis</i>	X	X	X	
<i>Myiozetetes similis</i>	X	X	X	X
<i>Oncostoma olivaceum</i>	X	X	X	X
<i>Onychorhynchus coronatus</i>	X	X	X	X
<i>Ornithion brunneicapillum</i>	X	X	X	X
<i>Pachyramphus cinnamomeus</i>	X	X	X	X
<i>Pachyramphus polychopterus</i>	X	X	X	X
<i>Pachyramphus rufus</i>	X	X		
<i>Phaeomyias murina</i>		X		
<i>Phylloscartes flavovirens</i>	X	X	X	
<i>Phylloscartes superciliaris</i>		X		
<i>Pitangus lictor</i>	X	X	X	
<i>Pitangus sulphuratus</i>	X	X	X	X
<i>Platyrinchus coronatus</i>	X	X	X	
<i>Platyrinchus mystaceus</i>	X	X		X
<i>Poecilotriccus sylvia</i>		X	X	
<i>Rhynchocyclus olivaceus</i>	X	X	X	X
<i>Rhytipterna holerythra</i>	X	X	X	
<i>Sapayoa aenigma</i>		X	X	
<i>Sayornis nigricans</i>		X		
<i>Schiffornis turdinus</i>	X	X	X	X
<i>Sirystes sibilator</i>			X	
<i>Sublegatus arenarum</i>	X	X	X	
<i>Terenotriccus erythrurus</i>	X	X	X	X
<i>Tityra inquisitor</i>	X	X	X	
<i>Tityra semifasciata</i>	X	X	X	X
<i>Todirostrum cinereum</i>	X	X	X	X
<i>Todirostrum nigriceps</i>	X	X		X
<i>Tolmomyias assimilis</i>	X	X	X	
<i>Tolmomyias sulphurescens</i>			X	
<i>Tyrannulus elatus</i>	X	X	X	X
<i>Tyrannus dominicensis</i>			X	
<i>Tyrannus melancholicus</i>	X	X	X	X
<i>Tyrannus savana</i>		X	X	
<i>Tyrannus tyrannus</i>			X	
<i>Zimmerius vilissimus</i>	X	X	X	X
COTINGIDAE				
<i>Cotinga nattererii</i>	X	X	X	
<i>Procnias tricarunculata</i>			X	
<i>Querula purpurata</i>	X	X	X	X
PIPRIDAE				
<i>Chiroxiphia lanceolata</i>	X	X	X	
<i>Chloropipo holochroa</i>	X	X		
<i>Corapipo altera</i>	X	X		X
<i>Manacus vitellinus</i>	X	X	X	X
<i>Pipra coronata</i>	X	X	X	
<i>Pipra mentalis</i>	X	X	X	X
HIRUNDINIDAE				
<i>Hirundo pyrrhonota</i>	X	X	X	
<i>Hirundo rustica</i>	X	X	X	X
<i>Neochelidon tibialis</i>	X	X	X	X
<i>Progne chalybea</i>	X	X	X	

TAXON	Catchment Area of Alhajuela Lake			Indio River
	Upper	Middle	Lower	
	<i>Progne subis</i>			X
	<i>Progne tapera</i>			X
	<i>Pygochelidon cyanoleuca</i>			X
	<i>Riparia riparia</i>			X
	<i>Stelgidopteryx ruficollis</i>	X	X	X
	<i>Tachycineta albilineata</i>	X	X	X
	<i>Tachycineta bicolor</i>			X
CORVIDAE	<i>Cyanocorax affinis</i>	X	X	X
TROGLODYTIDAE	<i>Campylorhynchus albobrunneus</i>			X
	<i>Cyphorhinus phaeocephala</i>	X	X	X
	<i>Henicorhina leucophrys</i>	X	X	X
	<i>Henicorhina leucosticta</i>	X	X	X
	<i>Microcerculus marginatus</i>	X	X	X
	<i>Thryothorus fasciatoventris</i>	X	X	X
	<i>Thryothorus leucotis</i>	X	X	X
	<i>Thryothorus modestus</i>	X	X	X
	<i>Thryothorus nigricapillus</i>	X	X	X
	<i>Thryothorus rufalbus</i>	X	X	X
	<i>Thryothorus rutilus</i>	X	X	X
	<i>Troglodytes aedon</i>	X	X	X
SYLVIIDAE	<i>Microbates cinereiventris</i>	X	X	X
	<i>Polioptila plumbea</i>	X	X	X
	<i>Polioptila schistaceigula</i>		X	
	<i>Ramphocaenus melanurus</i>	X	X	X
TURDIDAE	<i>Catharus aurantiirostris</i>			X
	<i>Catharus fuscater</i>	X	X	
	<i>Catharus fuscescens</i>			X
	<i>Catharus minimus</i>			X
	<i>Catharus ustulatus</i>		X	X
	<i>Hylocichla mustelina</i>			X
	<i>Turdus assimilis</i>			X
	<i>Turdus grayi</i>	X	X	X
	<i>Turdus obsoletus</i>	X	X	
MIMIDAE	<i>Dumetella carolinensis</i>			X
	<i>Mimus gilvus</i>		X	X
VIREONIDAE	<i>Cyclarhis gujanensis</i>			X
	<i>Hylophilus aurantiifrons</i>	X	X	X
	<i>Hylophilus decurtatus</i>		X	X
	<i>Hylophilus flavipes</i>	X	X	X
	<i>Hylophilus ochraceiceps</i>	X	X	X
	<i>Vireo flavifrons</i>	X	X	X
	<i>Vireo flavoviridis</i>	X	X	X
	<i>Vireo olivaceus</i>	X	X	X
	<i>Vireolanius pulchellus</i>		X	X
PARULIDAE	<i>Basileuterus rufifrons</i>	X	X	X
	<i>Basileuterus tristriatus</i>	X	X	
	<i>Dendroica castanea</i>	X	X	X
	<i>Dendroica cerulea</i>			X
	<i>Dendroica fusca</i>		X	X
	<i>Dendroica magnolia</i>			X

TAXON	Catchment Area of Alhajuela Lake			Indio River	
	Upper	Middle	Lower		
	<i>Dendroica pensylvanica</i>	X	X	X	X
	<i>Dendroica petechia</i>	X	X	X	X
	<i>Dendroica striata</i>			X	
	<i>Dendroica tigrina</i>			X	
	<i>Dendroica virens</i>			X	
	<i>Geothlypis trichas</i>			X	X
	<i>Helmitheros vermivorus</i>			X	
	<i>Mniotilta varia</i>	X	X	X	X
	<i>Myioborus miniatus</i>	X	X		
	<i>Oporornis formosus</i>			X	X
	<i>Oporornis philadelphia</i>	X	X	X	X
	<i>Phaeothlypis fulvicauda</i>	X	X	X	X
	<i>Protonotaria citrea</i>	X	X	X	X
	<i>Seiurus aurocapillus</i>			X	
	<i>Seiurus motacilla</i>			X	X
	<i>Seiurus noveboracensis</i>	X	X	X	X
	<i>Setophaga ruticilla</i>	X	X	X	
	<i>Vermivora chrysoptera</i>	X	X	X	X
	<i>Vermivora peregrina</i>	X	X	X	X
	<i>Vermivora pinus</i>			X	
	<i>Wilsonia canadensis</i>		X	X	
	<i>Wilsonia citrina</i>			X	
COEREBIDAE	<i>Coereba flaveola</i>	X	X	X	X
THRAUPIDAE	<i>Bangsia arcaei</i>	X	X		
	<i>Chlorophanes spiza</i>	X	X	X	X
	<i>Chlorospingus flavigularis</i>	X	X		
	<i>Chlorospingus tacarcunae</i>	X	X		
	<i>Chlorothraupis carmioli</i>	X	X	X	
	<i>Chrysothlypis chrysomelaena</i>		X		
	<i>Cyanerpes cyaneus</i>	X	X	X	X
	<i>Cyanerpes lucidus</i>	X	X	X	
	<i>Dacnis cayana</i>	X	X	X	X
	<i>Dacnis venusta</i>	X	X	X	X
	<i>Eucometis penicillata</i>			X	
	<i>Euphonia annae</i>	X	X		X
	<i>Euphonia fulvicrissa</i>	X	X	X	
	<i>Euphonia lanirostris</i>	X	X	X	X
	<i>Euphonia luteicapilla</i>	X	X	X	X
	<i>Euphonia minuta</i>			X	
	<i>Habia fuscicauda</i>	X	X	X	X
	<i>Habia rubica</i>				X
	<i>Heterospingus rubrifrons</i>	X		X	
	<i>Mitrospingus cassinii</i>	X	X	X	X
	<i>Piranga flava</i>		X		X
	<i>Piranga olivacea</i>	X	X	X	
	<i>Piranga rubra</i>	X	X	X	X
	<i>Ramphocelus dimidiatus</i>	X	X	X	X
	<i>Ramphocelus flammigerus</i>	X	X	X	X
	<i>Rhodinocichla rosea</i>	X	X	X	
	<i>Tachyphonus delatrii</i>	X		X	X
	<i>Tachyphonus luctuosus</i>	X	X	X	X
	<i>Tachyphonus rufus</i>	X	X	X	
	<i>Tangara florida</i>	X	X		X
	<i>Tangara guttata</i>		X		
	<i>Tangara gyrola</i>		X	X	X

TAXON		Catchment Area of Alhajuella Lake			Indio River
		Upper	Middle	Lower	
	<i>Tangara icterocephala</i>	X	X		X
	<i>Tangara inornata</i>	X	X	X	X
	<i>Tangara larvata</i>	X	X	X	X
	<i>Tangara lavinia</i>		X		
	<i>Thraupis episcopus</i>	X	X	X	X
	<i>Thraupis palmeri</i>	X	X	X	X
EMBEREZIDAE	<i>Arremon aurantirostris</i>	X		X	X
	<i>Arremonops conirostris</i>	X	X	X	X
	<i>Atlapetes atricapillus</i>	X	X		
	<i>Buarremon brunneinucha</i>				X
	<i>Oryzoborus angolensis</i>	X	X		
	<i>Oryzoborus funereus</i>			X	X
	<i>Sporophila americana</i>	X	X	X	X
	<i>Sporophila minuta</i>	X	X	X	
	<i>Sporophila nigricollis</i>	X	X	X	X
	<i>Sporophila schistacea</i>			X	
	<i>Tiaris olivacea</i>	X	X		X
	<i>Volatinia jacarina</i>	X	X	X	X
CARDINALIDAE	<i>Cyanocompsa cyanoides</i>	X	X	X	X
	<i>Passerina cyanea</i>			X	
	<i>Pheucticus ludovicianus</i>			X	
	<i>Saltator albicollis</i>	X	X	X	X
	<i>Saltator atriceps</i>	X	X	X	X
	<i>Saltator grossus</i>	X	X	X	
	<i>Saltator maximus</i>	X	X	X	X
	<i>Saltator striatipectus</i>				X
	<i>Spiza americana</i>			X	
ICTERIDAE	<i>Amblycercus holosericeus</i>	X	X	X	X
	<i>Cacicus cela</i>	X	X	X	X
	<i>Cacicus uropygialis</i>	X	X	X	X
	<i>Dolichonyx oryzivorus</i>			X	
	<i>Icterus chrysater</i>	X	X	X	X
	<i>Icterus galbula</i>	X	X	X	X
	<i>Icterus mesomelas</i>	X	X	X	
	<i>Icterus spurius</i>		X	X	X
	<i>Molothrus aeneus</i>		X		
	<i>Molothrus oryzivorus</i>	X	X	X	X
	<i>Psarocolius decumanus</i>	X	X	X	
	<i>Psarocolius wagleri</i>	X	X	X	X
	<i>Quiscalus mexicanus</i>	X	X	X	
	<i>Sturnella magna</i>	X	X		
	<i>Sturnella militaris</i>	X	X		
FRINGILLIDAE	<i>Carduelis psaltria</i>		X		
Total	species for Alhajuella = 519	340	375	443	235

Source: Karr 1990; Tejera et al. 1995; Aparacio 1997bc; Jimenez 1997ab.

Table A4.3-7 Ecological characteristics and State of Conservation of the Species of Birds of the Catchment Area of Alhajueta Lake.

KEY: State of conservation: ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; EX=Exotic; M=migratory; I, II=CITES; AU=Threatened according to the UICN. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Fru=frugivore; Car=canivore; Ins=insectivore; Nec=nectarivore; Ca=carion eating; Pis=piscivore; Her=herbivore. Behavior: T=terrestrial, SA=semiaquatic; Ar=arboreal or shrubby

TAXON		Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS								
	ORDER TINAMIFORMES							
	FAMILY TINAMIDAE							
	<i>Tinamus major</i>	Fru	D	T				
	<i>Crypturellus soui</i>	Fru	D	T				
	ORDER PODICIPEDIFORMES							
	FAMILY PODICIPEDIDAE							
	<i>Podilymbus podiceps</i>	Pis	D	SA				
	<i>Tachybaptus dominicus</i>	Pis	D	SA				
	ORDER PELECANIFORMES							
	FAMILY SULIDAE							
	<i>Sula leucogaster</i>	Pis	D	SA				
	FAMILY PELECANIDAE							
	<i>Pelecanus occidentalis</i>	Pis	D	SA				
	FAMILY PHALACROCORACIDAE							
	<i>Phalacrocorax brasilianus</i>	Pis	D	SA				
	FAMILY ANHINGIDAE							
	<i>Anhinga anhinga</i>	Pis	D	SA				
	FAMILY FREGATIDAE							
	<i>Fregata magnificens</i>	Pis	D	SA				
	ORDER CICONIIFORMES							
	FAMILY ARDEIDAE							
	<i>Agamia agami</i>	Pis	D	SA				
	<i>Ardea alba</i>	Pis	D	SA				
	<i>Ardea cocoi</i>	Pis	D	SA				M
	<i>Ardea herodias</i>	Pis	D	SA				
	<i>Bubulcus ibis</i>	Pis/Ins	D	SA	EX			
	<i>Butorides siriatius</i>	Pis	D	SA				
	<i>Casmerodius albus</i>	Pis	D	SA				
	<i>Cochlearius cochlearius</i>	Pis	D	SA				
	<i>Egretta caerulea</i>	Pis	D	SA				
	<i>Egretta thula</i>	Pis	D	SA				
	<i>Egretta tricolor</i>	Pis	D	SA				
	<i>Ixobrychus exilis</i>	Pis	D	SA				
	<i>Nyctanassa violacea</i>	Pis	D	SA				
	<i>Nycticorax nycticorax</i>	Pis	D	SA				
	<i>Tigrisoma fasciatum</i>	Pis	D	SA				
	<i>Tigrisoma lineatum</i>	Pis	D	SA				
	FAMILY THRESKIORNITHIDAE							
	<i>Mesembrinibis cayennensis</i>	Pis	D	SA				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
	<i>Pandion haliaetus</i>	Car	D				
	<i>Spizaetus ornatus</i>	Car	D			II	M
	<i>Spizaetus tyrannus</i>	Car	D			II	
	FAMILIA FALCONIDAE						
	<i>Caracara cheriway</i>	Car	D				
	<i>Falco femoralis</i>	Car	D	T		II	
	<i>Falco peregrinus</i>	Car	D	T		I	M
	<i>Falco rufigularis</i>	Car	D			II	
	<i>Falco sparverius</i>	Car	D			II	M
	<i>Herpetotheres cachinnans</i>	Car	D			II	
	<i>Ibyciter americanus</i>	Car	D	T		II	
	<i>Micrastur mirandollei</i>	Car	D	T		II	
	<i>Micrastur ruficollis</i>	Car	D			II	
	<i>Micrastur semitorquatus</i>	Car	D			II	
	<i>Mivago chimachima</i>	Car	D			II	
	ORDER GALLIFORMES						
	FAMILY CRACIDAE						
	<i>Crax rubra</i>	Fru	D				
	<i>Ortalis cinericeps</i>	Fru	D	T			
	<i>Penelope purpurascens</i>	Fru	D	T			
	FAMILY ODONTOPHORIDAE						
	<i>Odoniophorus melanotis</i>	Fru	D	T			
	<i>Odoniophorus gujanensis</i>	Fru	D	T			
	<i>Rhynchortyx cinctus</i>	Fru	D	T			
	ORDER GRUIFORMES						
	FAMILY RALLIDAE						
	<i>Aramides axillaris</i>	Pis/Fru	D				
	<i>Aramides cajanea</i>	Pis/Fru	D	T			
	<i>Fulica americana</i>	Pis/Fru	D				
	<i>Gallinula chloropus</i>	Pis/Fru	D				M
	<i>Laterallus albigularis</i>	Pis/Fru	D				
	<i>Porphyryula martinica</i>	Pis/Fru	D				
	<i>Porzana flaviventer</i>	Pis/Fru	D				
	FAMILY HELIORNITHIDAE						
	<i>Helionis fuitca</i>	Pis	D				
	FAMILY EURYPYGIDAE						
	<i>Eurypyga helias</i>	Pis	D				
	ORDER CHARADRIIFORMES						
	FAMILY CHARADRIIDAE						
	<i>Charadrius collaris</i>	Car	D				
	<i>Vanellus chilensis</i>	Car	D				
	FAMILY JACANIDAE						
	<i>Jacana spinosa</i>	Car	D				
	<i>Jacana jacana</i>	Car	D				
	FAMILY SCOLOPACIDAE						
	<i>Actitis macularia</i>	Car	D				M

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
<i>Arenaria interpres</i>	Car	D	SA				M
<i>Gallinago gallinago</i>	Car	D	SA				M
<i>Tringa flavipes</i>	Car	D	SA				M
<i>Tringa solitaria</i>	Car	D	SA				M
FAMILY LARIDAE							
<i>Anous stolidus</i>	Pis	D	SA	T			
<i>Chlidonias niger</i>	Pis	D	SA				
<i>Larus argentatus</i>	Pis	D	SA				M
<i>Larus atricilla</i>	Pis	D	SA				M
<i>Larus delawarensis</i>	Pis	D	SA				M
<i>Larus pipixcan</i>	Pis	D	SA				M
<i>Stercorarius parasiticus</i>	Pis	D	SA				M
<i>Sterna albifrons</i>	Pis	D	SA				
<i>Sterna fuscata</i>	Pis	D	SA	T			
<i>Sterna hirundo</i>	Pis	D	SA				M
<i>Sterna maxima</i>	Pis	D	SA				M
<i>Sterna nilotica</i>	Pis	D	SA				M
<i>Sterna sandvicensis</i>	Pis	D	SA				M
ORDER COLUMBIFORMES							
FAMILY COLUMBIDAE							
<i>Claravis pretiosa</i>	Fru	D	T/Ar				
<i>Columba cayennensis</i>	Fru	D	T/Ar				
<i>Columba nigrirostris</i>	Fru	D	T/Ar				
<i>Columba speciosa</i>	Fru	D	T/Ar				
<i>Columbina minuta</i>	Fru	D	T/Ar				
<i>Columbina talpacoti</i>	Fru	D	T/Ar				
<i>Geotrygon goldmani</i>	Fru	D	T	T, ER	AU		
<i>Geotrygon lawrencii</i>	Fru	D	T	T, ER			
<i>Geotrygon montana</i>	Fru	D	T				
<i>Geotrygon veraguensis</i>	Fru	D	T				
<i>Geotrygon violacea</i>	Fru	D	T	T			
<i>Leptotila cassinii</i>	Fru	D	T/Ar				
<i>Leptotila verreauxi</i>	Fru	D	T/Ar				
ORDER PSITTACIFORMES							
FAMILY PSITTACIDAE							
<i>Amazona autumnalis</i>	Fru	D	Ar			II	
<i>Amazona farinosa</i>	Fru	D	Ar			II	
<i>Amazona onchrocephala</i>	Fru	D	Ar	T		II	
<i>Ara ambigua</i>	Fru	D	Ar	T	AU	I	
<i>Ara chloropterus</i>	Fru	D	Ar	T		II	
<i>Ara macao</i>	Fru	D	Ar	T		I	
<i>Ara severa</i>	Fru	D	Ar	T		II	
<i>Brotogeris jugularis</i>	Fru	D	Ar			II	
<i>Pionopsitta haematotis</i>	Fru	D	Ar			II	
<i>Pionus menstruus</i>	Fru	D	Ar			II	
<i>Touit dilectissima</i>	Fru	D	Ar	T		II	

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
ORDER CUCULIFORMES							
FAMILY CUCULIDAE							
<i>Coccyzus americanus</i>	Fru/Ins	D	T/Ar				
<i>Coccyzus erythrophthalmus</i>	Fru/Ins	D	T/Ar				
<i>Crotophaga ani</i>	Fru/Ins	D	T/Ar				
<i>Crotophaga major</i>	Fru/Ins	D	T/Ar				
<i>Dromococcyx phasianellus</i>	Fru/Ins	D	T/Ar				
<i>Neonorphus geoffroyi</i>	Fru/Ins	D	T/Ar				
<i>Platya cayana</i>	Fru/Ins	D	T/Ar				
<i>Platya minuta</i>	Fru/Ins	D	T/Ar				
<i>Tapera naevia</i>	Fru/Ins	D	T/Ar				
ORDER STRIGIFORMES							
FAMILY TYTONIDAE							
<i>Tyto alba</i>	Car	N	T/Ar			II	
FAMILY STRIGIDAE							
<i>Ciccaba nigrolineata</i>	Car	N	T/Ar				
<i>Ciccaba virgata</i>	Car	N	T/Ar				
<i>Glaucidium minutissimum</i>	Car	N	T/Ar			II	
<i>Lophostrix cristata</i>	Car	N	T/Ar			II	
<i>Otus choliba</i>	Car	N	T/Ar			II	
<i>Otus guatemalae</i>	Car	N	T/Ar				
<i>Pseudoscops clamator</i>	Car	N	T/Ar				
<i>Pulsatrix perspicillata</i>	Car	N	T/Ar			II	
ORDER CAPRIMULGIFORMES							
FAMILY CAPRIMULGIDAE							
<i>Caprimulgus carolenensis</i>	Ins	N	T/Ar				
<i>Caprimulgus rufus</i>	Ins	N	T/Ar				
<i>Chordeiles acutipennis</i>	Ins	N	T/Ar				
<i>Chordeiles minor</i>	Ins	N	T/Ar				
<i>Lurocalis semitorquatus</i>	Ins	N	T/Ar				
<i>Nyctidromus albicollis</i>	Ins	N	T/Ar				
FAMILY NYCTIBIIDAE							
<i>Nyctibius grandis</i>	Ins	N	T/Ar				
<i>Nyctibius griseus</i>	Ins	N	T/Ar				
FAMILY STEATORNITHIDAE							
<i>Steatornis caripensis</i>	Fru	N	T/Ar	T			
ORDER APODIFORMES							
FAMILY APODIDAE							
<i>Chaetura brachyura</i>	Ins	D	T/Ar				
<i>Chaetura pelagica</i>	Ins	D	T/Ar				
<i>Chaetura spinicauda</i>	Ins	D	T/Ar				
<i>Chaetura vauxi</i>	Ins	D	T/Ar				
<i>Panyptila cayennensis</i>	Ins	D	T/Ar				
<i>Sireptoprocne zonaris</i>	Ins	D	T/Ar				
FAMILY TROCHILIDAE							
<i>Amazilia amabilis</i>	Nec	D	Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
<i>Amazilia edward</i>	Nec	D	Ar	T			
<i>Amazilia tzacatl</i>	Nec	D	Ar			II	
<i>Anthracoceros nigricollis</i>	Nec	D	Ar			II	
<i>Anthracoceros prevostii</i>	Nec	D	Ar	T		II	
<i>Chalybura buffonii</i>	Nec	D	Ar			II	
<i>Chalybura urochrysa</i>	Nec	D	Ar			II	
<i>Chlorostilbon assimilis</i>	Nec	D	Ar	T			
<i>Damophila julie</i>	Nec	D	Ar			II	
<i>Eutoxeres aquila</i>	Nec	D	Ar			II	
<i>Florisuga mellivora</i>	Nec	D	Ar			II	
<i>Glaucid aenea</i>	Nec	D	Ar			II	
<i>Glaucid hirsuta</i>	Nec	D	Ar			II	
<i>Goldmania violiceps</i>	Nec	D	Ar	T		II	
<i>Heliodoxa jacula</i>	Nec	D	Ar			II	
<i>Heliothryx longirostris</i>	Nec	D	Ar			II	
<i>Heliothryx barrotoi</i>	Nec	D	Ar			II	
<i>Klais guimeti</i>	Nec	D	Ar			II	
<i>Lepidopygia coeruleogularis</i>	Nec	D	Ar	T		II	
<i>Lophornis delattrei</i>	Nec	D	Ar				
<i>Phaeochroa cuvierii</i>	Nec	D	Ar				
<i>Phaethornis guy</i>	Nec	D	Ar			II	
<i>Phaethornis longuemareus</i>	Nec	D	Ar				
<i>Phaethornis superciliosus</i>	Nec	D	Ar				
<i>Thalurania colombica</i>	Nec	D	Ar			II	
<i>Threnetes ruckeri</i>	Nec	D	Ar			II	
ORDER TROGONIFORMES							
FAMILY TROGONIDAE							
<i>Trogon massena</i>	Fru/Ins	D	Ar				
<i>Trogon melanurus</i>	Fru/Ins	D	Ar				
<i>Trogon rufus</i>	Fru/Ins	D	Ar				
<i>Trogon violaceus</i>	Fru/Ins	D	Ar				
<i>Trogon viridis</i>	Fru/Ins	D	Ar				
ORDER CORACIIFORMES							
FAMILY MOMOTIDAE							
<i>Baryphthengus martii</i>	Ins	D	T/Ar				
<i>Electron platyrhynchum</i>	Ins	D	T/Ar				
<i>Momotus momota</i>	Ins	D	T/Ar				
FAMILY ALCEDINIDAE							
<i>Ceryle alcyon</i>	Pis	D	SA				
<i>Ceryle torquata</i>	Pis	D	SA				
<i>Chloroceryle aenea</i>	Pis	D	SA				
<i>Chloroceryle amazona</i>	Pis	D	SA				
<i>Chloroceryle americana</i>	Pis	D	SA				
<i>Chloroceryle inda</i>	Pis	D	SA				
ORDER PICIFORMES							
FAMILY BUCCONIDAE							

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
	<i>Malacoptila panamensis</i>	D	T/Ar				
	<i>Monasa morphoeus</i>	D	T/Ar				
	<i>Nonnula ruficapilla</i>	D	T/Ar				
	<i>Notharchus macrorhynchus</i>	D	T/Ar				
	<i>Notharchus pectoralis</i>	D	T/Ar				
	<i>Notharchus tectus</i>	D	T/Ar				
	FAMILY GALBULIDAE						
	<i>Jacamerops aurea</i>	D	Ar				
	FAMILY RAMPHASTIDAE						
	<i>Aulacorhynchus prasinus</i>	D	Ar				
	<i>Capito maculicoronatus</i>	D	Ar	T			
	<i>Pteroglossus torquatus</i>	D	Ar				
	<i>Ramphastos sulfuratus</i>	D	Ar			II	
	<i>Ramphastos swainsonii</i>	D	Ar				
	<i>Selenidera spectabilis</i>	D	Ar				
	FAMILY PICIDAE						
	<i>Campephilus haematogaster</i>	D	Ar				
	<i>Campephilus melanoleucos</i>	D	Ar				
	<i>Celeus torquatus</i>	D	Ar				
	<i>Dryocopus lineatus</i>	D	Ar				
	<i>Melanerpes formicivorus</i>	D	Ar				
	<i>Melanerpes pucherani</i>	D	Ar				
	<i>Melanerpes rubricapillus</i>	D	Ar				
	<i>Picus colaptes</i>	D	Ar	T			
	<i>Picus chrysochloros</i>	D	Ar				
	<i>Picumnus olivaceus</i>	D	Ar				
	ORDER PASSERIFORMES						
	FAMILY FURNARIIDAE						
	<i>Automolus ochrotaenus</i>	D	T/Ar				
	<i>Automolus rubiginosus</i>	D	T/Ar				
	<i>Cranioleuca erythrops</i>	D	T/Ar				
	<i>Hylocistes subulatus</i>	D	T/Ar				
	<i>Phylidor fuscipennis</i>	D	T/Ar				
	<i>Phylidor rufus</i>	D	T/Ar				
	<i>Premnoplex brunnescens</i>	D	T/Ar				
	<i>Sclerurus guatemalensis</i>	D	T/Ar				
	<i>Sclerurus mexicanus</i>	D	T/Ar				
	<i>Synallaxis albescens</i>	D	T/Ar				
	<i>Synallaxis brachyura</i>	D	T/Ar				
	<i>Syndactyla subularis</i>	D	T/Ar				
	<i>Xenops minutus</i>	D	T/Ar				
	FAMILY DENDROCOLAPTIDAE						
	<i>Campylorhamphus pusillus</i>	D	Ar				
	<i>Campylorhamphus trochilirostris</i>	D	Ar				
	<i>Deonychura longicauda</i>	D	Ar				
	<i>Dendrocincla fuliginosa</i>	D	Ar				

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS									
	<i>Dendrocincla homochroa</i>		Ins	D	Ar				
	<i>Dendrocolaptes sanctithomae</i>		Ins	D	Ar				
	<i>Glyphorhynchus spirurus</i>		Ins	D	Ar				
	<i>Lepidocolaptes affinis</i>		Ins	D	Ar				
	<i>Lepidocolaptes souleyetii</i>		Ins	D	Ar				
	<i>Xiphorhynchus erythropygius</i>		Ins	D	Ar				
	<i>Xiphorhynchus lachrymosus</i>		Ins	D	Ar				
	<i>Xiphorhynchus susurrans</i>		Ins	D	Ar				
	FAMILY THAMNOPHILIDAE								
	<i>Cercomacra tyrannina</i>		Ins	D	T/Ar				
	<i>Cymbilaimus lineatus</i>		Ins	D	T/Ar				
	<i>Dysithamnus mentalis</i>		Ins	D	T/Ar				
	<i>Dysithamnus puncticeps</i>		Ins	D	T/Ar				
	<i>Gymnocichla nudiceps</i>		Ins	D	T/Ar				
	<i>Gymnophaps leucaspis</i>		Ins	D	T/Ar				
	<i>Hylophylax naevioides</i>		Ins	D	T/Ar				
	<i>Microrhoptias quixensis</i>		Ins	D	T/Ar				
	<i>Myrmeciza exsul</i>		Ins	D	T/Ar				
	<i>Myrmeciza laenostiota</i>		Ins	D	T/Ar				
	<i>Myrmeciza longipes</i>		Ins	D	T/Ar				
	<i>Myrmornis torquata</i>		Ins	D	T/Ar				
	<i>Myrmotherula axillaris</i>		Ins	D	T/Ar				
	<i>Myrmotherula brachyura</i>		Ins	D	T/Ar				
	<i>Myrmotherula fulviventris</i>		Ins	D	T/Ar				
	<i>Myrmotherula schisticolor</i>		Ins	D	T/Ar				
	<i>Myrmotherula surinamensis</i>		Ins	D	T/Ar				
	<i>Phaenostictus nicleannani</i>		Ins	D	T/Ar				
	<i>Taraba major</i>		Ins	D	T/Ar				
	<i>Thannistes anabatinus</i>		Ins	D	T/Ar				
	<i>Thamnophilus doliatus</i>		Ins	D	T/Ar				
	<i>Thamnophilus punctatus</i>		Ins	D	T/Ar				
	<i>Xenornis setifrons</i>		Ins	D	T/Ar	T	AU		
	FAMILY FORMICARIIDAE								
	<i>Formicarius analis</i>		Ins	D	T/Ar				
	<i>Formicarius nigricapillus</i>		Ins	D	T/Ar				
	<i>Hylopezus perspicillatus</i>		Ins	D	T/Ar				
	<i>Pittasoma michleri</i>		Ins	D	T/Ar				
	FAMILY TYRANNIDAE								
	<i>Attila spadiceus</i>		Ins	D	Ar				
	<i>Campyostoma obsoletum</i>		Ins	D	Ar				
	<i>Capsiempis flaveola</i>		Ins	D	Ar				
	<i>Cnipodectes subbrunneus</i>		Ins	D	Ar				
	<i>Colonia colonus</i>		Ins	D	Ar				
	<i>Conopias albivittata</i>		Ins	D	Ar				
	<i>Contopus borealis</i>		Ins	D	Ar				
	<i>Contopus cinereus</i>		Ins	D	Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
	<i>Contopus sordidulus</i>	Ins	D	Ar			
	<i>Contopus virens</i>	Ins	D	Ar			
	<i>Elaenia chiriquensis</i>	Ins	D	Ar			
	<i>Elaenia flavogaster</i>	Ins	D	Ar			
	<i>Empidonax alnorumi</i>	Ins	D	Ar			
	<i>Empidonax flaviventris</i>	Ins	D	Ar			
	<i>Empidonax virescens</i>	Ins	D	Ar			
	<i>Laniocera rufescens</i>	Ins	D	Ar			
	<i>Legatus leucophaeus</i>	Ins	D	Ar			
	<i>Lipaugus unirufus</i>	Ins	D	Ar			
	<i>Lophotriccus pilaris</i>	Ins	D	Ar			
	<i>Lophotriccus pileatus</i>	Ins	D	Ar			
	<i>Megarhynchus pitanga</i>	Ins	D	Ar			
	<i>Mionectes oleagineus</i>	Ins	D	Ar			
	<i>Mionectes olivaceus</i>	Ins	D	Ar			
	<i>Myiarchus crinitus</i>	Ins	D	Ar			
	<i>Myiarchus panamensis</i>	Ins	D	Ar			
	<i>Myiarchus tuberculifer</i>	Ins	D	Ar			
	<i>Myiobius atricaudus</i>	Ins	D	Ar			
	<i>Myiobius barbatus</i>	Ins	D	Ar			
	<i>Myiobius sulphureipygus</i>	Ins	D	Ar			
	<i>Myiodynastes luteiventris</i>	Ins	D	Ar			
	<i>Myiodynastes maculatus</i>	Ins	D	Ar			
	<i>Myiopagis caniceps</i>	Ins	D	Ar			
	<i>Myiopagis gaimardii</i>	Ins	D	Ar			
	<i>Myiopagis viridicata</i>	Ins	D	Ar			
	<i>Myiophobus fasciatus</i>	Ins	D	Ar			
	<i>Myiornis atricapillus</i>	Ins	D	Ar			
	<i>Myiozetetes cayanensis</i>	Ins	D	Ar			
	<i>Myiozetetes granadensis</i>	Ins	D	Ar			
	<i>Myiozetetes similis</i>	Ins	D	Ar			
	<i>Oncostoma olivaceum</i>	Ins	D	Ar			
	<i>Onychorhynchus coronatus</i>	Ins	D	Ar			
	<i>Ornithion brunneicapillum</i>	Ins	D	Ar			
	<i>Pachyramphus cinnamomeus</i>	Ins	D	Ar			
	<i>Pachyramphus polychopterus</i>	Ins	D	Ar			
	<i>Pachyramphus rufus</i>	Ins	D	Ar			
	<i>Phaeomyias murina</i>	Ins	D	Ar			
	<i>Phylloscartes flavovirens</i>	Ins	D	Ar			
	<i>Phylloscartes superciliosus</i>	Ins	D	Ar			
	<i>Pitangus lictor</i>	Ins	D	Ar			
	<i>Pitangus sulphuratus</i>	Ins	D	Ar			
	<i>Platyrinchus coronatus</i>	Ins	D	Ar			
	<i>Platyrinchus mystaceus</i>	Ins	D	Ar			
	<i>Poecilotriccus sylvia</i>	Ins	D	Ar			
	<i>Rhynchocyclus olivaceus</i>	Ins	D	Ar			

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory	
CLASS BIRDS										
	<i>Rhytipterna holerythra</i>		Ins	D	Ar					
	<i>Sapayoa aenigma</i>		Ins	D	Ar					
	<i>Sayornis nigricans</i>		Ins	D	Ar					
	<i>Schiffornis turdinus</i>		Ins	D	Ar					
	<i>Sirystes sibilator</i>		Ins	D	Ar					
	<i>Sublegatus arenarum</i>		Ins	D	Ar					
	<i>Terentotriccus erythrurus</i>		Ins	D	Ar					
	<i>Tityra inquisitor</i>		Fru/Ins	D	Ar					
	<i>Tityra semifasciata</i>		Fru/Ins	D	Ar					
	<i>Todirostrum cinereum</i>		Ins	D	Ar					
	<i>Todirostrum nigriceps</i>		Ins	D	Ar					
	<i>Tolmomyias assimilis</i>		Ins	D	Ar					
	<i>Tolmomyias sulphureus</i>		Ins	D	Ar					
	<i>Tyrannulus elatus</i>		Ins	D	Ar					
	<i>Tyrannus dominicensis</i>		Ins	D	Ar					
	<i>Tyrannus melancholicus</i>		Ins	D	Ar					
	<i>Tyrannus savana</i>		Ins	D	Ar					
	<i>Tyrannus tyrannus</i>		Ins	D	Ar					
	<i>Zimmerius vilissimus</i>		Ins	D	Ar					
	FAMILY COTINGIDAE									
	<i>Cotinga nattererii</i>		Fru	D	T/Ar					
	<i>Procnias tricarunculata</i>		Fru	D	T/Ar	T				
	<i>Querula purpurata</i>		Fru	D	T/Ar					
	FAMILY PIPRIDAE									
	<i>Chiroxiphia lanceolata</i>		Fru/Ins	D	T/Ar					
	<i>Chloropipo holochroa</i>		Fru	D	T/Ar					
	<i>Corapipo altera</i>		Fru	D	T/Ar					
	<i>Manacus vitellinus</i>		Fru	D	T/Ar					
	<i>Pipra coronata</i>		Fru	D	T/Ar					
	<i>Pipra mentalis</i>		Fru/Ins	D	T/Ar					
	FAMILY HIRUNDINIDAE									
	<i>Hirundo pyrrhonota</i>		Ins	D	SA					
	<i>Hirundo rustica</i>		Ins	D	SA					
	<i>Neochelidon tibialis</i>		Ins	D	SA					
	<i>Progne chalybea</i>		Ins	D	SA					
	<i>Progne subis</i>		Ins	D	SA					
	<i>Progne tapera</i>		Ins	D	SA					
	<i>Pygochelidon cyanoleuca</i>		Ins	D	SA					
	<i>Riparia riparia</i>		Ins	D	SA					
	<i>Stelgidopteryx ruficollis</i>		Ins	D	SA					
	<i>Stelgidopteryx serripennis</i>		Ins	D	SA					
	<i>Tachycineta albilineata</i>		Ins	D	SA					
	<i>Tachycineta bicolor</i>		Ins	D	SA					
	FAMILY CORVIDAE									
	<i>Cyanocorax affinis</i>		Fru/Ins	D	T/Ar					
	FAMILY TROGLODYTIDAE									

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
<i>Campylorhynchus albocinnereus</i>	Ins	D	T/Ar	T			
<i>Cyporhynchus phaeocephala</i>	Ins	D	T/Ar				
<i>Henicorhina leucophrys</i>	Ins	D	T/Ar				
<i>Henicorhina leucosticta</i>	Ins	D	T/Ar				
<i>Microcerculus marginatus</i>	Ins	D	T/Ar				
<i>Thryothorus fasciatoventris</i>	Ins	D	T/Ar				
<i>Thryothorus leucotis</i>	Ins	D	T/Ar				
<i>Thryothorus modestus</i>	Ins	D	T/Ar				
<i>Thryothorus nigricapillus</i>	Ins	D	T/Ar				
<i>Thryothorus rufalbus</i>	Ins	D	T/Ar				
<i>Thryothorus rutilus</i>	Ins	D	T/Ar				
<i>Troglodytes aedon</i>	Ins	D	T/Ar				
FAMILY SYLVIIDAE							
<i>Microbates cinereiventris</i>	Ins	D	Ar				
<i>Poliopitla plumbea</i>	Ins	D	Ar				
<i>Poliopitla schistaceigula</i>	Ins	D	Ar				
<i>Ramphocaeus melanurus</i>	Ins	D	Ar				
FAMILY TURDIDAE							
<i>Catharus fuscater</i>	Fru/Ins	D	T/Ar				
<i>Catharus fuscescens</i>	Fru/Ins	D	T/Ar				
<i>Catharus minimus</i>	Fru/Ins	D	T/Ar				
<i>Catharus ustulatus</i>	Fru/Ins	D	T/Ar				
<i>Hylocichla mustelina</i>	Fru/Ins	D	T/Ar				
<i>Turdus assimilis</i>	Fru/Ins	D	T/Ar				
<i>Turdus grayi</i>	Fru/Ins	D	T/Ar				
<i>Turdus obsoletus</i>	Fru/Ins	D	T/Ar				
FAMILY MIMIDAE							
<i>Dumetella carolinensis</i>	Fru	D					
<i>Mimus gilvus</i>	Fru	D					
FAMILY VIREONIDAE							
<i>Cyclarhis gujanensis</i>	Ins	D	T/Ar				
<i>Hylophilus aurantiifrons</i>	Ins	D	T/Ar				
<i>Hylophilus decurtatus</i>	Ins	D	T/Ar				
<i>Hylophilus flavipes</i>	Ins	D	T/Ar				
<i>Hylophilus ochraceiceps</i>	Ins	D	T/Ar				
<i>Vireo flavifrons</i>	Ins	D	T/Ar				
<i>Vireo flavoviridis</i>	Ins	D	T/Ar				
<i>Vireo olivaceus</i>	Ins	D	T/Ar				
<i>Vireolanus pulchellus</i>	Ins	D	T/Ar				
FAMILY PARULIDAE							
<i>Basileuterus rufifrons</i>	Ins	D	T/Ar				
<i>Basileuterus tristitatus</i>	Ins	D	T/Ar				
<i>Dendroica castanea</i>	Ins	D	T/Ar				
<i>Dendroica cerulea</i>	Ins	D	T/Ar				
<i>Dendroica fusca</i>	Ins	D	T/Ar				
<i>Dendroica magnolia</i>	Ins	D	T/Ar				

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
	<i>Dendroica pensylvanica</i>	Ins	D				
	<i>Dendroica petechia</i>	Ins	D				
	<i>Dendroica striata</i>	Ins	D				
	<i>Dendroica tigrina</i>	Ins	D				
	<i>Dendroica virens</i>	Ins	D				
	<i>Geothlypis trichas</i>	Ins	D				
	<i>Helmitheros vermivorus</i>	Ins	D				
	<i>Mniotilta varia</i>	Ins	D				
	<i>Myioborus miniatus</i>	Ins	D				
	<i>Oporornis formosus</i>	Ins	D				
	<i>Oporornis philadelphia</i>	Ins	D				
	<i>Phaeothlypis fulvicauda</i>	Ins	D				
	<i>Protonotaria citrea</i>	Ins	D				
	<i>Seiurus aurocapillus</i>	Ins	D				
	<i>Seiurus motacilla</i>	Ins	D				
	<i>Seiurus noveboracensis</i>	Ins	D				
	<i>Setophaga ruticilla</i>	Ins	D				
	<i>Vermivora chrysoptera</i>	Ins	D				
	<i>Vermivora peregrina</i>	Ins	D				
	<i>Vermivora pinus</i>	Ins	D				
	<i>Wilsonia canadensis</i>	Ins	D				
	<i>Wilsonia citrina</i>	Ins	D				
	FAMILY COEREBIDAE						
	<i>Coereba flaveola</i>	Ins/Nec	D				
	FAMILY THRAUPIDAE						
	<i>Bangsia arcaei</i>	Fru/Ins	D				
	<i>Chlorophanes spiza</i>	Fru/Ins	D				
	<i>Chlorospingus flavularis</i>	Fru/Ins	D				
	<i>Chlorospingus tacarcunae</i>	Fru/Ins	D				
	<i>Chlorothraupis carmioli</i>	Fru/Ins	D				
	<i>Chrysothlypis chrysomelaena</i>	Fru/Ins	D				
	<i>Cyanerpes cyaneus</i>	Fru/Ins	D				
	<i>Cyanerpes lucidus</i>	Fru/Ins	D				
	<i>Cyanerpes cayana</i>	Fru/Ins	D				
	<i>Dacnis venusta</i>	Fru/Ins	D				
	<i>Eucometis penicillata</i>	Fru/Ins	D				
	<i>Euphonia anneae</i>	Fru/Ins	D				
	<i>Euphonia fulvicrissa</i>	Fru/Ins	D				
	<i>Euphonia lanirostris</i>	Fru/Ins	D				
	<i>Euphonia luteicapilla</i>	Fru/Ins	D				
	<i>Euphonia minuta</i>	Fru/Ins	D				
	<i>Habia fuscicauda</i>	Fru/Ins	D				
	<i>Heterospingus rubrifrons</i>	Fru/Ins	D				
	<i>Mitrospingus cassinii</i>	Fru/Ins	D				
	<i>Piranga flava</i>	Fru/Ins	D				
	<i>Piranga olivacea</i>	Fru/Ins	D				

TAXON			Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory	
CLASS BIRDS										
	<i>Piranga rubra</i>		Fru/Ins	D	T/Ar					
	<i>Ramphocelus dimidiatus</i>		Fru/Ins	D	T/Ar					
	<i>Ramphocelus flammigerus</i>		Fru/Ins	D	T/Ar					
	<i>Rhodinocichla rosea</i>		Fru/Ins	D	T/Ar					
	<i>Tachyphonus delatrii</i>		Fru/Ins	D	T/Ar					
	<i>Tachyphonus luctuosus</i>		Fru/Ins	D	T/Ar					
	<i>Tachyphonus rufus</i>		Fru/Ins	D	T/Ar					
	<i>Tangara florida</i>		Fru/Ins	D	T/Ar					
	<i>Tangara guttata</i>		Fru/Ins	D	T/Ar					
	<i>Tangara gyrola</i>		Fru/Ins	D	T/Ar					
	<i>Tangara icterocephala</i>		Fru/Ins	D	T/Ar					
	<i>Tangara inornata</i>		Fru/Ins	D	T/Ar					
	<i>Tangara larvata</i>		Fru/Ins	D	T/Ar					
	<i>Tangara lavinia</i>		Fru/Ins	D	T/Ar					
	<i>Thraupis episcopus</i>		Fru/Ins	D	T/Ar					
	<i>Thraupis palmeri</i>		Fru/Ins	D	T/Ar	T				
	FAMILY EMBERIZIDAE									
	<i>Arremon aurantirostris</i>		Fru/Ins	D	T/Ar					
	<i>Arremonops conirostris</i>		Fru/Ins	D	T/Ar					
	<i>Atlapetes atricapillus</i>		Fru/Ins	D	T/Ar					
	<i>Oryzoborus angolensis</i>		Fru/Ins	D	T/Ar					
	<i>Oryzoborus funereus</i>		Fru/Ins	D	T/Ar					
	<i>Sporophila americana</i>		Fru/Ins	D	T/Ar					
	<i>Sporophila minuta</i>		Fru/Ins	D	T/Ar					
	<i>Sporophila nigricollis</i>		Fru/Ins	D	T/Ar					
	<i>Sporophila schistacea</i>		Fru/Ins	D	T/Ar					
	<i>Tiaris olivacea</i>		Fru/Ins	D	T/Ar					
	<i>Volatinia jacarina</i>		Fru/Ins	D	T/Ar					
	FAMILY CARDINALIDAE									
	<i>Cyanococcyz cyanoides</i>		Fru	D	T/Ar					
	<i>Passerina cyanea</i>		Fru	D	T/Ar					
	<i>Phenicicops ludovicianus</i>		Fru	D	T/Ar					
	<i>Saltator albicollis</i>		Fru	D	T/Ar					
	<i>Saltator atriceps</i>		Fru	D	T/Ar					
	<i>Saltator grossus</i>		Fru	D	T/Ar					
	<i>Saltator maximus</i>		Fru	D	T/Ar					
	<i>Spiza americana</i>		Fru	D	T/Ar					
	FAMILY ICTERIDAE									
	<i>Amblycercus holosericeus</i>		Fru/Ins	D	T/Ar					
	<i>Cacicus cela</i>		Fru/Ins	D	T/Ar					
	<i>Cacicus uropygialis</i>		Fru/Ins	D	T/Ar					
	<i>Dolichonyx oryzivorus</i>		Fru/Ins	D	T/Ar					
	<i>Icterus chrysater</i>		Fru/Ins	D	T/Ar					
	<i>Icterus galbula</i>		Fru/Ins	D	T/Ar					
	<i>Icterus mesomelas</i>		Fru/Ins	D	T/Ar					
	<i>Icterus spurius</i>		Fru/Ins	D	T/Ar					

TAXON	Nourishing Habit	Activity	Behavior	ANAM	UICN	CITES	Migratory
CLASS BIRDS							
	<i>Molothrus aeneus</i>	D	T/Ar				
	<i>Molothrus oryzivorus</i>	D	T/Ar				
	<i>Psarocolius decumanus</i>	D	T/Ar				
	<i>Psarocolius wagleri</i>	D	T/Ar				
	<i>Quiscalus mexicanus</i>	D	T/Ar				
	<i>Sturnella magna</i>	D	T/Ar				
	<i>Sturnella militaris</i>	D	T/Ar				
FAMILY FRINGILLIDAE							
	<i>Carduelis psaltria</i>	D	T/Ar	EX	7	73	27
			TOTAL	2ER, 49A	7	73	27

Source: Karr 1990; Ridgely y Gwynne 1993; Tejera et al. 1995; ANAM 2000; CITES 2003.

Table A4.3-8. Richness of Species of Reptiles and his Distribution in Three Sections (Upper, Middle and Lower) of the Catchment Area of the Alhajuela Lake, compared with the species of Indio River.

TAXON		Catchment Area of Alhajuela			Indio River
		Upper	Middle	Lower	
CLASS REPTILIA					
CROCODYLIA					
ALLIGATORIDAE	<i>Caiman crocodilus</i>			X	X
LACERTILIA					
CORYTOPHANIDAE	<i>Basiliscus basiliscus</i>	X	X	X	X
	<i>Corytophanes cristatus</i>		X	X	X
GEKKONIDAE	<i>Gonatode albogularis</i>			X	X
	<i>Hemidactylus frenatus</i>				X
	<i>Lepidoblepharis sanctaemartae</i>	X		X	
	<i>Lepidoblepharis xanthostigma</i>	X	X		X
	<i>Sphaerodactylus lineolatus</i>		X		X
	<i>Thecadactylus rapicauda</i>			X	
IGUANIDAE	<i>Iguana iguana</i>	X		X	X
GYMNOPHTHALMIDAE	<i>Echinosaura horrida</i>	X	X		X
	<i>Leposoma rugiceps</i>			X	
	<i>Leposoma southi</i>	X	X		X
	<i>Ptychoglossus festae</i>	X	X		
	<i>Ptychoglossus plicatus</i>	X	X		
POLYCHROTIDAE	<i>Anolis auratus</i>			X	X
	<i>Anolis capito</i>		X		X
	<i>Anolis chocorum</i>	X			
	<i>Anolis frenatus</i>	X	X		X
	<i>Anolis humilis</i>	X	X		X
	<i>Anolis limifrons</i>	X	X	X	X
	<i>Anolis lionotus</i>			X	X
	<i>Anolis pentaprion</i>			X	
	<i>Anolis poecilopus</i>	X	X		
	<i>Anolis sp.</i>			X	
	<i>Anolis sp. (grupo fuscoauratus)</i>	X			
	<i>Anolis sp. (grupo mirus)</i>	X			
	<i>Anolis tropidogaster</i>			X	
	<i>Anolis vittigerus</i>	X			X
SCINCIDAE	<i>Mabuya unimarginata</i>	X		X	X
TEIIDAE	<i>Ameiva ameiva</i>	X		X	X
	<i>Ameiva festiva</i>	X	X		X
	<i>Ameiva leptophrys</i>	X	X	X	X
SERPENTES					
COLUBRIDAE	<i>Chironius carinatus</i>	X			
	<i>Chironius grandisquamis</i>	X			
	<i>Clelia clelia</i>		X		
	<i>Coniophanes fissidens</i>		X		
	<i>Dendrophidion nuchalis</i>		X		
	<i>Dendrophidion vinitor</i>		X		

TAXON		Catchment Area of Alhajuela			Indio River
		Upper	Middle	Lower	
	<i>Dipsas articulata</i>	X			
	<i>Dryadophis melanolomus</i>	X			X
	<i>Enuluis flavitorques</i>		X		
	<i>Imantodes cenchoa</i>	X	X	X	X
	<i>Imantodes gemmistratus</i>			X	
	<i>Leptodeira annulata</i>			X	X
	<i>Leptodeira septentrionalis</i>	X	X		
	<i>Leptophis ahaetulla</i>			X	X
	<i>Leptophis depressirostris</i>	X			
	<i>Leptophis nebulosus</i>		X		
	<i>Liophis epinephelus</i>	X		X	
	<i>Oxybelis aeneus</i>	X			
	<i>Oxybelis brevirostris</i>	X	X		
	<i>Oxyrhopus petolarius</i>	X			
	<i>Pseutes poecilonotus</i>	X			
	<i>Rhadinaea sargenti</i>	X			
	<i>Sibon argus</i>	X			X
	<i>Spilotes pullatus</i>				X
	<i>Tantilla schistosa</i>		X		
	<i>Urotheca euryzona</i>	X			X
	<i>Urotheca fulviceps</i>				X
	<i>Xenodon rabdocephalus</i>	X			X
ELAPIDAE	<i>Micrurus mipartitus</i>				X
	<i>Micrurus multifasciatus</i>		X		
	<i>Micrurus nigrocinctus</i>	X			
	<i>Micrurus stewarti</i>	X			X
VIPERIDAE	<i>Bothrops asper</i>	X	X	X	X
	<i>Bothriechis schlegelii</i>		X		
	<i>Porthidium nasutum</i>	X			
TESTUDINES					
EMYDIDAE	<i>Trachemys scripta</i>	X			
KINOSTERNIDAE	<i>Kinosternon leucostomum</i>				X
Total	species for Alhajuela = 65	41	28	23	34

Source: Rand y Myers 1990; Tejera et al. 1995; Jaramillo e Ibañez 1997 bcde; Ibañez et al 1999.

Table A4.3-9 Ecological Characteristic and State of Conservation of the Species of Reptiles of the Catchement Area of the Alhajuela Lake. KEY: State of conservation: EN=endemic native; ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; I, II=CITES; TU=Threatened according to the IUCN. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Car=carnivore; Ins=insectivore; Fo=folivore; Om=omnivore. Behavior: T=terrestrial; SA=semiaquatic; Ar=arboreal or shrubby; Aq=aquatic.

TAXON	Nourishing Habit	Activity	Behavior	ANAM	CITES
CLASS REPTILIA					
ORDER CROCODYLIA					
ALLIGATORIDAE					
<i>Caiman crocodilus</i>	Car	D/N	Aq	T	II
ORDER LACERTILIA					
CORYTOPHANIDAE					
<i>Basiliscus basiliscus</i>	Ins	D	SA		
<i>Corytophanes cristatus</i>	Ins	D	Ar	T	
GEKKONIDAE					
<i>Gonatode albogularis</i>	Ins	D	Ar		
<i>Lepidoblepharis sanctaemartae</i>	Ins	D	Ar	ER	
<i>Lepidoblepharis xanthostigma</i>	Ins	D	Ar	ER	
<i>Sphaerodactylus lineolatus</i>	Ins	D	Ar	ER	
<i>Thecadactylus rapicauda</i>	Ins	D	Ar		
IGUANIDAE					
<i>Iguana iguana</i>	Fo	D	Ar	T	II
GYMNOPHTHALMIDAE					
<i>Echinosaura horrida</i>	Ins	D/N	T		
<i>Gymnophthalmus speciosus</i>	Ins	D	T		
<i>Leposoma rugiceps</i>	Ins	D	T		
<i>Leposoma southi</i>	Ins	D	T		
<i>Ptychoglossus festae</i>	Ins	D	T		
<i>Ptychoglossus plicatus</i>	Ins	D	T		
POLYCHROTIDAE					
<i>Anolis auratus</i>	Ins	D	Ar		
<i>Anolis capito</i>	Ins	D	Ar		
<i>Anolis chocorum</i>	Ins	D	Ar	ER	
<i>Anolis frenatus</i>	Ins	D	Ar		
<i>Anolis humilis</i>	Ins	D	Ar	ER	
<i>Anolis limifrons</i>	Ins	D	Ar		
<i>Anolis lionotus</i>	Ins	D	Ar	EN	
<i>Anolis pentaprion</i>	Ins	D	Ar		
<i>Anolis poecilopus</i>	Ins	D	Ar	ER	
<i>Anolis sp.</i>	Ins	D	Ar		
<i>Anolis sp. (grupo fuscoauratus)</i>	Ins	D	Ar		
<i>Anolis sp. (grupo mirus)</i>	Ins	D	Ar		
<i>Anolis tropidogaster</i>	Ins	D	Ar		
<i>Anolis vittigerus</i>	Ins	D	Ar	ER	
SCINCIDAE					
<i>Mabuya unimarginata</i>		D	T		
TEIIDAE					
<i>Ameiva ameiva</i>	Ins	D	T		
<i>Ameiva festiva</i>	Ins	D	T		
<i>Ameiva leptophrys</i>	Ins	D	T	ER	
ORDER SERPENTES					
COLUBRIDAE					
<i>Chironius carinatus</i>	Car	D	T/Ar		
<i>Chironius grandisquamis</i>	Car	D	T/Ar		

TAXON		Nourishing Habit	Activity	Behavior	ANAM	CITES
	<i>Clelia clelia</i>	Car	N	T/Ar		II
	<i>Coniophanes fissidens</i>	Car	D	T/Ar		
	<i>Dendrophidion nuchalis</i>	Car	D	T/Ar		
	<i>Dendrophidion vinitor</i>	Car	D	T/Ar		
	<i>Dipsas articulata</i>	Car	N	T/Ar	ER	
	<i>Dryadophis melanolomus</i>	Car	D	T/Ar		
	<i>Enuluis flavitorques</i>	Car	N	T/Ar		
	<i>Imantodes cenchoa</i>	Car	N	T/Ar		
	<i>Imantodes gemmistratus</i>	Car	N	T/Ar		
	<i>Leptodeira annulata</i>	Car	D	T/Ar		
	<i>Leptodeira septentrionalis</i>	Car	N	T/Ar		
	<i>Leptophis ahaetulla</i>	Car	D	T/Ar		
	<i>Leptophis depressirostris</i>	Car	D	T/Ar		
	<i>Leptophis nebulosus</i>	Car	D	T/Ar		
	<i>Liophis epinephelus</i>	Car	D	T/Ar		
	<i>Oxybelis aeneus</i>	Car	D	T/Ar		
	<i>Oxybelis brevirostris</i>	Car	D	T/Ar		
	<i>Oxyrhopus petolarius</i>	Car	N	T/Ar		
	<i>Pseutes poecilonotus</i>	Car	D	T/Ar		
	<i>Rhadinaea sargenti</i>	Car	D	T/Ar	EN, T	
	<i>Sibon argus</i>	Car	N	T/Ar	ER	
	<i>Tantilla schistosa</i>	Car	N	T/Ar		
	<i>Urotheca euryzona</i>	Car	D/N	T/Ar		
	<i>Xenodon rabdocephalus</i>	Car	D	T/Ar		
	ELAPIDAE					
	<i>Micrurus multifasciatus</i>	Car	D/N	T	ER	
	<i>Micrurus nigrocinctus</i>	Car	D/N	T		
	<i>Micrurus stewarti</i>	Car	D/N	T	EN	
	VIPERIDAE					
	<i>Bothrops asper</i>	Car	D/N	T		
	<i>Bothriechis schlegelii</i>	Car	N	T		
	<i>Porthidium nasutum</i>	Car	N	T		
	ORDER TESTUDINES					
	EMYDIDAE					
	<i>Trachemys scripta</i>	Om	D	Aq		
				TOTAL	3EN, 4A	3

Source: Rand y Myers 1990; Tejera et al. 1995; Young et al. 1999; ANAM 2000; CITES 2003.

Table A4.3-10. Richness of Species of Amphibians and his Distribution in Three Sections (Upper, Middle and Lower) of the Ahajuela Lake. Compared with the species of Indio River.

TAXON		Catchment Area of Ahajuela Lake			Indio River
		Upper	Middle	Lower	
CLASS AMPHIBIA					
GYMNOPHIONA					
CAECILIAIDE	<i>Dermophis parviceps</i>		X		
	<i>Oascaecilia ochrocephala</i>	X		X	X
CAUDATA					
PLETHODONTIDAE	<i>Bolitoglossa biseriata</i>	X	X		X
	<i>Bolitoglossa schizodactyla</i>	X	X		X
	<i>Oedipina complex</i>			X	
	<i>Oedipina parvipes</i>	X	X	X	X
ANURA					
BUFONIDAE	<i>Atelopus limosus</i>	X			
	<i>Atelopus sp.</i>	X	X		
	<i>Bufo coniferus</i>	X	X		X
	<i>Bufo granulosis</i>			X	
	<i>Bufo haematiticus</i>	X	X	X	X
	<i>Bufo marinus</i>	X	X	X	X
	<i>Bufo typhonius</i>	X	X	X	X
CENTROLENIDAE	<i>Centrolene ilex</i>	X	X		X
	<i>Centrolene prosoblepon</i>	X	X	X	X
	<i>Cochranella albomaculata</i>	X	X		X
	<i>Cochranella euknemos</i>		X	X	
	<i>Cochranella granulosa</i>	X	X	X	X
	<i>Cochranella spinosa</i>		X	X	X
	<i>Hyalinobatrachium colymbiphillum</i>	X	X	X	
	<i>Hyalinobatrachium fleischmanni</i>	X	X	X	X
	<i>Hyalinobatrachium pulveratum</i>	X	X	X	X
	<i>Hyalinobatrachium vireovittatum</i>		X		X
DENDROBATIDAE	<i>Colostethus flotator</i>	X	X	X	X
	<i>Colostethus choacoensis</i>	X	X		
	<i>Colostethus inguinalis</i>	X	X	X	X
	<i>Colostethus nubicola</i>	X	X		X
	<i>Colostethus pratti</i>	X	X		X
	<i>Colostethus talamancae</i>	X	X	X	X
	<i>Dendrobates auratus</i>	X	X	X	
	<i>Minyobates fulguritus</i>	X	X	X	
	<i>Minyobates minutus</i>	X	X	X	X
	<i>Phyllobates lugubris</i>				X
	HYLIDAE	<i>Agalychnis calcarifer</i>		X	X
<i>Agalychnis callidryas</i>		X	X	X	X
<i>Agalychnis spurrelli</i>			X	X	
<i>Gastrotheca cornuta</i>		X	X		X
<i>Hemiphractus fasciatus</i>		X	X		
<i>Hyla boans</i>		X	X	X	
<i>Hyla colymba</i>		X			
<i>Hyla crepitans</i>		X	X	X	X
<i>Hyla ebraccata</i>			X	X	X
<i>Hyla microcephala</i>		X	X	X	X
<i>Hyla miliaria</i>		X			

TAXON	Catchment Area of Alhajuela Lake			Indio River	
	Upper	Middle	Lower		
	<i>Hyla palmeri</i>	X	X	X	X
	<i>Hyla phlebodes</i>		X	X	X
	<i>Hyla rosenbergi</i>		X	X	
	<i>Hyla rufitela</i>		X	X	X
	<i>Phrynohyas venulosa</i>		X	X	X
	<i>Phyllomedusa lemur</i>	X	X		
	<i>Scinax boulengeri</i>			X	X
	<i>Scinax rostrata</i>			X	X
	<i>Scinax rubra</i>			X	X
	<i>Scinax staufferi</i>			X	
	<i>Smilisca phaeota</i>	X	X	X	X
	<i>Smilisca sila</i>	X	X	X	X
MICROHYLIDAE	<i>Chiasmocleis panamensis</i>	X		X	X
	<i>Nelsonophryne atterima</i>		X		
LEPTODACTYLIDAE	<i>Eleutherodactylus antillensis</i>			X	
	<i>Eleutherodactylus biporcatus</i>	X	X	X	
	<i>Eleutherodactylus bransfordii</i>	X	X	X	X
	<i>Eleutherodactylus bufoniformis</i>	X	X	X	X
	<i>Eleutherodactylus caryophyllaceus</i>	X	X		X
	<i>Eleutherodactylus cerasinus</i>	X	X	X	X
	<i>Eleutherodactylus crassidigitus</i>	X	X	X	X
	<i>Eleutherodactylus cruentus</i>	X	X		X
	<i>Eleutherodactylus diastema</i>	X	X	X	X
	<i>Eleutherodactylus fitzingeri</i>	X	X	X	X
	<i>Eleutherodactylus gaigeae</i>	X	X	X	X
	<i>Eleutherodactylus gollmeri</i>	X	X		X
	<i>Eleutherodactylus johnstonei</i>			X	
	<i>Eleutherodactylus longirostris</i>	X	X		
	<i>Eleutherodactylus megacephalus</i>				X
	<i>Eleutherodactylus melanostictus</i>	X			
	<i>Eleutherodactylus moro</i>	X			
	<i>Eleutherodactylus museosus</i>	X	X		X
	<i>Eleutherodactylus pardalis</i>		X		X
	<i>Eleutherodactylus punctariolus</i>	X			X
	<i>Eleutherodactylus ridens</i>	X	X	X	X
	<i>Eleutherodactylus sp.</i>	X	X		
	<i>Eleutherodactylus taeniatus</i>	X	X	X	X
	<i>Eleutherodactylus talamancae</i>	X	X		X
	<i>Eleutherodactylus vocator</i>	X	X	X	X
	<i>Leptodactylus fuscus</i>			X	
	<i>Leptodactylus insularum</i>		X	X	X
	<i>Leptodactylus labialis</i>	X	X	X	X
	<i>Leptodactylus melanonotus</i>		X		X
	<i>Leptodactylus pentadactylus</i>	X	X	X	X
	<i>Leptodactylus poecilochilus</i>			X	X
	<i>Physalaemus pustulosus</i>	X	X	X	X
	<i>Pleuroderma brachyops</i>			X	
RANIDAE	<i>Rana vaillanti</i>			X	X
	<i>Rana warszewitschii</i>	X	X	X	X
Total	species for Alhajuela = 91	63	72	61	64

Source: Rand y Myers 1990; Tejera et al. 1995; Jaramillo e Ibañez 1997 bcde; Ibañez et al 1999.

Table A4.3-11: Ecological Characteristics and State of Conservation of the Species of Amphibians of the Catchment Area of the Alhajuella Lake.

KEY: State of conservation: EN=endemic native; ER=endemic regional, it can be shared by Colombia or by Costa Rica; T=Threatened; I, II=CITES. Period of activity: D=diurnal; N=nocturnal. Nourishing habit: Car=carnivore; Ins=insectivore. Behavior: T=terrestrial; SA=semiaquatic; Ar=arboreal or shrubby; Fos=fosorio

TAXON	Nourishing Habit	Activity	Behavior	ANAM	CITES
CLASS AMPHIBIA					
ORDER GYMNOPIHIONA					
FAMILY CAECILIAE					
<i>Dermophis parviceps</i>	Ins	D	Fos	ER	
<i>Oascaecilia ochrocephala</i>	Ins	D	Fos	ER	
ORDER CAUDATA					
FAMILY PLETHODONTIDAE					
<i>Bolitoglossa biseriata</i>	Ins	D	T	ER	
<i>Bolitoglossa schizodactyla</i>	Ins	D	T	EN	
<i>Oedipina complex</i>	Ins	N	T	ER	
<i>Oedipina parvipes</i>	Ins	N	T	ER	
ORDER ANURA					
FAMILY BUFONIDAE					
<i>Atelopus limosus</i>	Ins	D	T	EN, T	
<i>Atelopus sp.</i>	Ins	D	T		
<i>Bufo coniferus</i>	Ins	N	T		
<i>Bufo granulosus</i>	Ins	N	T		
<i>Bufo haematiticus</i>	Ins	N	T		
<i>Bufo marinus</i>	Ins	N	T		
<i>Bufo typhonius</i>	Ins	N	T		
FAMILY CENTROLENIDAE					
<i>Centrolene ilex</i>	Ins	N	Ar	ER	
<i>Centrolene prosoblepon</i>	Ins	N	Ar		
<i>Cochranella albomaculata</i>	Ins	N	Ar		
<i>Cochranella euknemos</i>	Ins	N	Ar	ER	
<i>Cochranella granulosa</i>	Ins	N	Ar	ER	
<i>Cochranella spinosa</i>	Ins	N	Ar		
<i>Hyalinobatrachium colymbiphylum</i>	Ins	N	Ar	ER	
<i>Hyalinobatrachium fleischmanni</i>	Ins	N	Ar		
<i>Hyalinobatrachium pulveratum</i>	Ins	N	Ar	ER	
<i>Hyalinobatrachium vireovittatum</i>	Ins	N	Ar	ER	
FAMILY DENDROBATIDAE					
<i>Colostethus flotator</i>	Ins	D	T	ER	
<i>Colostethus chocoensis</i>	Ins	D	T		
<i>Colostethus inguinalis</i>	Ins	D	SA	ER	
<i>Colostethus nubicola</i>	Ins	D	T	ER	
<i>Colostethus pratti</i>	Ins	D	T	ER	
<i>Colostethus talaucanae</i>	Ins	D	T	ER	
<i>Dendrobates auratus</i>	Ins	D	T	ER, T	II
<i>Minyobates fulguritus</i>	Ins	D	T	ER	II
<i>Minyobates minutus</i>	Ins	D	T	EN	II
FAMILY HYLIDAE					
<i>Agalychnis calcarifer</i>	Ins	N	T	T	
<i>Agalychnis callidryas</i>	Ins	N	T	T	
<i>Agalychnis spurrelli</i>	Ins	N	T	ER, T	
<i>Gastrotheca cornuta</i>	Ins	N	T	ER, T	
<i>Hemiphractus fasciatus</i>	Ins	N	T	ER, T	
<i>Hyla boans</i>	Ins	N	T		
<i>Hyla colymba</i>	Ins	N	Ar		
<i>Hyla crepitans</i>	Ins	N	Ar		
<i>Hyla ebraccata</i>	Ins	N	Ar		
<i>Hyla microcephala</i>	Ins	N	Ar	T	
<i>Hyla miliaria</i>	Ins	N	Ar	ER	
<i>Hyla palmeri</i>	Ins	N	Ar		
<i>Hyla phlebodes</i>	Ins	N	Ar	ER	
<i>Hyla rosenbergi</i>	Ins	N	Ar		
<i>Hyla rufitela</i>	Ins	N	Ar	ER	

TAXON	Nourishing Habit	Activity	Behavior	ANAM	CITES
<i>Phrynohyas venulosa</i>	Ins	N	T		
<i>Phyllomedusa lemur</i>	Ins	N	T	ER	
<i>Scinax boulengeri</i>	Ins	N	T/Ar		
<i>Scinax rostrata</i>	Ins	N	T/Ar		
<i>Scinax rubra</i>	Ins	N	T/Ar		
<i>Scinax staufferi</i>	Ins	N	T/Ar		
<i>Smilisca phaeota</i>	Ins	N	T/Ar		
<i>Smilisca sila</i>	Ins	N	T/Ar	ER	
FAMILY MICROHYLIDAE					
<i>Chiasmocleis panamensis</i>	Ins	N	T	ER	
<i>Nelsonophryne atterima</i>	Ins	N	T		
FAMILY LEPTODACTYLIDAE					
<i>Eleutherodactylus antillensis</i>	Ins	N	T		
<i>Eleutherodactylus biporcatus</i>	Ins	D/N	T	ER	
<i>Eleutherodactylus bransfordii</i>	Ins	N	T	ER	
<i>Eleutherodactylus bufoniformis</i>	Ins	N	SA	ER	
<i>Eleutherodactylus caryophyllaceus</i>	Ins	N	T	ER	
<i>Eleutherodactylus cerasinus</i>	Ins	D/N	T/Ar	ER	
<i>Eleutherodactylus crassidigitus</i>	Ins	N	T/Ar	ER	
<i>Eleutherodactylus cruentus</i>	Ins	D/N	Ar	ER	
<i>Eleutherodactylus diastema</i>	Ins	N	T		
<i>Eleutherodactylus fitzingeri</i>	Ins	N	T/Ar	ER	
<i>Eleutherodactylus gaigeae</i>	Ins	N	T	ER	
<i>Eleutherodactylus gollmeri</i>	Ins	N	T	ER	
<i>Eleutherodactylus johnstonei</i>	Ins	N	T		
<i>Eleutherodactylus longirostris</i>	Ins	D/N	T		
<i>Eleutherodactylus melanostictus</i>	Ins	N	T	ER	
<i>Eleutherodactylus moro</i>	Ins	N	T	ER	
<i>Eleutherodactylus museosus</i>	Ins	N	T	EN, T	
<i>Eleutherodactylus pardalis</i>	Ins	N	T	ER	
<i>Eleutherodactylus punctariolus</i>	Ins	N	T	ER	
<i>Eleutherodactylus ridens</i>	Ins	N	T/Ar		
<i>Eleutherodactylus sp.</i>	Ins	N	T		
<i>Eleutherodactylus taeniatus</i>	Ins	N	T/Ar	ER	
<i>Eleutherodactylus talamancae</i>	Ins	D/N	T	ER	
<i>Eleutherodactylus vocator</i>	Ins	N	T/Ar	ER	
<i>Leptodactylus fuscus</i>	Ins	N	T		
<i>Leptodactylus insularum</i>	Ins	N	T		
<i>Leptodactylus labialis</i>	Ins	N	T		
<i>Leptodactylus melanonotus</i>	Ins	N	T		
<i>Leptodactylus pentadactylus</i>	Car	N	T		
<i>Leptodactylus poecilochilus</i>	Ins	N	T		
<i>Physalaemus pustulosus</i>	Ins	N	T		
<i>Pleuroderma brachyops</i>	Ins	N			
FAMILY RANIDAE					
<i>Rana vaillanti</i>	Ins	N	SA		
<i>Rana warszewitschii</i>	Ins	N	SA	ER	
TOTAL				4EN, 9A	3

Source: Rand y Myers 1990; Tejera et al. 1995; Young et al. 1999; ANAM 2000; CITES 2003.

Table A4.3-12: Species of Aquatic Invertebrates (Crustaceans and Molluscs) According to his Value of Conservation, Habitat, Distribution Localización.

TAXON	EIE	Area of Interes		Aquatic Habitat				High	Catchment Area
		AIG	AIE	HWS	FFLWS	SFLWS	EWS		
Molluscs									
Acmaeidae									
<i>Acmaea</i> sp.							1	L	La
Arcidae									
<i>Anadara</i> sp.	1						1	L	La
Corbiculidae									
<i>Corbicula fluminea</i>	1		1		1	1		L	J,La
Neritidae									
<i>Nerita</i> sp.							1	L	La
Olividae									
<i>Oliva</i> sp.							1	L	La
Pilidae									
<i>Pomacea</i> sp.			1				1	M,L	J,C,L
<i>Pomacea cummingi</i>	1						1	L	J
Tellinidae									
<i>Tellina</i> sp.							1	L	La
Thiaridae									
<i>Melanoides tuberculata</i>			1	1	1	1	1	U,M,L	J,C,La
Trochidae									
<i>Calliostoma</i> sp.	1						1	L	La
Turridae									
<i>Monilispira</i> sp.								L	La
SUBTOTALS	4	0	3	1	2	2	9		
Crustaceans									
Palaemonidae									
<i>Macrobrachium amazonicum</i>			1						J
<i>Macrobrachium carcinus</i>	1	1	1	1	1	1	1	U,M,L	J,C,La
<i>Macrobrachium crenulatum</i>	1	1	1	1	1	1	1	U,M,L	J,C,La
<i>Macrobrachium acanthurus</i>	1	1	1	1	1	1	1	U,M,L	J,C,La
Atyidae									
<i>Atya scabra</i>	1	1	1	1	1	1		U,M	C,I
<i>Potimirin glabra</i>		1	1	1	1	1		M	C,I
Portunidae									
<i>Callinectes</i> sp.	1	1					1	L	La
Pseudothelphusidae									
<i>Pseudothelphusa americana</i>	1	1	1		1	1		M	A,C,I
Grapsidae									
<i>Sesarma</i> sp.	1	1					1	L	I
SUBTOTALS	7	8	6	5	6	6	5		
Total of Invertebrates	11	8	9	6	8	8	14		

Legend: EIE: species of special interest; AIG: areas of general interes; AIE: areas of specific interes HWS:Highland water system; FFLWS: Fast Flowing Lowland Water System;SFLWS: Slow Flowing Lowland Water System ; EWS: Estuarine Water system; U: Upper; MMiddle; L:Lower; J: Ahajuela, C: Ciri, La: Lagarto, I: Indio.

Family	Specie	Common Name	Physiologic Classification	Type of Habitat	Distribution	CACHMENT AREAS									
						Ciri		Lagarto			Alhajuela				
						U	M	L	U	M	L	U	M	L	
	<i>Brachyrhaphis cascajalensis</i>	parivivo	Secondary	SFLWS, FFLWS	SI, PE										
	<i>Brachyrhaphis episcopi</i>	parivivo	Secondary	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1				
	<i>Neoheterandria tridentiger</i>	parivivo	Secondary	SFLWS, HWS	SI, GI	1	1	1	1	1	1				
	<i>Poecilia gillii</i>	parivivo	Secondary	SFLWS, FFLWS, HWS	SI, GI, PE	1	1	1	1	1	1				
Rivulidae															
	<i>Rivulus brunneus</i>	s/n	Secondary		SI									1	
	<i>Rivulus</i> sp.	sp.	Secondary	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1				
Synbranchidae															
	<i>Synbranchius marmoratus</i>	culebra de agua	Secondary	SFLWS, FFLWS, HWS	SI, GI	1	1	1	1	1	1				
Sygnathidae															
	<i>Microphis brachyurus</i>	s/n	Periferic	FFLWS										1	
	<i>Pseudophallus mindii</i>	s/n	Periferic	EWS	GI									1	
Trichomycteridae															
	<i>Trichomycterus striatus</i>	s/n	Primary	SFLWS, FFLWS, HWS	SI, GI									1	
TOTAL: Family: 23; species:58; Periferic:20; Primary:23; Secondary: 15															
TOTAL: HWS: 18;SFLWS: 43;FFLWS: 37; EWS: 10						17	38	33	30	40	49			34	

* Genera and specie introduced

HWS: Highland Water System

FFLWS: Fast Flowing Lowlands Water System

SFLWS: Slow Flowing Lowland Water System

EWS: Estuarine Water System

GI: area of general interes

SI: area of specific interes

PE: Periferic

U:Upper Catchment Area

M:Middle Catchment Area

L:Lower Catchment Area

Source: Louis Berger (1999).

Table A4.3-14: Species of Terrestrial Insects by Distribution and Location.

TAXON	Section of the Catchment Area			Catchment Area
	Upper	Middle	Lower	
Tabanidae				
<i>Catachlorps fulmineus</i>	+			C
<i>Dicleracera fasiata</i>	+	+	+	C,L
<i>Dicleracera hartmanni</i>			+	C,L
<i>Philopatabanus magnificus</i>	+	+	+	C,L
<i>Philopatabanus nigrinubilus</i>	+			C,L
<i>Tabanus albocirculus</i>		+	+	C,L
<i>Tabanus surifer</i>	+			C
<i>Tabanus unistriatus</i>		+	+	C,L
<i>Tabanus occidentalis</i>	+	+	+	C,L
<i>Tabanus puntipleura</i>			+	C,L
<i>Tabanus pungens</i>	+			C
<i>Chrysops melaenus</i>	+	+	+	C,L
<i>Chrysops nexosus</i>		+	+	C,L
<i>Chrysops variegatus</i>		+	+	C,L
<i>Chrysops calogaster</i>			+	C
<i>Esenbeckia parasineventris</i>		+	+	C,L
<i>Leucotabanus exaestuans</i>		+	+	C,L
<i>Fifena flavipennis</i>		+	+	C,L
<i>Stibasoma flaviventre</i>	+			C
<i>Poeciloderas quadripunctatus</i>	+			C
Culicidae				
<i>Culex coronatus</i>			+	C,L
<i>Culex (Melanoconium) sp.</i>	+	+	+	C,L
<i>Culex vomerifer</i>	+	+	+	C,L
<i>Culex quinquefasciatus</i>		+	+	C,L
<i>Psoropha feraz</i>		+	+	C,L
<i>Psoropha lineata</i>	+			C
<i>Wyeomyia arthrostigma</i>	+	+	+	C,L
<i>Anopheles punctimacula</i>	+	+	+	C,L
<i>Anopheles pseudopuntipennis</i>		+	+	C,L
<i>Aedes taeniorhynchus</i>		+	+	C,L
<i>Aedes septentriatus</i>	+			C
<i>Coquillettidia venezuelensis</i>			+	C,L
<i>Mansonia titillans</i>			+	C,L
<i>Haemagogus indicoler</i>	+	+		C
<i>Sabathes chloropterus</i>	+	+	+	C,L
<i>Sabathes undosus</i>	+			C
Psichodidae				
<i>Lutzomyia adydifera</i>	+		+	C
<i>Lutzomyia camposi</i>	+	+	+	C,L
<i>Lutzomyia carpenteri</i>	+	+	+	C,L
<i>Lutzomyiap panamensis</i>	+	+	+	C,L
<i>Lutzomyia sanguinaria</i>	+		+	C,L
<i>Lutzomyia trapidoi</i>			+	C,L

TAXON	Section of the Catchment Area			Catchment Area
	Upper	Middle	Lower	
<i>Lutzomyia triramula</i>	+	+	+	C,L
<i>Lutzomyia gomezi</i>	+	+	+	C,L
<i>Lutzomyia ylephiletor</i>	+			C,L
<i>Lutzomyia shannoni</i>			+	C,L
<i>Lutzomyia hartmanni</i>	+			C
<i>Lutzomyia vespertilionis</i>	+			C
Ceratopogonidae				
<i>Culicoides furens</i>	+	+	+	C,L
<i>Culicoides insignis</i>		+	+	C,L
Simuliidae				
<i>Simulium sanguineum</i>	+	+	+	C,L
<i>Simulium quadrivittatum</i>	+	+	+	C,L
<i>Simulium ochraceatum</i>		+	+	C,L
<i>Simulium metallicum</i>		+	+	C,L
<i>Simuliummexicanum</i>	+		+	C,L
Triatominae				
<i>Rhodnius pallescens</i>	+	+	+	C
<i>Pastrongylus geniculatus</i>	+			C
<i>Pastrongylus humeralis</i>	+			C
<i>Pastrongylus rufotuberculatus</i>	+			C

Legend: C: Ciri, L: Lagarto.

Source: Louis Berger (1999)

TABLE A4.3-15

Species of Aquatic Insects According its Distribution for Catchment Area

TAXON	Catchment Area		
	Ciri	Indio	Lagarto
Aeshenidae	X	X	X
Athericidae	X	X	X
Baetidae	X	X	X
Caenidae	X	X	X
Calamoceratidae	X	X	X
Calopterygidae	X	X	X
Ceratopogonidae	X	X	X
Chironomidae	X	X	X
Coenagrionidae	X	X	X
Corydalidae	X	X	X
Dixidae	X	X	X
Dolichopodidae	X	X	X
Dysticidae	X	X	X
Elmidae	X	X	X
Empididae	X	X	X
Entomobrydae	X	X	X
Ephydriidae	X	X	X
Glossomatidae	X	X	X
Gomphidae	X	X	X
Gyrinidae	X	X	X
Hebridae	X	X	X
Heptageniidae	X	X	X
Hydrophilidae	X	X	X
Hydropsychidae	X	X	X
Hydroptilidae	X	X	X
Leptoceridae	X	X	X
Leptohyphidae	X	X	X
Leptophlebiidae	X	X	X
Libellulidae	X	X	X
Megapodagrionidae	X	X	X
Naucoridae	X	X	X
Perlidae	X	X	X
Philopotamidae	X	X	X
Polithoridae	X	X	X
Polycentropodidae	X	X	X
Psephenidae	X	X	X
Psychodidae	X	X	X
Ptylodatilidae	X	X	X
Pyralidae	X	X	X
Reduviidae	X	X	X
Scarbidae	X	X	X
Scirtidae	X	X	X
Simulidae	X	X	X
Stratiomyidae	X	X	X
Tupilidae	X	X	X
Vellidae	X	X	X

Source: Louis Berger

Tabla A 4.3-16: Statistics of the Changes of Use of the Soil for the Alhajucla Lake

	Specific Area of Interes						Buffer Zone						General Area of Interes					
	SOIL USE			Change of Use	SOIL USE			Change of Use	SOIL USE			Change of Use	SOIL USE			Change of Use		
	2000	1990	%		2000	1990	%		2000	1990	%		2000	1990	%			
	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha	Surf/Ha			
Mature Forest	10.5	12.1	-13.2231	-1.6	3162.1	4063.0	-900.9	-22.2	74108.6	76268.4	2159.8	2.8						
Secondary Forest	31.3	104.5	-70.0	-73.2	8038.8	10253.6	-2214.8	-21.6	19854.9	23644.0	3789.1	16.0						
Pasture	163.6	0.0	100	163.6	5721.5	1674.0	4047.5	241.8	18970.1	8287.6	-10682.4	-128.9						
Shrub land	107.7	196.48	-45.1853	-88.8	6856.0	7913.4	-1057.4	-13.4	19262.9	24457.8	5194.9	21.2						
Temporary agriculture	0.0	0.0	0.0	0.0	199.4	110.1	89.3	81.1	662.9	232.1	-430.8	-185.6						
Permanant agriculture	0.0	0.0	0.0	0.0	44.9	0.0	44.9		122.3	85.8	-36.6	-42.6						
Forestal Plantations	0.0	0.0	0.0	0.0	38.9	0.0	38.9		107.8	0.0	-107.8	0.0						
Naked soils	0.0	0.0	0.0	0.0	5.2	57.1	-51.8	-90.9	322.6	437.4	114.8	26.2						
TOTAL	313.1	313.1	-28.4562	0.02	24066.8	24071.2	-4.4	174.86	133412.0	133413.1	1.1	0.0						

SOURCE: GIS-URS, Holdings ACP DATA.

Table A4.3-17
Statistics for the Change Use of the Soil
Catchment Area of Alhajuella Lake

Zone name: Mature Forest

Class Name	Count	%	Hectares
0 fondo	25	0.00	1.563
1 Mature Forest	1185389	97.14	74086.813
2 Secondary Forest	27438	2.25	1714.875
3 Shrub Land	3963	0.32	247.688
4 Pasture	2537	0.21	158.563
5 Commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	918	0.08	57.375
7 Water	24	0.00	1.500
8 Reforestation	0	0.00	0.000
9 Naked Soil	0	0.00	0.000
Total	1220294	100.00	76268.375

Zone name: Secondary Forest

Class	Name	Count	%	Hectares
0 fondo		10	0.00	0.625
1 Mature Forest		67	0.02	4.188
2 Secondary Forest		280495	74.15	17530.938
3 Shrub Land		71210	18.82	4450.625
4 Pasture		23339	6.17	1458.688
5 Commercial agriculture		0	0.00	0.000
6 Subsistence agriculture		2934	0.78	183.375
7 Water		189	0.05	11.813
8 Reforestation		54	0.01	3.375
9 Naked Soil		6	0.00	0.375
Total		378304	100.00	23644.000

Zone name: Shrub Land

Class	Name	Count	%	Hectares
0 fondo		11	0.00	0.688
1 Mature Forest		54	0.01	3.375
2 Secondary Forest		6224	1.59	389.000
3 Shrub Land		201298	51.44	12581.125
4 Pasture		173834	44.42	10864.625
5 Commercial agriculture		1205	0.31	75.313
6 Subsistence agriculture		6622	1.69	413.875
7 Water		86	0.02	5.375
8 Reforestation		1431	0.37	89.438
9 Naked Soil		559	0.14	34.938
Total		391324	100.00	24457.750

Table A4.3-17
Statistics for the Change Use of the Soil
Alhajuela Lake

Zone name: Pasture / Pastizal

Class Name	Count	%	Hectares
0 fondo	0	0.00	0.000
1 Mature Forest	0	0.00	0.000
2 Secondary Forest	1168	0.88	73.000
3 Shrub Land	30693	23.15	1918.313
4 Pasture	99280	74.87	6205.000
5 Commercial agriculture	472	0.36	29.500
6 Subsistence agriculture	0	0.00	0.000
7 Water	2	0.00	0.125
8 Reforestation	239	0.18	14.938
9 Naked Soil	748	0.56	46.750
Total	132602	100.00	8287.625

Zone name: Commercial agriculture

Class	Name	Count	%	Hectares
0	fondo	0	0.00	0.000
1	Mature Forest	0	0.00	0.000
2	Secondary Forest	0	0.00	0.000
3	Shrub Land	110	8.02	6.875
4	Pasture	982	71.57	61.375
5	Commercial agriculture	280	20.41	17.500
6	Subsistence agriculture	0	0.00	0.000
7	Water	0	0.00	0.000
8	Reforestation	0	0.00	0.000
9	Naked Soil	0	0.00	0.000
Total		1372	100.00	85.750

Zone name: Subsistence agriculture

Class	Name	Count	%	Hectares
0	fondo	0	0.00	0.000
1	Mature Forest	1	0.03	0.063
2	Secondary Forest	2306	62.09	144.125
3	Shrub Land	747	20.11	46.688
4	Pasture	528	14.22	33.000
5	Commercial agriculture	0	0.00	0.000
6	Subsistence agriculture	132	3.55	8.250
7	Water	0	0.00	0.000
8	Reforestation	0	0.00	0.000
9	Naked Soil	0	0.00	0.000
Total		3714	100.00	232.125

Table A4.3-17
Statistics for the Change Use of the Soil
Alhajuella Lake

Zone name: Water

Class Name	Count	%	Hectares
0 fondo	0	0.00	0.000
1 Mature Forest	4	0.00	0.250
2 Secondary Forest	32	0.04	2.000
3 Shrub Land	127	0.15	7.938
4 Pasture	71	0.08	4.438
5 Commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	0	0.00	0.000
7 Water	84318	99.72	5269.875
8 Reforestation	0	0.00	0.000
9 Naked Soil	0	0.00	0.000
Total	84552	100.00	5284.500

Zone name: Reforestation

Class Name	Count	%	Hectares
0 fondo	0	0.00	0.000
1 Mature Forest	0	0.00	0.000
2 Secondary Forest	0	0.00	0.000
3 Shrub Land	0	0.00	0.000
4 Pasture	0	0.00	0.000
5 Commercial agriculture	0	0.00	0.000
6 Subsistence agriculture	0	0.00	0.000
7 Water	0	0.00	0.000
8 Reforestation	0	0.00	0.000
9 Naked Soil	0	0.00	0.000
Total	0	0.00	0.000

Zone name: Naked Soil

Class	Name	Count	%	Hectares
0	fondo	1	0.01	0.063
1	Mature Forest	0	0.00	0.000
2	Secondary Forest	0	0.00	0.000
3	Shrub Land	40	0.57	2.500
4	Pasture	3108	44.41	194.250
5	Commercial agriculture	0	0.00	0.000
6	Subsistence agriculture	0	0.00	0.000
7	Water	0	0.00	0.000
8	Reforestation	1	0.01	0.063
9	Naked Soil	3849	54.99	240.563
Total		6999	100.00	437.438

**TABLE A4.3-18
INSTALLATIONS OF HEALTH ACCORDING TO TYPE,
BUFFER AREA, ALHAJUELA LAKE**

Location	Type
Salamanquilla	Puesto de Salud
Nuevo Vigía	Sub- Centro de Salud

Source: Listing of Installations of the Regions of Health, Colon. December 2003.

**TABLE A4.3-19
INSTALLATIONS OF HEALTH ACCORDING TO TYPE, GENERAL AREA OF
INTEREST, ALHAJUELA LAKE**

Location	Type
Chilibre	Centro de Salud
Caimitillo	Sub- Centro
Sardinilla	Centro de Salud
Boquerón Arriba	Puesto de Salud
Entrada de Nuevo San Juan	Policlínica
Gatuncillo	Puesto de Salud **
Santa Rosa	Puesto de Salud **
Guayabalito	Puesto de Salud

Legend: ** currently are closed

Source: Listing of Installations of the Regions of Health of Panama March 2003.

TABLE A4.3-20
HUMAN RESOURCES BY INSTALLATION OF HEALTH AND ACCORDING TO
TYPE OF PERSONNEL, GENERAL AREA OF INTEREST. LAKE ALHAJUELA

Type of official	Installations of Health							
	Province of Panama		Province of Colon					
	C.S. Chilibre	SC Caimitillo	P.S. Guayabalito	PC. Nuevo San Juan	SC. Nuevo Vigía	C.S. Sardinilla	P.S. Salamanquilla	P.S. Boquerón Arriba
Assistant of pharmacy	1	1	--	--	--	--	--	--
Assistant of health	--	--	1	--	--	--	1	1
Auxiliar of nursing	4	1	--	13	1	3	--	--
Nurse	5	1	--	15	--	2	--	--
Pharmacy specialist	--	--	--	3	--	1	--	--
Inspector of environmental sanitation	1	--	--	--	--	--	--	--
Laboratorista	1	--	--	2	--	--	--	--
Medical surgeon	--	--	--	1	--	--	--	--
Doctor	6	1	--	12	--	2	--	--
Medical gynecologist	--	--	--	2	--	--	--	--
Medical otorrinolaringólogo	--	--	--	1	--	--	--	--
Medical pediatrician	--	--	--	1	--	--	--	--
Dentist	3	1	--	5	--	2	--	--
Clerical staff	--	--	--	40	--	4	--	--
Psychologist	--	--	--	1	--	--	--	--
Social worker	--	--	--	1	--	--	--	--

Legend: C.S.: Centro de Salud PC.: Policlínica, P.S.: Puesto de Salud, SC.: Sub-Centro de Salud

Source: Region of Health of San Miguelito, december 2003, Region of Health of Colon, Office of Planning. December 2003.

TABLE A4.3-21
AREAS OF REFERENCE, ACCORDING TO INSTALLATIONS OF HEALTH. LAKE
ALHAJUELA. GENERAL AREA OF INTEREST. DECEMBER 2003.

Installation	Area of Reference
Centro de Salud de Chilibre	C. de S. De San Isidro / Hosp.. Integrado San Miguel Arcángel
Sub Centro de Salud de Caimitillo	Policlínica de Nuevo San Juan
Centro de Salud de Boquerón Arriba	C. de S. De Sardinilla / Policlínica de Nuevo San Juan/ Hosp.. Amador Guerrero
Puesto de Salud de Santa Rosa **	Policlínica de Nuevo San Juan/ Hosp.. Amador Guerrero
Puesto de Salud de Guayabalito	Hosp.. Amador Guerrero
Policlínica de Nuevo San Juan	Hosp.. Amador Guerrero
Centro de Salud de Sardinilla	Hosp.. Amador Guerrero
Centro de Salud de Gatuncillo **	Policlínica de Nuevo San Juan

Legend: ** currently are closed.

TABLE A4.3-22
PRINCIPAL CAUSES OF MORTALITY FOR CORREGIMIENTO AND AS
IT CAUSES BUFFER AND GENERAL AREA OF INTERES. LAKE ALHAJUELA

Cause	Corregimiento			
	Chilibre	Salamanca	San Juan	Santa Rosa
Total	152	10	61	7
Harmful tumors	26	--	9	2
isquemic illnesses of the heart	16	2	4	2
Accidents, wounds, aggressions and other violence's	22	2	15	--
Brain-vascular illnesses	17	1	6	2
Diabetes mellitus	8	1	5	--
AID's	9	--	2	--
Septisemia		--	1	--
Other illnesses of the heart	7	--	3	--
Liver illnesses	--	--	2	--
Chronic illnesses of the lower respiratory ways	5	2	4	--
Gastric and duodenal Ulcers	--	--	1	--
Certain affections originated in period perinatal	8	--	2	--
Anemia	--	--	1	--
Congenital malformations	4	1	--	--
The other causes	30	1	6	1

Source: Contraloría General de la República. Dirección de Estadística y Censo. December 2003.

TABLE A4.3-23
THE FIVE PRINCIPAL CAUSES OF MORBIDITY FOR GROUP ETAREO
POLYCLINIC NUEVO SAN JUAN, PROVINCE OF COLON. GENERAL AREA OF
INTEREST LAKE ALHAJUELA.

Group of Age	Cause	Number
Less than 1 year	Flu Syndrome	517
	Piodermatitis	108
	Dermatitis	25
	Impetigo	26
	Intestinal Parasitosis	22
	Diarrheic illnesses	21
1 - 4 year	Flu Syndrome	580
	Impetigo	172
	Piodermatitis	138
	Pharyngitis	131
	Dyspepsia	69
	Intestinal Parasitosis	64
5-9 year	Flu Syndrome	206
	Piodermatitis	114
	Impetigo	94

Group of Age	Cause	Number
	Pharyngitis	75
	Dyspepsia	63
	Intestinal Parasitosis	62
10-14 year	Flu Syndrome	43
	Sharp Faringoamigdalitis	94
	Infection of urinary tract	88
	Conjuntivitis	79
	Pharyngitis	63
	Intestinal Parasitosis	62
15- 19 year	Flu Syndrome	116
	Sharp Faringoamigdalitis	149
	Conjuntivitis	125
	Micosis	56
	Gastritis	48
20-59 year	Conjuntivitis	679
	Gastritis	439
	Flu Syndrome	402
	Piodermitis	398
	Dyspepsia	238
	Pharyngitis	215
60 and more	Flu Syndrome	93
	Conjuntivitis	85
	Intestinal Parasitosis	81
	Faringoamigdalitis	51
	Gastritis	46

Source: Statistical and Medical Records. Policlínica of Nuevo San Juan. Dec. 2003.

TABLE A4.3-24
THE PRINCIPAL CAUSES OF INFECTIOUS MORBIDITY, POLYCLINIC OF NUEVO
SAN JUAN, PROVINCE OF COLON AREA OF GENERAL INTEREST. LAKE
ALHAJUELA..

Diagnostic	Number	Percentage
Total	8842	100
Flu Syndrome	2085	23.6
Conjuntivitis	1012	11.5
Piodermatitis	839	9.5
Sharp Faringoamigdalitis	792	8.9
Intestinal Parasitosis	527	5.9
Infection of the urinary tract	516	5.8
Impetigo	497	5.6
Pharyngitis	413	4.7
Dermatitis	404	4.6
Diarrheics illnesses	334	3.8
Micosis	333	3.7
Gastroenteritis	257	2.9

Source: Statistical and Medical Records. Policlínica of Nuevo San Juan. Dec. 2003.

TABLE A4.3-25
THE PRINCIPAL INFECTIOUS MORBIDITIES OF THE CORREGIMIENTO OF
CHILIBRE, AREA OF GENERAL INTEREST OF LAKE ALHAJUELA.

Morbilidad	Position
Cold	1
Grippe	2
Diarrhea	3
Dermatitis	4
Faringitis	5
Bronquitis	7
Conjuntivitis	8
Amigdalitis	10
I.V.U.	12
Piodermatitis	13

Source: Region of Health of San Miguelito. Dec. 2003.

TABLE A4.3-26
THE PRINCIPAL CAUSES OF MORBIDITY OF EPIDEMIOLOGICAL
NOTIFICATION. CENTER OF HEALTH OF BUENA VISTA.
LAKE ALHAJUELA, PROVINCE OF COLON. YEAR 2001.

MORBIDITY	Number	Rate by 1000
Sharp respiratory infection	148	158.1
Piodermitis	130	138.8
Diarrhea	49	52.34
Escabiasis	47	50.2
Vaginal lips infections	8	8.54
Conjuntivitis	8	8.54
Chicken pox	13	13.89
Leishmaniasis	19	20.3
Amoebiasis	34	36.3
Herpes	8	8.54

Source: Statistical and Medical Records of the MINSa. Colon. Regional Planning Office. Dec. 2003.
MINSa: Department of Health

ANNEX - 4

1.0 PLAN OF SECURITY

1.1 INTRODUCTION

The Study of Compilation of Environmental, Social and Cultural Information for Catchments areas in or Adjacent to the Eastern Region of the Canal of Panama watershed will be carried out to a great extent using detailed information that has been already raised in field under other efforts / contracts of consultancy. It is for it, that the work of field associated with the above mentioned study of compilation of information would be limited to recognitions and efforts of crosscheck. Therefore, the quantity of personnel that will have to work in field and the time of his demurrage in this one will be limited.

This Plan of Security tries to design specific measurements to assure the safety and health of the persons who should work in the field, inside the context of the project earlier mentioned. To assure the safety and health of the personnel, in this document there appear simple procedures that will have to be used by the whole personnel that takes part of the field activities. URS Holdings, also it has used as base his recent experience in the region to perfect some details that in this plan appear.

Before describing the principal elements of the plan, it is meritorious to indicate that all the members of URS Holdings, Inc. at the expense of the coordinating works, supervision and logistics of the personnel that will realize field works it has wide experience in this type of activities in remote, outlying areas or that they present adverse situations; such as the regions of the Darién or the Western Region of the Panama Canal Watershed. In addition, there will be hired personnel of the region that for his knowledge with the conditions of the same one they are less capable to risk. Nevertheless, in spite of these forecasts, the development and implementation of a Plan of Security it is the key in order that the activities are realized by a minimal risk, accidents and in the due time.

The intention of this Plan is to establish the requisites of health and safety, uniform and comprehensive, to carry out all the activities of field.

1.2 FULFILLMENT OF THE PLAN - OFFICIAL OF SECURITY

The field activities for this consultancy are of minor scale than for other projects that have developed in the Panama Canal Watershed and Bordering Areas. Consequently, it will not be asked from a safety official that it is present in the region during the execution of the contract. Nevertheless, to assure that they should be fulfilled by appropriate measurements of safety, the Coordinating one of Logistics and Administrative Support (Mariela Talavera) will be the Official of Security and it will be at the expense of assuring that all the persons who should take part of the field activities should read this plan and should promise to continue his indications. For such an effect the Lic. Talavera will provide any required support, as for example first-aid kits, vests lifebelt, etc. The

Lic. Talavera will be able, of considering it to be prudent, suspending the field activities if it is not fulfilled by the measurements established in this plan.

1.3 SUSPENSION OF WORKS

The works can be suspended if the personnel that is developing field activities experiences any symptom of illness (annoyance of the skin, eyes, gullet, nausea, vomiting, fevers, etc.). This decision will be a responsibility of the leader of the group.

Once the works are suspended, the Official of Security or his designated one, he will have to drive to the personnel that needs it to places of medical attention or out of areas of risk. The Official of Security will have to then inform the Project manager or the Local Coordinator of the happened. In his report, the Official of Security will have to explain the conditions or reasons that generated a situation of risk for the safety or the health and since anticipate them in the future.

1.4 PROTECTION MEASUREMENTS

The protection measurements include general topics as clothing and hydration, in addition to others to avoid specific illnesses as hanta virus, dengue and leishmaniasis. The whole personnel of field will have to respect the measurements arranged for his protection. These measurements include:

1.4.1 Generals

- There is recommended the use of the following appropriate clothing:
 - Shirt of sleeve talks
 - Boots of rubber
 - Beach thongs in the passages in rivers and gorges.
 - Cap or sombrero of wide wing
 - Long and resistant trousers.
 - Glasses or dark glasses for protection of solar beams.
- To take sufficient drinkable water in hermetically sealed receptacles or electrolytic solution sterile.
- To have tinned food or in conserves of sure origin.
- Use of repellent: we recommend bay run with sheet of tobacco or the available thing on the market.
- Always To use protection measurements: vest lifebelt; safety belt, hand lantern; portable radio; to use maps you guide, etc.
- To take briefcase of the first aids (at least one for team of work) which will have to include as minimum:
 - hydrogen peroxide (1 fco of 50 cc)
 - alcohol to 95 % (1 fco of 50cc)
 - soap hibiscrub (1 fco of 50 cc)

- gasas sterile (10)
 - Antiofidic polyvalent Serum

 - syringes of 5cc of of 21x 1 ½ (10)
 - adhesive cloth
 - gloves
 - antihistaminic: 1 frasco of benadryl of use i.m or i.v and/or (10) blisters of clorotrimetrón of use i.m or tablets (20)
 - diclofenac tablets of 50 mg. (20)
 - acetaminophen tablets of 500 mg (20)
 - thread of suture sedates N° 3 zero or 1 zero.
 - salvacolina tablets oral route for the cases of diarrheic cases
 - aeroxano plus suspension for the cases of cases of gastric annoyance or vomiting.
 - dehydration oral Serum in envelopes (N° 20)
 - solution of adrenaline (1 blister) subcutaneous route.
 - set of minor surgery
- To cover the wounds of the skin with a curita.
 - To wash food with water and soap and of being possible to submit them to cooking overhead of them 100°C before his ingestion.
 - In case of burns, use saline normal solution (plastic bottles of 1000cc)
 - In case of contact with irritating plants or sting of poisonous insect or bee Africanized, to use the antihistaminic with solution of adrenaline.

1.4.2 Protection measurements To anticipate Infestation for Hanta Virus

- To keep the camp clean to avoid the presence of the rodents:
 - to store the meal in closed places and to place them to not minor height of 25 cm of the soil
 - to place the garbage or garbage produced in receptacles with hermetic cover or to use carrier bag.
 - of being necessary, burying the garbage in the soil to a depth of 30 cm.
 - to wash kitchen tools immediately after using them
 - to proceed to clean counters and soils of residues.

- If it has to enter a housing:
 - one assure that the same one is well ventilate, opening his windows and doors in order that between the solar light.
 - Do not sweep the soil with broom directly; use Lysol or Clorox this way: 1 ½ cup of Clorox for a gallon of water. Use a cloth for cleaning with the above-mentioned solution.
 - Support the surroundings of the housing free of undergrowths, sheets of foundation, poles, sticks, scrap, deposit of firewoods or area of culture of rice or corn. up to a distance of 100 feet.

- If you have to encamp outdoors, avoid sleeping next to garbage, dens or rodents.
- Avoid to sleep in open ground; use bedspread, mattress or other raised
- Guard the food in packing sealed against rodents.
- Practice the hand wash constantly.
- Do not inhale elevated dust of areas contaminated with excrement of rodents.
- Discard, bury or burn all the garbage as soon as possible.

1.4.3 Protection measurements To anticipate Infestation for Leishmaniasis

- Periodic application of insecticides of residual action. To spray the interior and exterior of doors and other openings of the housing dumps.
- To anticipate poisonings for the use of the same ones respect the period of return that indicates the label (it ranges between 1 hour up to 4 hours).
- Use windows and thin meshes.
- Dump elimination or other places that favor the multiplication of the female of the phlebotomy.
- Use repellent of insects especially in hours of the late afternoon.
- Use protective clothes: sleeve talks, trousers and caps.

1.4.4 Protection measurements To anticipate Infestation for Dengue

- To spray the area close to the camp with insecticide derivative of piretroide and to eliminate the breeding grounds of the mosquito *Aedes aegypti*, identified
- To sleep with mosquito net
- Use of protective clothes and repellent.

1.5 RECOMMENDED VACCINES

- Tetanic Toxoide
- It vaccinates against German measles and Measles
- Yellow fever

1.6 REPORTS

Since it has been indicated briefly, of situations of risk to take place for the health or the safety or of are provoked accidents that were giving as turned out the injury of personnel, the Official of Security will have to realize a report and present it to the Project manager. The report will have to include the reasons for which the incident happened and that measurements will have to take to prevent the same one from repeating. Additionally, the Official of Security will have to prepare a report at the end of the field activities that sums up and explains the level of success with the one that applied to him the plan and will have to give information that sustains the mentioned report. The report will have the following tentative structure:

Introduction

Summary of Field activities

Application of Measurements of Security

Summary of Incidents

Corrective actions

Conclusion

Annexes

The report will be of approximately 10 pages.

Minuta

Name: Meeting in the ACP

Ref. Presentation of the Matrix of Evaluation of Alternatives

Dates: January 15 of 2,004

Hour: 2:00 PM

Place: Building Not 744

Participants: ACP: Franklin Guardia, Emilio Messina, Hortencia Broce, Guadalupe Ortega, Octavino De Gracia

URS: Ing. Juan Carlos Vallarino, Eduardo Montenegro

Summary:

Last January 15 of the current year, there was realized the presentation of the Matrix of Evaluation of Alternatives, where there was described the used methodology, considered variables and the weighting proposed for discussion and approval on behalf of the ACP.

In the meeting the Ing. Vallarino gave an explanation detailed on the components of the Matrix and of the table that would feed the matrix, the weighting and results waited on having completed the information in the counterfoil.

At the conclusion of the presentation we passed to the questions and responses to clarify the questions arisen after the presentation, as soon as they were clarified that the questions criteria were preceded to unify:

- To fit to 30 % the Social and Internal criteria of the project.
- To fit to 20 % the environmental and economic criteria.
- There will be replaced the variable "Problems of Construction " by the line of Risk.
- The variable "loss of the forest " it was replaced by the variables: mature Forest, secondary Forest, Stubble and Pasture.
- The ACP accepted to support the unit of cost in money proposed by URS to estimate the losses in infrastructure.

Finally, it reminded to be checked and to update the information for Rio Indio.

MINUTA
12/12/03

Name: Meeting in the SIG of the ACP

Ref: Presentation of the Categories of Use of Soil

Dates: on December 12 of 2,003

Hour: 10:00 AM

Place: Building of the SIG Not 748

Participants: ACP: Franklin Guardia, Lic. Raúl Martínez
URS: Eduardo Montenegro, José Guardia
Representatives of Consulting Companies

Summary:

In this meeting there represented the representatives of URS, Holding, besides there were present the representatives of other consulting companies who support contracts with the Authority of the Canal of Panama.

The meeting was directed by the Lic. Martínez, who spoke on the different terminologies that were in use for the classification of the use of the soil in the diverse projects that were executed in the ACP. For such a reason the SIG of the ACP it prepared the homologation of categories of use with the purpose of which all the consulting companies realized his classifications being based on an already established terminology, with the target to support uniformity in the information generated in the diverse projects. As soon as there was concluded the presentation and discussion of the presented categories, one of the representatives suggested to add to the list the network vial, such a motion was accepted by the representatives of the SIG.

Other topics that were included it was the quality of the products that were submitting to the ACP since there had submitted a few products that were not coinciding with the information of the ACP.

Enclosure to this menu presents to itself a copy of the categories of use of soil that was given by the SIG of the ACP.

VEGETABLE COVERAGE AND USE OF SOIL

Unit of Remote Sensors ACP

1-Forest

Mature forests
Forests Secondary

2-Shrublands and Stubbles

3-Pasture

4-Pasture Land (Straw Roof-gutter, Faragua)

5-Agriculture

- Permanents
- Temporary

6- Forest Plantations

7- Cattle Activities

- Porcine
- Poultry
- Bobbin

8- Mineral Exploitations

9-Areas Populated or Humanized

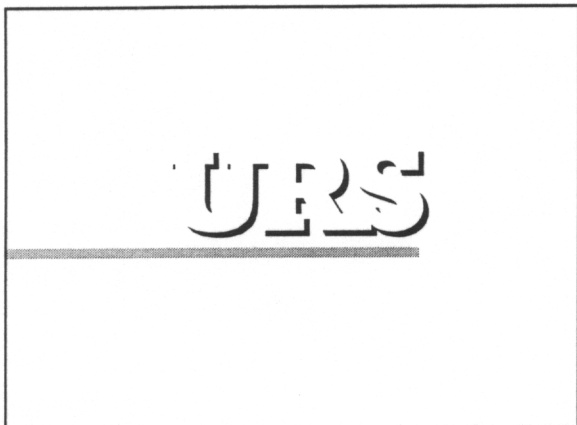
- Housings
- High density
- Medium density
- Low density

10-Naked soils

11-Water

12-Proteted Areas

13-Red Vial



URS

Environmental, Social and Cultural Data Gathering for Catchment Areas in or Adjacent to the Eastern Region of the Panama Canal Watershed.

Prepared for:
Authority of the Canal of Panama.

Presented for:
URS Holdings Inc.

May 13, 2004

URS

Introduction

URS **Background**

- The transit of ships for the Canal of Panama depends on the availability of water stored in the lakes Alhajuela and Gatún.
- The volume of shipping traffic across the Canal turns out to be occasionally restricted during the dry season, especially in the frame of climatic extreme phenomena.

URS **Precedents**

- These facts sustain the need that there confronts the Authority of the Canal of Panama (ACP) to realize studies to evaluate the practicality of a new game of sluices, systems for the water saving and the improvement of the channels of navigation, between others.

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Objetives

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- Gathering environmental, socioeconomic and sociocultural information of the subbasins of the rivers Ciri Grande, Lagarto and of the Lake Alhajuela.
- To determine the possible impacts on the physical way, biótico and socioeconomic
- To compare Alternatives with the Option of Indio River.

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Area of Study

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Criteria of Definition

- Terms of Reference of the Project
- Hidrological delimitation of the Catchments of:
 - Ciri Grande River
 - Lagarto River
- Simulation of the elevation of the current level of the Lake Alhajuela.

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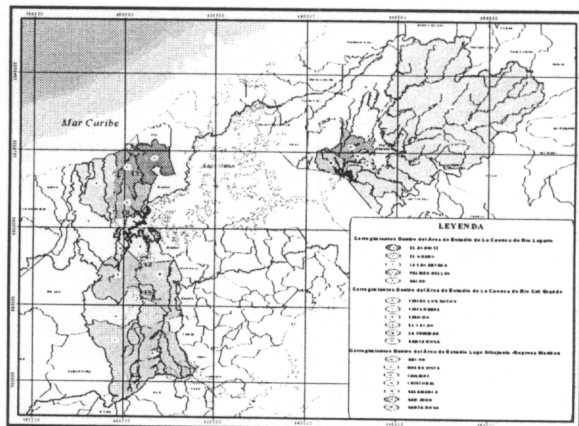
Areas of Interest

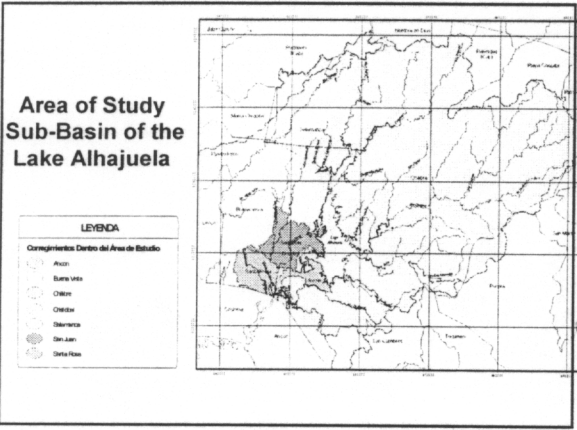
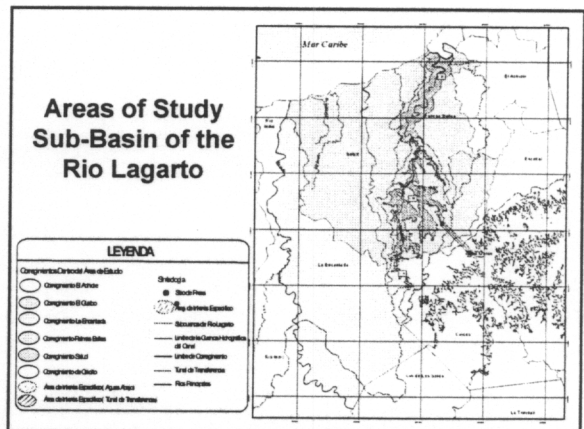
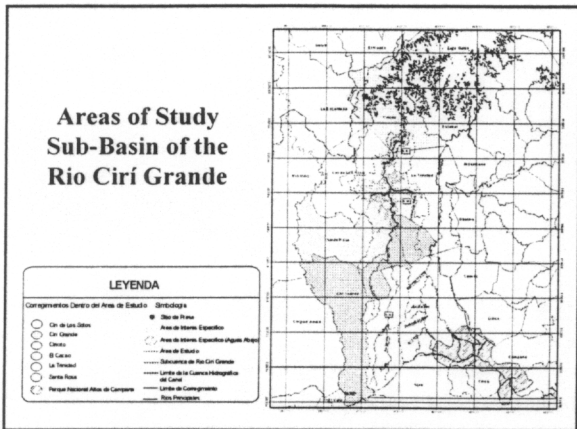
- Upper subbasin (SA)
- Middle Subbasin (MS)
- Lower Subbasin (LS)
- Area of Specific Interest (ASI)
- Buffer Zone (BZ)
- Area of General Interest (AGI)

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Surface Estimated

Catchment	Area of Study (Ha)	Catchment(Ha)	ASI	AGI	BZ
Ciri Grande	70,003.9	22,407.3	4030.0	18377.3	—
Rio Lagarto	49,347.10	10,955.00	3,180.0	7,914.2	—
Lake Alhajuela	133,351.10	—	312.8	108,850.40	24,187.9





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Methodology

- URS**
- Secondary sources (Flora and Fauna)
 - Images of Satellite of 1990 and of 2000 (ACP)
 - Digital image of the Area (Images of radar IFSAR / 2000)
 - National Census of Population and Housing (1960-2000) - Agricultural Census (2001)
 - MINSA (Epidemiology)

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Results

Environmental information

Terrestrial Habitat's

1. Tropical Evergreen Ombrophilus Lowland Forest (0-500 masl BPOTTB).
2. Very Disturbed Tropical Evergreen Ombrophilus Lowland Forest of 0-500 masl (BPOTTBBI)
3. Tropical Evergreen Ombrophilus Submontane Forest of 500-1,000 masl (BPOTSM).
4. Tropical Evergreen Ombrophilus Montane Forest of 1,000-2,000 masl (BPOTM).
5. Pasture
6. Shrubland/Stubble

CATEGORIES OF HABITAT	Ciri Grande		Rio Lagarto		Lake Alhajuela		Indio River	
	Sup ha	%	Sup ha	%	Sup ha	%	Sup ha	%
BPOTT B (0- 500 msnm)	2,227.20	10.7	3,195.82	29.2	4,925.55	20.2	7,894.5	20.5
BPOTTBI (0-500 msnm)	-	-	-	-	6,260.20	25.7	-	-
BPOTM (1000-2000 msnm)	141.9	0.7	-	-	-	-	74.0	0.2
BPOTS (500-1000 msnm)	1,590.10	7.7	-	-	104.95	0.4	2,168.4	5.6
Pasture	6,472.40	31.1	2,287.95	20.9	6,034.60	24.8	5,435.9	14.1
Shrub Land- Stubble	10,346.80	49.8	5,471.23	49.9	6,998.60	28.8	22,872.9	59.5
TOTAL	20,778.30	100.0	10,955.0	100.0	24,323.90	100.0	38,445.7	100.0



SHRUB LAND



PASTURE



MATURE FOREST

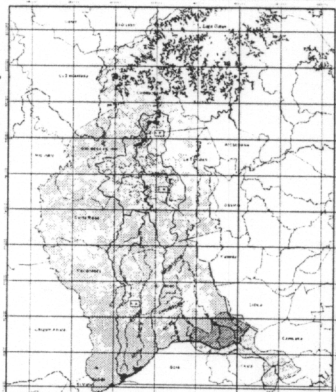
Distribution of Habitat

Categories of Habitat	Ciri Grande River		Lagarto River		Lake Alhajuela		
	ASI	AGI	ASI	AGI	ASI	BZ	AGI
BPOTTB (0- 500 msnm)	155.7	2,071.5	398.9	2,808.4	6.7	4,918.9	46,220.0
BPOTTBBI (0-500 msnm)	--	--	--	--	31.3	6,228.9	13,808.0
BPOTM (1000-2000 msn)	--	142.0	--	--	--	--	--
BPOTS (500-1000 m)	--	1,590.1	--	--	--	105.0	23,301.0
Pasture	2,090.4	4,382.0	1,061.7	1,312.3	42.6	5,978.5	13.5
Shrub Land/Stubble	748.2	9,599.5	1,718.7	3,793.1	232.5	6,766.1	12,658.4
Totales	2,994.3	17,785.1	3,179.3	7,913.8	313.1	23,997.4	96,000.9

Distribution of Habitat of the Sub-Basin of the Rio Ciri Grande

LEYENDA

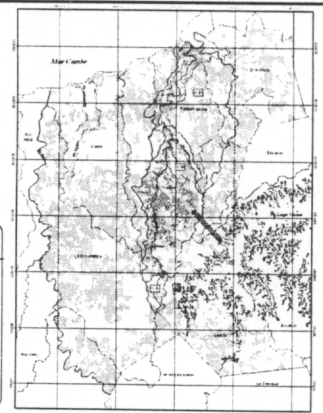
- Categorías de Hábitat
- Bosque Perennifolio Ombrofilo Tropical de Teras Baja (<500 mts)
 - Bosque Perennifolio Ombrofilo Tropical Sub Montano (500 - 1000 mts)
 - Bosque Perennifolio Ombrofilo Tropical Alto (> 1000 mts)
 - Pastoral Sistema Productivo con vegetación nativa importante agrícola (10%)
 - Pastoral Sistema Productivo con vegetación nativa importante agrícola (10-50%)
 - Parque Nacional Alto de Campesina

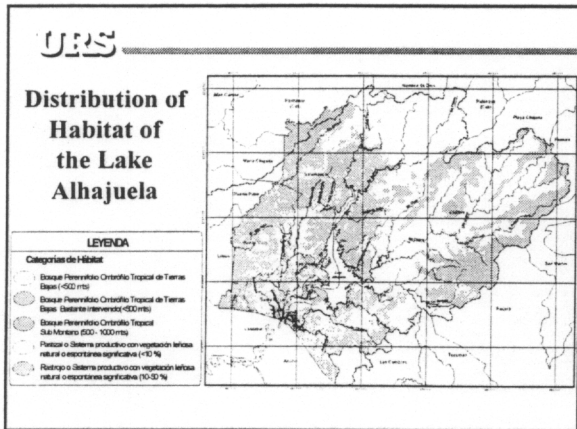


Distribution of Habitat of the Sub-Basin of the Lagarto River

LEYENDA

- Categorías de Hábitat
- Bosque Perennifolio Ombrofilo Tropical de Teras Baja (<500 mts)
 - Pastoral Sistema Productivo con vegetación nativa importante agrícola (10%)
 - Pastoral Sistema Productivo con vegetación nativa importante agrícola (10-50%)
 - Área de Interés Especifico (Agua Abajo)
 - Área de Interés Especifico (Túnel de Transferencia)





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Terrestrial Flora

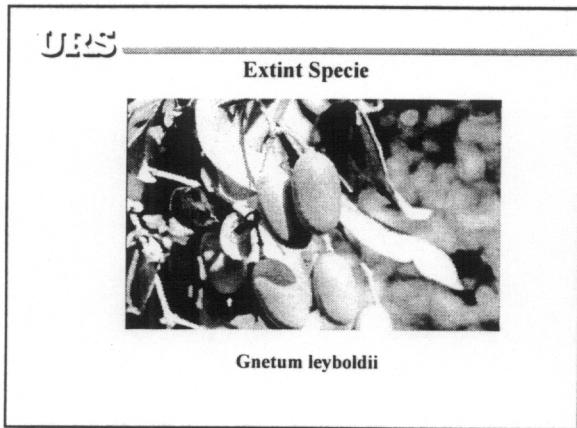
Sub-Basin	No. Families	No. Species
Total of Three Areas of Study	82	681
Ciri Grande		280
Rio Lagarto		450
Lake Alhajuela		231

UICN	ANAM	CITES
Vulnerables 32	Vulnerables 77	1
Treathened 19	Treathened 6	
Low Risk 89		

Aphelandra campanensis
Highland Forest Specie

Amphitecna isthmica
Treathened Specie

Chrysothemis friedrichthaliana
Treathened Specie



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Aquatic Species

Sub-Basin	No. Families	No. Species	Emergent	Floating	Marginal	Submerged
Total of the three Areas of Study	28	45	9	7	27	7
Ciri Grande	25	41	9	6	24	6
Rio Lagarto	25	43	9	7	23	7
Lago Alhajuela	11	17	0	2	12	2

Eichhornia crassipes

Pistia stratiotes

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Aquatics Habitat's

Highland Water system (HWS)	Develop over 100 masl.
Fast Flowing Water System (FFWS)	Develop between 10-100 masl, the average speed of the course is top to 0.5m/seg.
Lower Flowing Water System (LFWS)	Develop between 10-100 masl, the average speed of the course is low to 0.4 - 0.5 m/seg.
Estuarine Water System (EWS)	Develop under 10 masl.

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Families and Species of Fishes

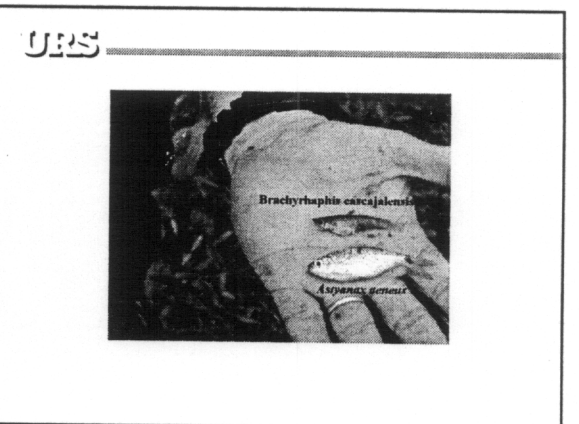
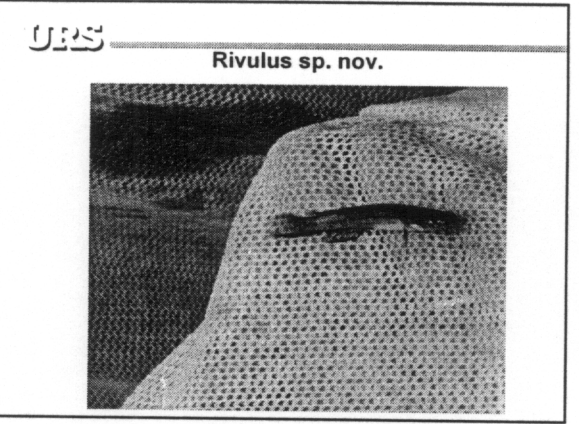
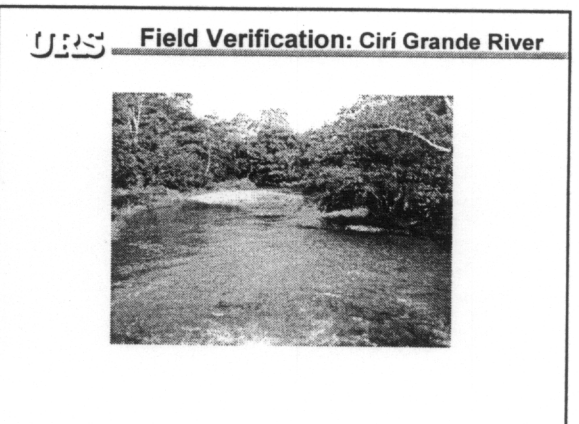
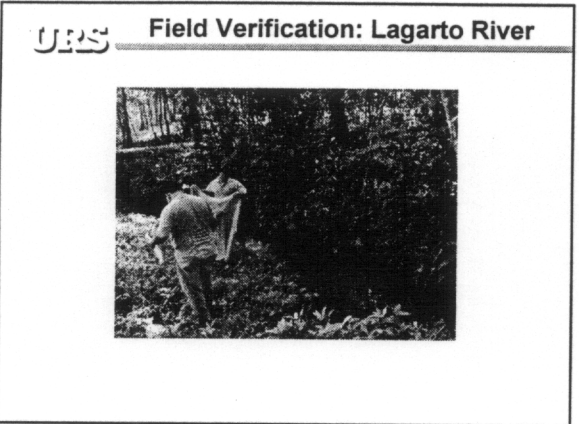
Catchment	Total of Families	Total of Species
Ciri Grande River	15	40
Lagarto River	23	52
Lake Alhajuela	14	37
Indio River	16	35

URS Número de Especies Según Hábitat

Hidric Systems	Cirí Grande River	Lagarto River	Indio River
HWS	18	18	17
FFWS	34	32	26
LFWS	39	39	22
EWS	0	28	20

Species that may be survivor the Water option

Familia	Specie	Common Name	Physiologic Classification	Type of Habitat	Distribution	Cirí	Lagarto	Altiplano
						U	M	L
Atherinidae	<i>Atherinella chagresi</i>	sardina	Periferic	FFWS	IE, PE	1	1	1
Characidae	<i>Asynxus acensis</i>	sardina de río	Primary	LFWS, FFWS, HWS	IE, IG, PE	1	1	1
	<i>Brycon chagrensis</i>	sábalo pipón	Primary	LFWS, FFWS, HWS	IE, IG	1	1	1
	<i>Rachoides guatemalensis</i>	choveca	Primary	LFWS, FFWS, HWS	IE, IG, PE	1	1	1
Cichlidae	<i>Aequidens coeruleopunctatus</i>	chogorro	Secondary	LFWS, FFWS, HWS	IE, IG, PE	1	1	1
Cichlidae	<i>Vieja maculosa</i>	vieja	Secondary	LFWS, FFWS	IE, PE	1	1	1
Eleotridae	<i>Gobiomorus dormitor</i>	guahina de río	Periferic	LFWS, FFWS	IE, PE	1	1	1
Erythrinidae	<i>Hoplias microlepis</i>	pejeperro	Primary	LFWS	IE, PE	1	1	1
Loricariidae	<i>Hypostomus panamensis</i>	cococha	Primary	LFWS, FFWS	IE, IG, PE	1	1	1
Pimelodidae	<i>Rhamdia quelen</i>	barbudo	Primary	LFWS, HWS	IE, IG, PE	1	1	1
POECILIIDAE	<i>Brachyraphis cascajalensis</i>	parvivo	Secondary	LFWS, FFWS	IE, PE	1	1	1
	<i>Poecilia gillii</i>	parvivo	Secondary	LFWS, FFWS, HWS	IE, IG, PE	1	1	1



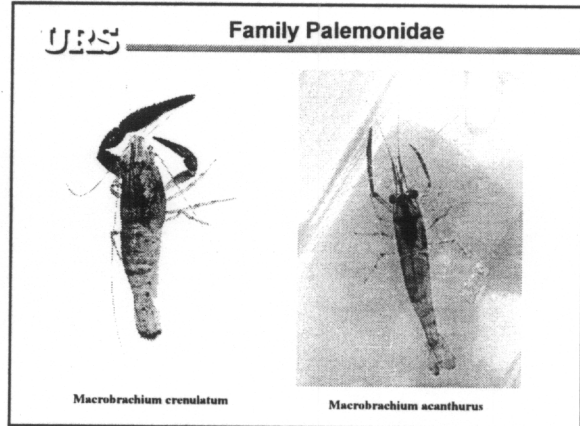
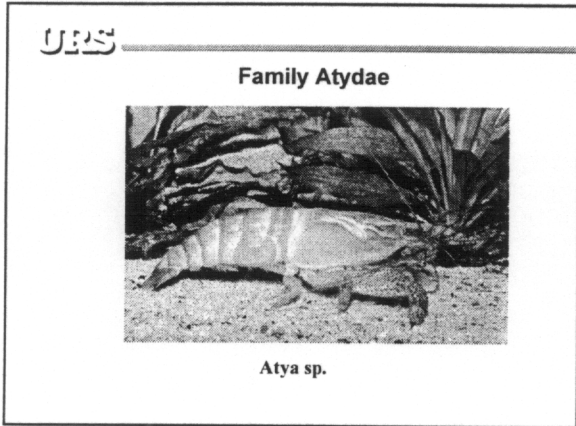
URS **Crustaceans y Molluscs**

Aquatic Fauna	Ciri Grande River		Lagarto River		Lake Alhajuela		Indio River	
	No. Species	No. Families	No. Species	No. Families	No. Species	No. Families	No. Species	No. Families
Crustaceans	6	3	6	3	5	2	7	4
Molluscs	2	2	10	10	4	3	10	10

- The catchments Areas of Lagarto and Indio Rivers presents the biggest diversity of molluscs, it is due to the fact that in both subbasins one finds the Estuarine Water System.
- In Ciri Grande, Alhajuela and Lagarto possess fewer species of Crustaceans than Indio River.
- Of the whole of species of crustaceans 3 species correspond to 3 Families of Crabs, where the Families Grapsidae and Portunidae, they are of the Estuarine Water System.

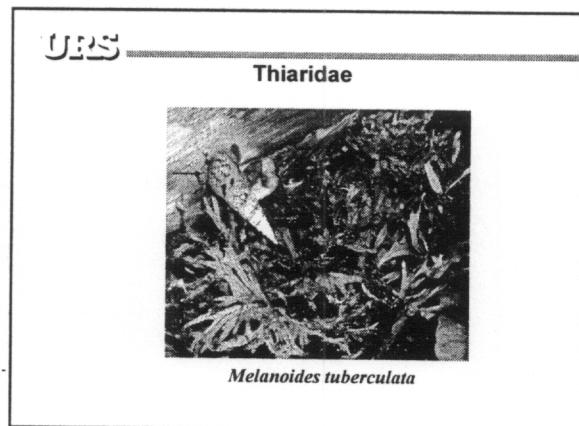
URS **Crustaceans**

TAXON	SIS	Area of Interest			Habitat			High	Catchment
		GAL	ASI	HW	LPWS	FFWS	EWS		
Crustaceans									
Athyidae									
<i>Atya acantha</i>	1	1	1	1	1	1	1	A.M	C.J
<i>Paratya glabra</i>	1	1	1	1	1	1	1	M	C.J
Palaemonidae									
<i>Macrobrachium americanum</i>			1					A	
<i>Macrobrachium curcatus</i>	1	1	1	1	1	1	1	A.M.B	A.C.L
<i>Macrobrachium crenulatum</i>	1	1	1	1	1	1	1	A.M.B	A.C.L
<i>Macrobrachium acanthurus</i>	1	1	1	1	1	1	1	A.M.B	A.C.L
Crabs									
Portunidae									
<i>Callinectes sp.</i>	1	1						1	B L
Pseudothelphusidae									
<i>Pseudothelphusa americana</i>	1	1	1		1	1		M	A.C.J
Grapsidae									
<i>Scorpaena sp.</i>		1						1	B L
SUBTOTAL	6	8	7	5	6	6	5		



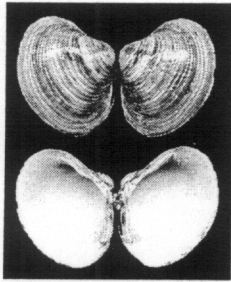
URS **Mollusc**

TAXON	EE	Area de Interés			Habitat				Altura	Subsistema
		ARG	AIE	SIA	SBCL	SBOR	SE			
Molluscs										
Acomidae										
<i>Acomca sp.</i>							1	B	L	
Archidae										
<i>Archia sp.</i>	1						1	B	L	
Corbiculidae										
<i>Corbicula fluminea</i>	1	1	1		1	1			B	A.L
Neritidae										
<i>Nerita sp.</i>							1	B	L	
Obolidae										
<i>Obola sp.</i>							1	B	L	
Pisidae										
<i>Pisumca sp.</i>		1	1				1	M.D	A.C.L	
<i>Pisumca curatigi</i>	1						1	B	A	
Tellinidae										
<i>Tellina sp.</i>							1	B	L	
Unionidae										
<i>Melanoidea tuberculata</i>		1	1	1	1	1	1	A.M.B	A.C.L	
Trochidae										
<i>Callaetoma sp.</i>	1						1	B	L	
Unionidae										
<i>Melanoidea sp.</i>								B	L	
SUBTOTALS	4	3	3	1	2	2	9			

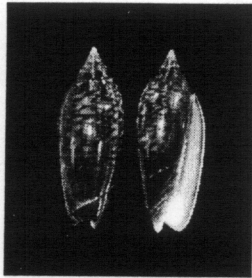


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Corbiculidae & Olividae



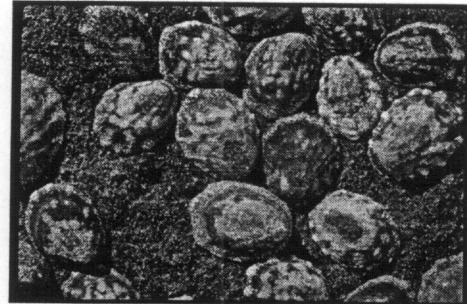
Corbicula fluminea



Oliva sp.

URS

Acmaeidae



Acmaea sp.

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Terrestrial Fauna

Terrestrial Fauna	Ciri Grande		Lagarto River		Lake Alhajuela		Indio River	
	No. Species	No. Families	No. Species	No. Families	No. Species	No. Families	No. Species	No. Families
Mammals	74	27	96	32	107	35	50	22
Birds	362	51	356	53	518	61	235	41
Amphibians	71	9	46	9	91	9	66	9
Reptiles	51	11	46	16	65	12	35	12

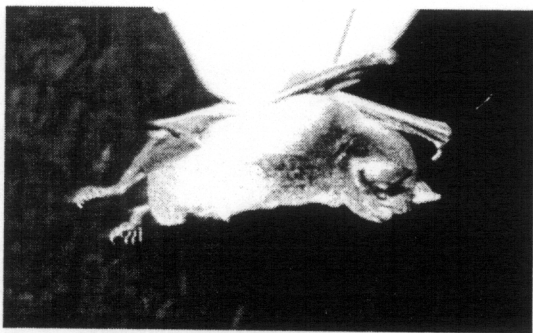
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Categories of Conservation : Mamíferos

Catchment	ANAM	UICN	CITES
Ciri Grande	1 E / 15 T	2 T	7
Lagarto	1 E / 21 T	7 T	15
Lake Alhajuela	1 E / 24 T	9 T	18
Indio	1 E / 14 T	9 T	18

E: Endemic T: Threatened

URS



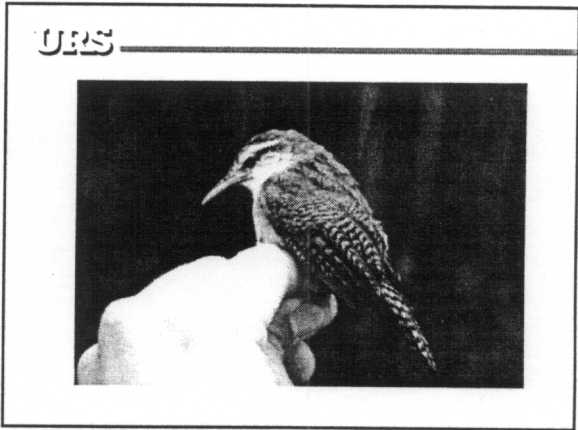
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URS Categories of Conservation : Birds

Catchment	ANAM	UICN	CITES	Migratory
Ciri Grande	3 ER /19 T	1 T	39	7
Rio Lagarto	16 T	1 T	38	9
Lake Alhajuela	2ER / 49 T	8	72	28
Indio	15 T	35 T	35	29

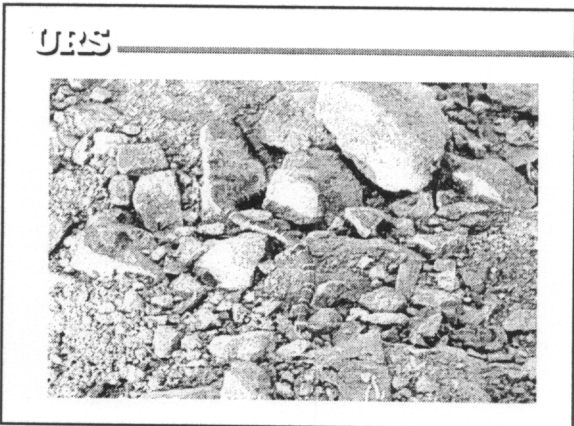
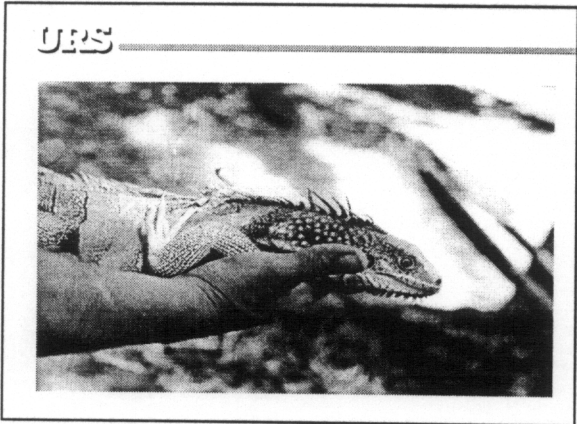
E: Endemic T: Threatened



URS Categories of Conservation: Reptiles

Catchment	ANAM	UICN	CITES
Ciri Grande	2 E / 5T	1T	5
Lagarto River	2 E / 6T	1T	4
Lake Alhajuela	2E / 3T	-	3
Indio River	2E/ 7T	-	2

E: Endemic T: Threatened

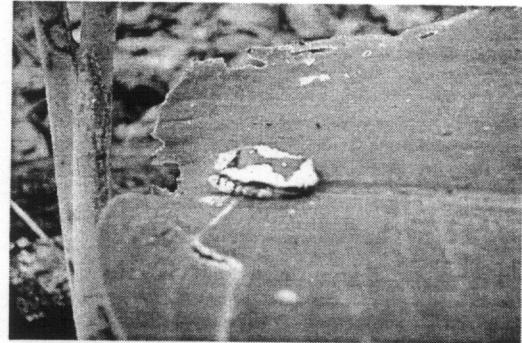


URS Categories of Conservation: Amphibians

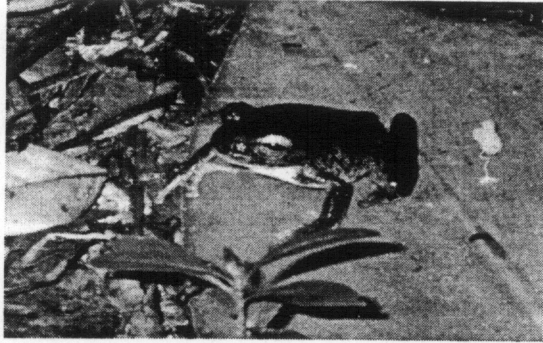
Catchment	ANAM	UICN	CITES
Ciri Grande	4E / 7T	-	4
Lagarto River	1E / 7T	-	3
Lake Alhajuela	4E / 7T	-	3
Indio River	1E / 16T	-	2

E: Endemic T: Threatened

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Socioeconomics Data

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Use Actual of the Soil

Categories of Use	Ciri Grande River		Lagarto River		Lake Alhajuela		Indio River	
	Sup/ha	%	Sup/ha	%	Sup/ha	%	Sup/ha	%
Mature Forest	1,469.0	7.0	---	---	74,108.6	55.5	1,134.30	3.1
Secondary Forest	2,477.9	11.9	3,284.20	29.9	19,854.9	14.9	10,465.80	28.4
Pasture	6,484.5	30.8	2,058.40	18.8	19,262.9	14.4	8,819.30	24.0
Shrub land and Stubbles	10,217.0	47.2	5,522.60	50.4	18,970.1	14.2	15,423.30	42.0
Permanent Agriculture	0.0	0.0	---	---	122.3	0.1	5.7	0.0
Subsistence Agriculture	210.4	1.0	89.7	0.8	662.9	0.5	879	2.4
Reforestation	0.0	0.0	0.0	0.0	107.8	0.1	0	0.0
Naked Soils	0.0	0.0	0.0	0.0	322.6	0.2	24.9	0.1
TOTAL	20,778.8	100.0	10,955.0	100.0	133,412.1	100.0	36,692.7	100.0

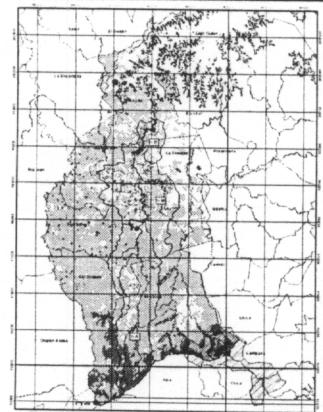
Fuente: URS con Datos de la ACP

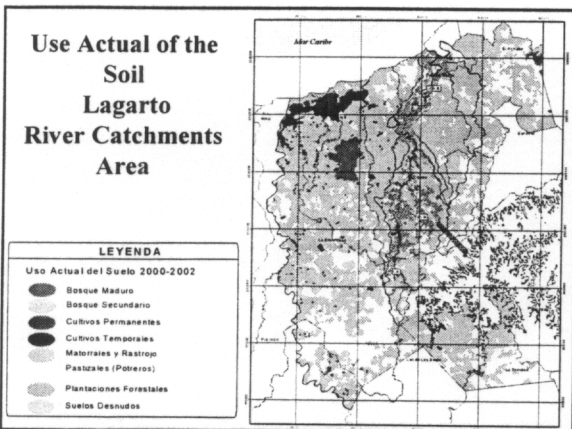
**Use Actual of the Soil
Ciri Grande
River Catchments
Areas**

LEYENDA

Uso del Suelo Actual 2000-2002

- Bosque Maduro
- Bosque Secundario
- Cultivos Permanentes
- Cultivos Temporales
- Matorrales y Rastrojo
- Pastizales (Potreros)
- Parque Nacional Años de Campana
- Rios Principales





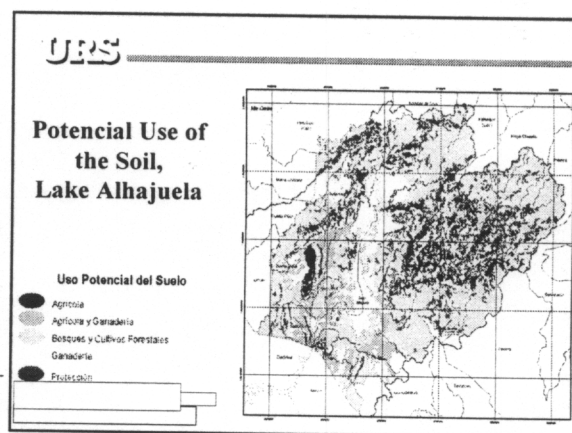
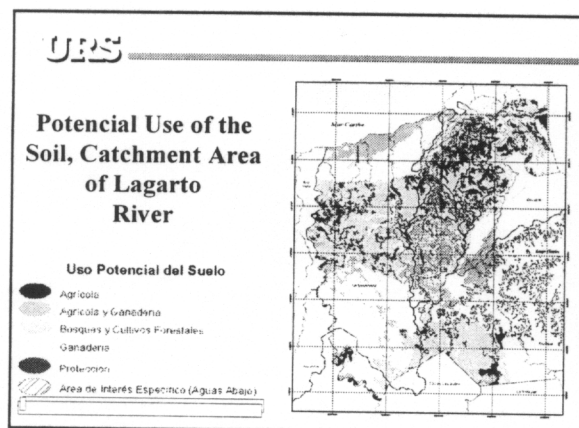
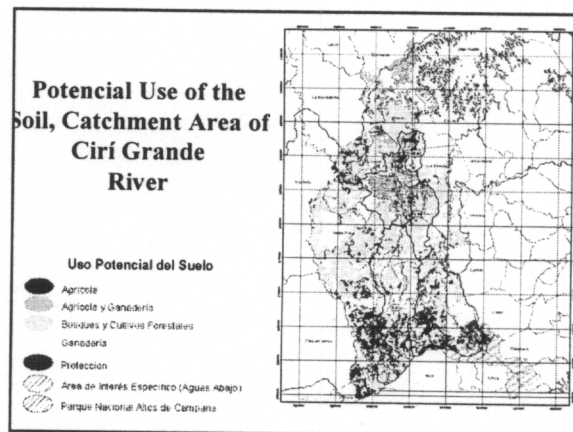
URS Change of Soil Use

Use of Soil	Catchment Area of Ciri Grande River				Catchment Area of Lagarto River				Lake Alhajueta			
	2000 Sup/ha	1990 Sup/ha	Change of Use Sup/ha	%	2000 Sup/ha	1990 Sup/ha	Change of Use Sup/ha	%	2000 Sup/ha	1990 Sup/ha	Change of Use Sup/ha	%
Mature Forest	1469.0	1506.1	-37.1	-2.46	0.0	139.9	-139.9	-100.0	74108.6	76268.0	-2159.4	-2.83
Secondary Forest	2477.9	2963.8	-486.0	-16.40	3284.2	4382.6	-1098.4	-25.1	19854.9	23644.0	-3789.1	-16.03
Pasture	6404.5	6052.7	351.8	5.81	2058.4	1587.3	471.1	29.7	18970.1	8287.6	10682.5	128.90
Shrub Land & Scrublands	10217.0	10144.9	72.1	0.71	5522.6	4797.3	725.4	15.1	19262.9	24457.0	-5194.1	-21.24
Subsistence Agriculture	210.0	106.6	103.3	96.93	89.7	47.0	42.7	90.9	662.9	232.6	430.3	184.98
Permanent Agriculture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	122.3	0.9	121.5	14289.76
Forestal Plantations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.8	0.0	107.8	0.00
Naked Soils	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	322.6	4.4	318.2	7232.39
TOTAL	20774	20774	4.2	84.59	10955.0	10955.0	0.9	10.6	133412	133413.1	1.072	0.001

URS Potential Use of the Soil

Potencial Use	Sup/ha	%	Sup/ha	%	Sup/ha	%	Sup/ha	%
Agriculture	69.4	0.3	-----	-----	849.3	0.6	17426	45.1
Agriculture y Cattle	1496.6	7	1149	10.5	10,781.20	8.1	7258.5	18.8
Cattle	5,894.70	28.4	2596	23.7	15,145.90	11	6.48	0.02
Forest & Forestal Plantations	10448.8	50.3	4309	39.3	81,591.00	61	13858	35.8
Protection	2,868.90	13.8	2902	26.5	24,983.70	19	111.5	0.29
Total	20778.4	100.0	10955	100	133351.1	100	38660.0	100

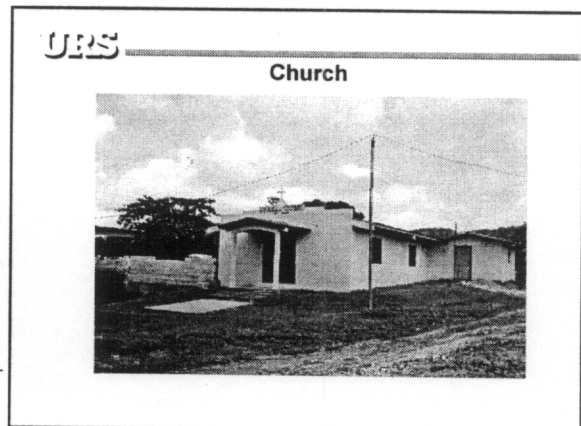
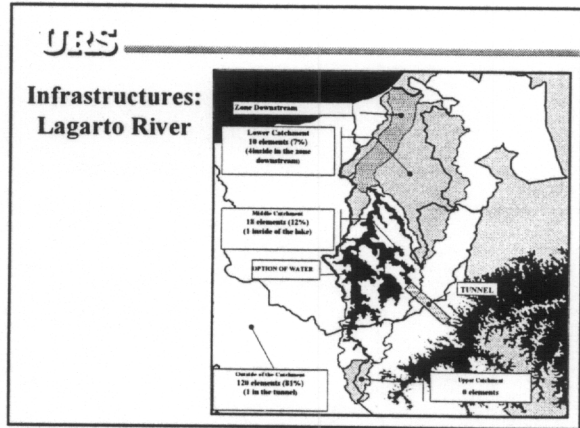
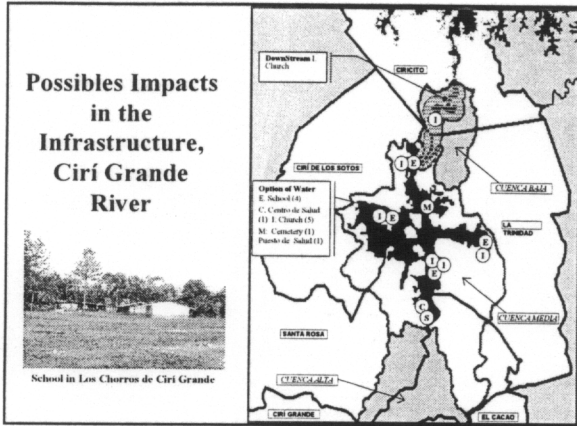
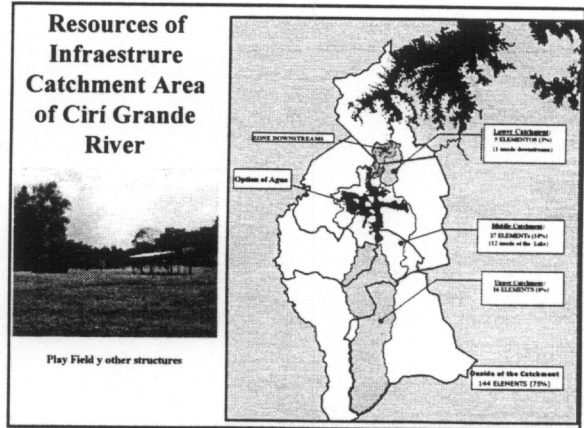
Source: URS with Data from ACP

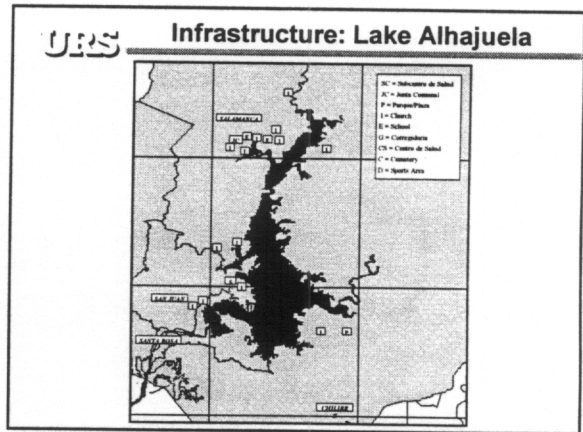
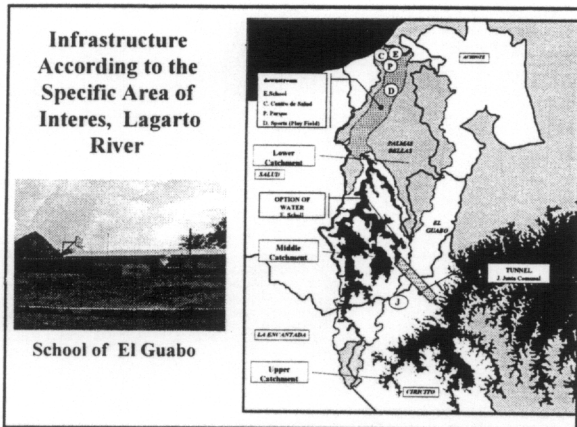


URS Infrastructure

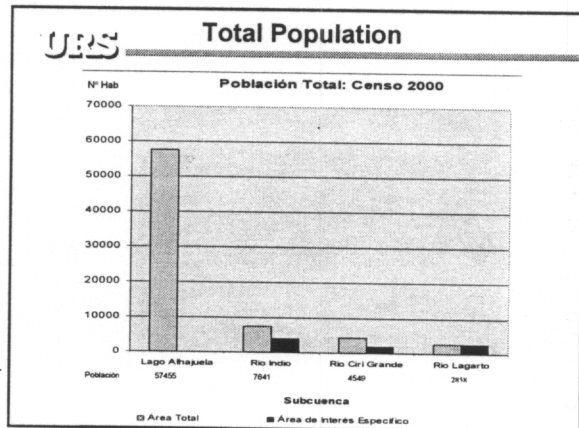
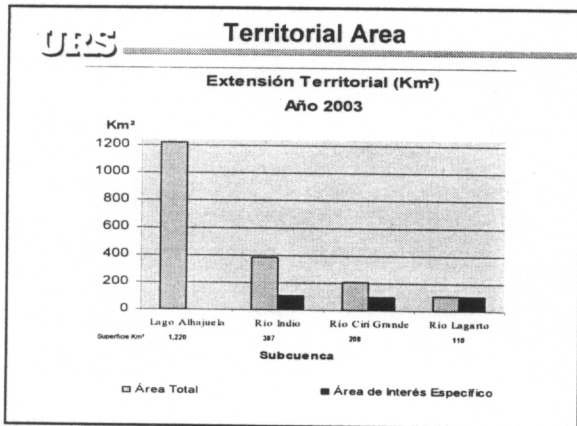
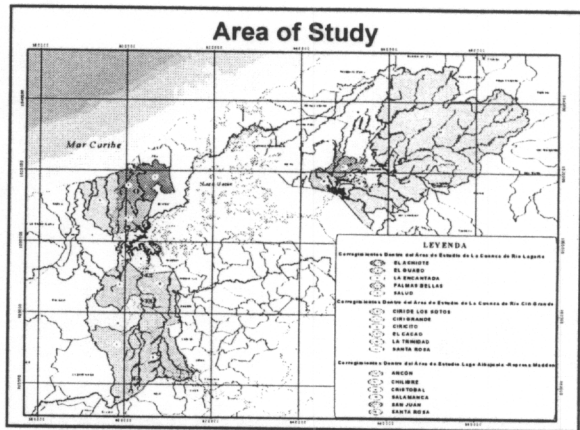
Type of Infrastructure	Rio Ciri				Lagarto River				Lake Alhambra			
	AGI	ASI	AGO	TSA	AGI	ASI	AGO	TSA	BZ	ASI	AGI	TSA
Church	18	0	35	76	19	21	51	13	0	36	49	
Schools	11	1	31	46	5	2	29	36	6	0	16	
Centros de Salud	1	1	11	13	2	1	10	13	1	0	6	
Parques de Salud	1	1	4	6	3	0	7	10	0	0	4	
Subcentros de Salud	0	0	1	1	0	0	1	1	1	0	1	
Hospital	0	0	0	0	0	0	0	0	0	0	1	
Junta Comunal	0	0	5	5	1	0	8	10	1	0	9	
Cemetery	3	1	21	25	0	0	8	5	1	0	4	
Compadrinas	0	0	4	4	1	0	3	3	1	0	2	
Canchas Cuadras	1	0	8	9	1	1	9	11	2	0	12	
Parque-Square	0	0	4	4	0	1	3	4	1	0	6	
MIDA ANAM	0	0	3	3	0	0	0	0	0	0	2	
Centro de Rehabilitacion	0	0	0	0	0	0	0	0	0	0	2	
Ibiboteca	0	0	0	0	0	0	0	0	0	0	1	
Subtotal	35	13	144	192	23	6	119	148	27	0	101	
Total	48	144	192	28	119	148	27	101	128			
Percentage	25%	75%	100%	20%	80%	100%	21%	79%	100%			

AGI: Area of General Interest in the Catchment; AGIO: Areas General Interest outside of the Catchment.
BZ: Buffer Zone; ASI: Area of Specific Interest; TSA: Total of the Study Area





URS Demographics Aspects



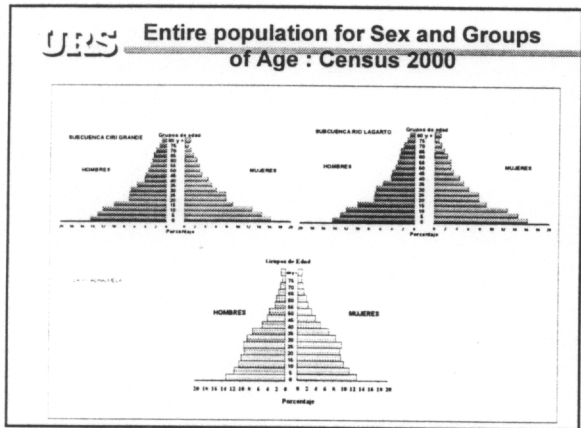
URS Demographic Density: Census 2000

Indicator	Subcuenca			
	River	River	River	Lake
	Indio	Ciri Grande	Lagarto	Alhajuela
Densidad demografica Density in the Catchment (Hab./Km ²)	20	22	26	47
Number of little towns in the catchment	135	53	34	97
Number of little town with 100 and more inhabitant	21	16	6	37
Porcentajes of inhabitants the living in little towns				
With 100 and more inhabitants	45	66	73	97

URS Growth of the Population: Year 1960-2000

Indicator	Catchment			
	Indio	Ciri Grande	Lagarto	Lake Ahajuela
Tendency of growth of the entire population in Catchment (Rate for 100 inhabitants)				
1960-70	4.2	2.6	3.5	(a) 9.1
1970-80	2.7	2.2	1.9	(a) 2.1
1980-90	4.4	5.0	2.4	(a) 3.7
1990-00	1.0	0.3	1.8	(a) 2.2
Index of Masculinity of the population of the Catchment (Men for every 100 women)	120	120	113	107
Percentage of 15-year-old minors in the Catchment	45	44	40	35
Median age of the population in the Catchment	18	19	20	23

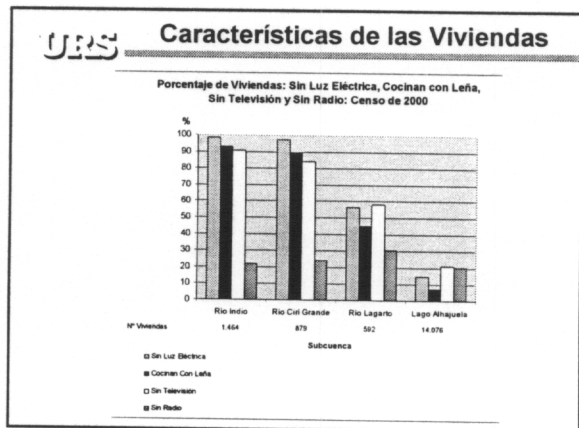
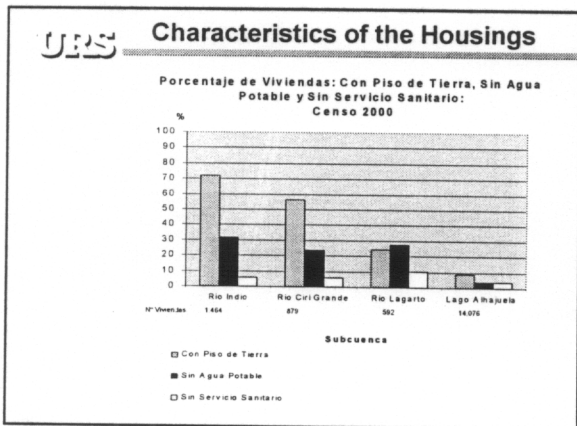
(a) Buffer Zone



URS Condiciones Socioeconómicas de la Población: Censo 2000

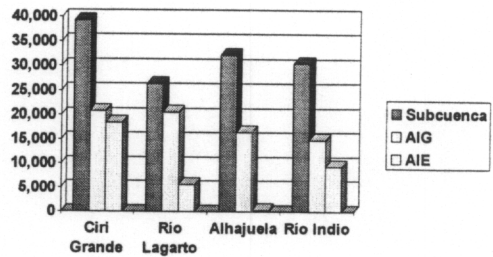
Indicator	Subcuenca			
	River Indio	River Ciri Grande	River Lagarto	Lake Ahajuela
10-YEAR-OLD POPULATION AND MORE OF AGE:				
Whole in catchment area	5135	3132	2,002	43,298
Percentage of illiterate	9.6	12.3	7.1	4.1
Average of approved years	4.4	4.3	5.8	7.1
Valuation of economic activity (for 100 pers. of 10 years and more)	51.4	49.4	44.8	51.3
Valuation of unemployment (for 100 active persons)	4.6	7.4	12.8	15.6
Percentage of population occupied in agricultural activities	90.0	86.0	45.0	6.0
Median of monthly revenue of the health (Balboas)	*70.0	82.0	213.0	367.0

* By occupied person

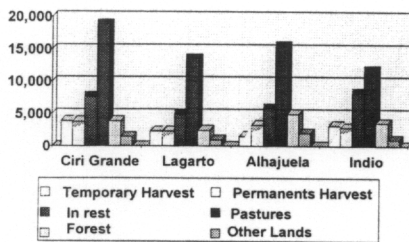


DESCRIPTION OF THE ECONOMIC STRUCTURE CATCHMENT'S AREA OF THE RIVERS CIRI GRANDE, LAGARTO AND LAKE ALHAJUELA

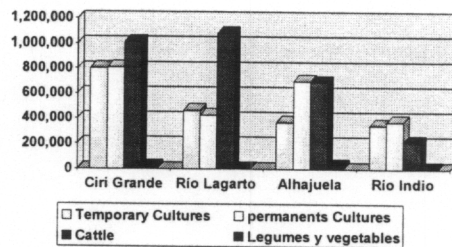
Surface of the Catchment's



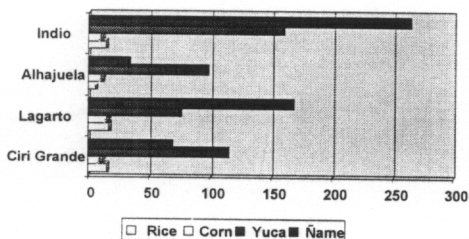
Type of utilization In the Catchments



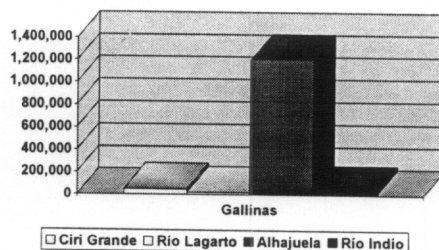
Value of the Agricultural Production in the Catchments

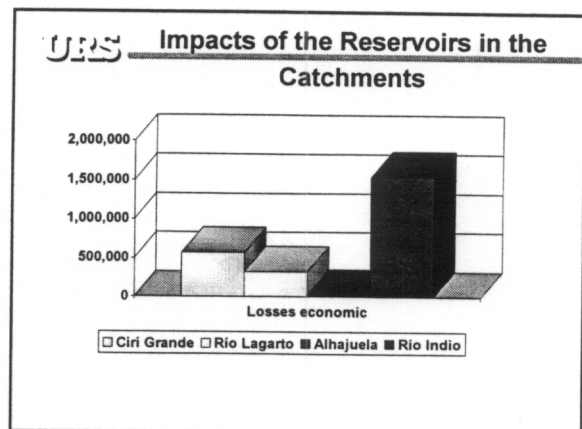
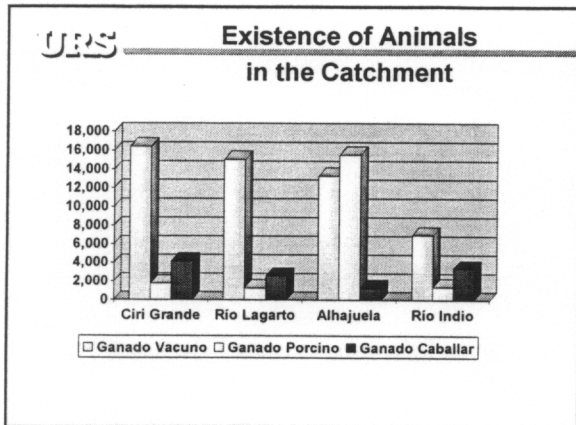


Yields for Has of Some Products in the Catchment



Hen existence in the Catchment





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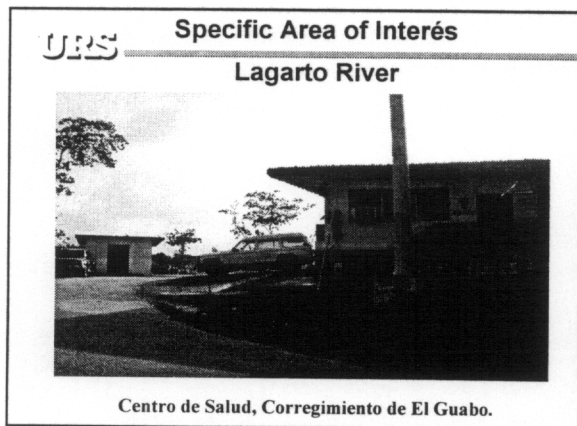
Epidemiology

URS Direct access to Facilities of Health

Table No.1

Población por Área de Interés	Ciri Grande		Río Lagarto		Lago Alhajueta	
	No. Hab.	%	No. Hab.	%	No. Hab.	%
Población en Área de Interés Específico	4985	100	4949	100		
Total de Acceso Directo	415	8.32	2308	46.6		
Población en Área de Interés General	11286	100	52508	100	7616	100
Total de Acceso Directo	2316	20.5	13468	25.6	1137	15
Población en Zona de Amortiguamiento					2858	100

Source: Census of the Contraloría. Año 2000



URS Principal Causes of Mortality

Causas de Mortalidad	Subcuencas		
	Río Ciri Grande	Río Lagarto	Lago Alhajueta
Accidentes, lesiones autoinfluidas, agresiones y otra violencia	7	3	22
Cáncer: Obstrucción directa		1	
Cáncer: Obstrucción originada en el período perinatal	2	1	8
Desnutrición		1	
Diabetes Mellitus		2	8
Énfisis y gastroenteritis de presunto origen infeccioso	1	1	
Enf. Crónicas de las vías respiratorias inferiores		5	5
Enfermedades cerebrovasculares	4	4	17
Enfermedades del hígado	1		
Enfermedades hipertensivas	1		
Enfermedades neoplásicas del corazón		1	16
Las demás enfermedades infecciosas y parasitarias	1		26
Malformaciones congénitas, deformidades y anomalías cromosómicas	2	1	4
Neurastenia	1	3	
Otras enfermedades del corazón	2	2	7
SIDA		5	9
Tuberculosis		2	
Tumores (neoplasias) maligno	8	7	
Las demás causas	17	7	30
Total	48	46	182

Source: Contraloría General de la República. Año 2003

URS Coverage of Vaccination to 1-year-old Minors
The first Trimester. Año 2003

Cuadro No. 3

Vacuna	Subcuenca	Subcuenca	Lago Alhajuela		
	Cirí Grande	Lagarto	S. Miguelito	Chagres	Colón
Anti Polio	69.0	98.8	69.9	98.8	95.5
Anti Sarampión	64.8	98.8	58.7	98.8	90.7
B.C.G.	91.5	98.8	61.5	55.0	96.4
Pentavente	73.2	55.0	68.6	98.8	95.7

Source: Extended program of Immunizations, October 2003.

URS The First five Causes of Morbidity
Cirí Grande

CAUSA	No.	Área de Interés General **		
		CAUSA	No.	TASA/100HAB
Síndrome Gripal	1	Parasitosis	74	37.8
Diarrea	2	Leishmaniasis	64	32.7
Hipertensión Arterial	3	Faringitis	40	20.4
Rinofaringitis Aguda	4	Piodermatitis	37	18.9
Infección de Vías Urinarias	5	Bronquitis	17	8.7
Asma Bronquial	6	Bajo Peso	16	8.2

Source: * Medical Diagnostic. ** Health field trip

URS Morbidity in Lagarto River

Table No. 5

Área de Interés Específico	
CAUSA	No.
Total de Consultas	422
Resfriado Común	99
H.T.A.	63
Faringoamigdalitis	43
I.V.U.	36
Caries Dental	33
Gripe	28
Artralgia	28
Parasitosis	27
Enf. Inflamatoria Pélvica	
Aguda	23
Escabiasis	22
Desnutrición Leve	20

Registro Médico y Estadística del MINSA, Colón.

URS Morbidity in Lagarto River. Area of General Interest

Table No. 6

Área de Interés General		
CAUSA	No.	TASA/100HAB
Resfriado Común	133	77.13
Desnutrición Leve y Moderada	45	25.33
Estados Febriles	38	21.3
Hipertensión Arterial	38	21.3
Piodermatitis	34	19.1
Heridas en Diversas Partes del Cuerpo	31	17.5
Diarrea	26	14.6
Leishmaniasis	25	14

Source: Datos de Ciras de Salud a Limón y la Encantada. Año 2001

URS Morbidity, Lake Alhajuela

Table No. 7 Principal Causes of Morbidity, Centro de Salud de Sardinilla, Buffer Area. Lake Alhajuela. Colón. Year 2001.

Morbilidades	Posición
Anemia	1
Bajo Peso	2
Tricomoniasis	3
Infección de Vías Urinarias	4
Cándidiasis	5

Source: Medical Records & Statistic of MINSA, Colón. Regional Planning. Dec., 2001.

URS Morbidity for Position and Brought Cases
General Area of Interes, Lake Alhajuela

Morbilidad	Posición	Morbilidad	No.	Porcentaje
Resfriado común	1	Síndrome Gripal	2085	23.6
Gripe	2	Conjuntivitis	1012	11.5
Diarrea	3	Piodermatitis	839	9.5
Dermatitis	4	Faringoamigdalitis Aguda	792	8.9
Faringitis	5	Dispepsia	539	6.1
Obesidad	6	Parasitosis Intestinal	527	5.9
Bronquitis	7	Infección de Vías Urinarias	516	5.8
Conjuntivitis	8	Impétigo	497	5.6
Hipertensión arterial	9	Faringitis	413	4.7
Amigdalitis	10	Dermatitis	404	4.6
Asma	11	Enf. Diarreica	334	3.8
I.V.U.	12	Micosis	333	3.7
Piodermatitis	13	Lumbalgia	304	3.4
Anemia	14	Gastroenteritis	257	2.9
Desnutrición leve	15	Total	8842	100

Fuente: Registro Médico y Estadística del MINSA.

URS**Principals Causes of Morbidity**

Table No. 9 Principal Causes of Morbidity of epidemiological notification. Centro de Salud de Buena Vista. Lake Alajuela. Colón. Año 2001.

Morbilidad	Número	Tasa por 1000
Infección Respiratoria Aguda	148	158.1
Piodermitis	130	138.8
Diarrea	49	52.34
Escabiasis	47	50.2
Vulvovaginitis	8	8.54
Conjuntivitis	8	8.54
Varicela	13	13.89
Leishmaniasis	19	20.3
Amebiasis	34	36.3
Herpes	8	8.54

Source: Medical Records & Statistics of MNSA, Colón, Regional Planning, Dec. 2003.

URS**Matrix of Evaluation of Alternatives****URS****Introduction**

- The Matrix I is based on the concepts got in the TDR of the project
- The structure used in the proposal has been kept since it is simple and uses real values

URS**Criteria of Evaluation**

- Selected on the base of parameters for which information existed for all the projects
- Internal criteria
- Cost
- Risk
- Hydroelectric potential
- Water production

URS**Criteria of Evaluation**

- Environmental criteria
- Loss of Mature Forests
- Loss of Secondary Forests
- Loss of Pastizales and Stubble
- Social criteria
- Affected area
- Affected population
- Loss of Infrastructure
- Population Downstream

URS**Criteria of Evaluation**

- Economic criteria
- Loss of Production
- Loss of Agricultural Potential
- There express all the units of the criteria of evaluation for esclusaje:
- Hectares of lost forest / Lockage
- Affected inhabitants / Lockage



Structure of the Matrix

- Two Principal Tables
- Introduction of Information
- Revenue of real values for Lockage
- Values from the data bases SIG
- Every cell represents an analysis or operation in a data base SIG
- Evaluation of Options or Alternatives
- Matrix of evaluation
- Weighting of the criteria
- Puntaje for every alternative



Structure of the Matrix

Criteria	Unit	Value 1	Value 2	Value 3	Value 4
Losses of Secondary Forest	Ha	2747.84	21.44	218.91	33.33
Losses of Secondary Forest / Lockage	Ha/Exchange	142.47	6.92	116.75	25.27
Losses of Shrub Land	Ha	3481.94	476.13	1781.21	105.57
Losses of Shrub Land / Lockage	Ha / Exchange	228.38	153.58	1619.28	83.52
Losses of Pastures	Ha	3487.47	2073.34	495.34	34.64
Losses of Pastures/ Lockage	Ha/Exchange	220.73	668.83	476.33	27.93
SOCIAL CRITERIA					
Affected Area	Ha	11217.80	2993.76	3185.30	313.12
Affected Area / Lockage	Ha / Exchange	589.88	96.71	2397.73	252.72
Population	Habitantes	2215.86	1973.80	1098.60	0.00
Population/ Lockage	Habitantes / Exchange	140.19	454.43	998.18	0.00
Losses of Infrastructure	\$	8389290.00	3807880.00	490415.00	0.00
Losses of Infrastructure / Lockage	\$ / Exchange	538967.72	1228348.39	4446519.89	0.00
Population downstream	Habitantes	1829.86	125.80	1719.00	0.00
Population downstream / Lockage	Habitantes / Exchange	115.76	40.32	1542.73	0.00
HYDROELECTRIC CRITERIA					
Losses of Production	\$	1540700.00	548718.00	174034.00	18725.80
Losses of Production / Lockage	\$ / Exchange	97113.23	183457.42	174889.84	18619.52
Losses of Agricultural Potential	Ha	5421.32	2182.36	1780.83	156.54
Losses of Agricultural Potential / Lockage	Ha / Exchange	343.12	479.97	1623.64	121.68



Structure Of the Matrix

CRITERIA OF EVALUATION	Peso Especifico
INTERNAL CRITERIA OF THE PROJECT	25.00%
Cost / Esclusaje	15.00%
Water production	5.00%
Problems of Construction	2.50%
Hydroelectric potential / Lockage	2.50%
ENVIRONMENTAL CRITERIA	20.00%
Loss of Mature Forest / Lockage	10.00%
Loss Secondary Forest / Lockage	5.00%
Loss of Stubble / Lockage	2.50%
Loss of Pastures / Lockage	2.50%
SOCIAL CRITERIA	30.00%
Affected area	5.00%
Population / Lockage	15.00%
Loss of Infrastructure / Lockage	5.00%
Population Downstream / Lockage	5.00%
ECONOMIC CRITERIA	25.00%
Loss of Production / Lockage	10.00%
Loss of Agricultural Potential / Lockage	15.00%
	100.00%



Use of the Matrix

- Revenue of Information
- Allocation of Values for Every Criterion
- Allocation of points in a scale of 100 %
- Each of four categories of criteria has a specific gravity
- The project that presents the most favorable characteristic will receive the whole of the puntaje of the subcriterion
- The rest of the projects will receive a puntaje considered proportionally



Example

- Data Entries

CRITERIA OF EVALUATION	Source of Data		
	Unidad	Indio	Ciri Grande
INTERNAL CRITERIA OF THE PROJECT			
Cost	\$	230430000.00	71856000.00
Water production	Esclusajes	15.80	3.10
Cost / Esclusaje	\$ / Esclusaje	14584177.22	23179354.84
Contingencies	\$	28868000.00	14371106.00
Contingencies / Lockage	\$ / Esclusaje	1827088.61	4635840.65
Potential Hydroelectric	MW	1.60	2.20



Example

- Allocation and Weighting of Values for Internal Criteria

CRITERIA OF EVALUATION	Peso Especifico	Indio	Ciri Grande
INTERNAL CRITERIA OF THE PROJECT	25.00%	22.26%	13.53%
Cost / Lockage	15.00%	14.40%	9.00%
Water production	5.00%	5.00%	0.98%
Contingencies	2.50%	2.50%	0.99%
Hydroelectric potential / Lockage	2.50%	0.36%	2.50%



Development of Alternatives

- Alternatives:
 - Indio vs. Lagarto + Ciri + Alhajuela
 - Indio vs. Lagarto + Ciri
 - Indio vs. Lagarto + Alhajuela
 - Indio vs Ciri + Alhajuela
 - Indio vs Ciri
 - Indio vs Lagarto
 - Indio vs Alhajuela
- Every project is compared with Indio River
- Combinations are compared with Indio River



Results

CRITERIA OF EVALUATION	Peso Especifico	Indio	Ciri Grande	Lagarto	Ciri + Lagarto + Alhajuela
INTERNAL CRITERIA OF THE PROJECT	25.00%	22.26%	11.51%	8.24%	11.91%
Cost / Lockage	15.00%	14.40%	9.00%	7.20%	10.92%
Water Production	5.00%	5.00%	0.90%	0.35%	0.30%
Contingencies	2.50%	2.50%	0.99%	0.78%	1.19%
Potential Hydroelectric Lockage	2.50%	0.30%	2.50%	0.00%	1.42%
ENVIRONMENTAL CRITERIA	28.00%	14.23%	18.00%	11.61%	2.44%
Losses of Mature Forest / Lockage	10.00%	10.00%	10.00%	10.00%	0.00%
Losses of Secondary Forest / Lockage	5.00%	0.21%	5.00%	0.19%	0.71%
Losses of Shrub Land / Lockage	2.50%	1.52%	2.17%	0.73%	0.70%
Losses of Pasture / Lockage	2.50%	2.50%	0.85%	1.25%	1.15%
SOCIAL CRITERIA	38.00%	26.24%	12.71%	4.82%	8.70%
Affected Area	5.00%	5.00%	3.68%	1.20%	2.97%
Population Lockage	15.00%	15.00%	3.90%	2.11%	3.73%
Losses of Infrastructure / Lockage	5.00%	5.00%	2.10%	0.60%	1.60%
Population Downstream Lockage	5.00%	1.24%	3.57%	0.99%	0.42%
ECONOMICS CRITERIA	25.00%	21.45%	12.06%	8.37%	12.81%
Losses of Production / Lockage	10.00%	8.45%	4.40%	5.20%	5.80%
Losses of Potential Agricultural / Lockage	15.00%	15.00%	7.57%	3.17%	6.92%
	100.00%	86.18%	56.30%	32.39%	38.15%



Results

CRITERIA OF EVALUATION	Specific Weight	Indio	Ciri + Lagarto	Lagarto + Alhajuela	Ciri + Alhajuela
INTERNAL CRITERIA OF THE PROJECT	25.00%	22.26%	12.98%	17.96%	16.45%
Cost / Lockage	15.00%	14.40%	8.40%	15.00%	12.50%
Water Production	5.00%	5.00%	1.72%	1.10%	0.70%
Contingencies	2.50%	2.50%	0.92%	1.63%	1.37%
Potential Hydroelectric Lockage	2.50%	0.30%	1.85%	0.00%	1.79%
ENVIRONMENTAL CRITERIA	28.00%	14.23%	12.15%	3.18%	6.48%
Losses of Mature Forest / Lockage	10.00%	10.00%	10.00%	0.00%	0.00%
Losses of Secondary Forest / Lockage	5.00%	0.21%	0.63%	0.35%	2.84%
Losses of Shrub Land / Lockage	2.50%	1.52%	0.62%	0.41%	2.50%
Losses of Pasture / Lockage	2.50%	2.50%	0.90%	2.44%	1.14%
SOCIAL CRITERIA	38.00%	26.24%	8.90%	8.32%	17.31%
Affected Area	5.00%	5.00%	2.41%	2.37%	4.60%
Population Lockage	15.00%	15.00%	2.88%	4.48%	4.63%
Lockage of Infrastructure / Lockage	5.00%	5.00%	1.28%	1.27%	3.03%
Population downstream Lockage	5.00%	1.24%	0.33%	0.20%	5.00%
ECONOMICS CRITERIA	25.00%	21.45%	10.21%	16.22%	15.98%
Losses of Production / Lockage	10.00%	8.45%	4.66%	10.00%	6.00%
Losses of Agricultural Potential / Lockage	15.00%	15.00%	5.55%	6.22%	9.98%
	100.00%	86.18%	42.24%	45.68%	56.23%



Comparison of Alternatives

- The Alternative 1 (Lake Alhajuela) would cause the minor number of environmental and social impacts for esclusaje.
- The Alternative 1, for not expiring for if alone with the water demand, it is a good option to combine with other alternatives.
- The use of the concept of "Lockage" allowed to carry out an evaluation of cost-benefit.
- The use of real information of SIG allowed to realize an evaluation objetiva.



Conclusion



Comparison of Alternatives

- Taking in consideration the demand of water projected for the operation of the channel, the Alternative of Indio River is the most favorable from the technical, environmental, social and economic point of view.
- The Alternative 2 (Ciri) is attractive from the environmental point of view but not from the social and economic point of view.
- The Alternative the minor received 3 (Lagarto) points since it is not favorable from the environmental point of view not socioeconomic.

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Comparison of Alternatives

- The Alternatives 4, 5 and 6 (Combinations of Rio Lagarto) receive a low average. It cost High Benefit.

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General Conclusions

- In the three Catchment Areas the types of dominant vegetation are the Pasture and Shrub Land. Nevertheless, the proportion of forests and Shrubland is different according to the evaluated Catchment; in Ciri Grande and Lagarto the forests do not occupy 20 %, whereas in the lake Alhajuela the forests occupy 46 % of the surface.
- In three evaluated catchment areas, the area of the possible reservoir or the area that would turn out to be affected by the increase of capacity of the reservoir in case of the Lake Alhajuela, corresponds principally to herdsmen's areas and/or stubbles, for what it is believed that the impact on species of special interest, both of flora and of fauna, will be minimal.

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- The area of study is very diverse and heterogeneous, and occupy regions that are so much to the west of the watershed of the Canal (rivers Ciri Grande and Lagarto) as to this (Lake Alhajuela) of the same one.
- Each of these areas has a particular situation as for his natural resources and socioeconomic situation; the residents in the outskirts of the Lake Alhajuela possess major accesses to basic services that the residents of the catchment of Ciri Grande and Lagarto.

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- The principal economic activities of three studied Catchments are centered in the agricultural sector and to a lesser extent in commercial activities and of services.