THREATENED PLANTS OF COSTA RICA

CONSERVATION ASSESSMENT AND MANAGEMENT PLANNING WORKSHOP

San José, Costa Rica

4 - 6 October 1996

Report

Organized by

Fundación pro Zoológicos
Instituto Nacional de Biodiversidad
Herbario Nacional, Musseo Nacional
Universidad Nacional

In Collaboration with

Conservation Breeding Specialist Group SSC/IUCN

with the support of

Instituto Costarricense de Turismo

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SECTION 1

EXECUTIVE SUMMARY

Executive Summary

Introduction

This report is the result of a Conservation Assessment and Management Planning (CAMP) Workshop, held 5-7 October 1996 at the Simon Bolivar Zoo in San Jose Costa Rica, to evaluate the threatened status of 41 plants (Table 1) of Costa Rica. The workshop was supported in part by the Instituto Costarricense de Turismo.

Representatives of four Costa Rican organizations (Fundación pro Zoológicos, Instituto Nacional de Biodiversidad, Herbario Nacional, Musseo Nacional, Universidad Nacional) and other experts in collaboration with the Conservation Breeding Specialist Group of the Species Survival Commission of the World Conservation Union (IUCN) participated in the Workshop. They worked together, using CBSG workshop processes, to assess the threatened status of each species, to identify the primary threats to survival of each species, and to recommend specific conservation actions - research and management that are needed. Costa Rican researchers with experience with each of the species, botanical ecologists with experience with some of the species in cultivation, and protected area mangers participated in the workshop and shared their expert knowledge for assessment of the status of each species and its habitat in the wild. More than 25 people met on the first day and about 16 people (see participants list) worked the next two days assembling and evaluating the information using the CBSG Taxon Data Sheet as a guide, assessing the threats to each species using the IUCN Categories of Threat as guide, and formulating management recommendations. Methods of cultivation of some of the most endangered taxa were discussed. Several of the participants also marked the general location of the known stands of each species on map.

The CAMP Process and the IUCN Categories of Threat

CAMPs and their reports are designed to provide a methodology for rapid assessment of groups of taxa and to provide strategic guidance for application of intensive management and information collection techniques to threatened taxa. CAMPs provide a rational and comprehensive means of assessing priorities for intensive management within the context of the broader conservation needs of threatened taxa.

Within the Species Survival Commission (SSC) of IUCN, the primary goal of the Conservation Breeding Specialist Group (CBSG) is to contribute to the development of holistic (i.e., integrating *in situ* and *ex situ)* and viable conservation strategies and action plans. The CAMP process assembles a broad spectrum of expertise on wild and captive management of the taxa under review in collaboration with regional wildlife agencies or non-governmental organizations.

A CAMP process brings together 10-40 experts (e.g., wildlife managers, Specialist Group members, scientists from the academic community and/or the private sector, land owners, and

captive managers) to evaluate the threat status of all taxa in a broad group (e.g., an order or family), country, or geographic region to set conservation action and information-gathering priorities. For each taxon reviewed, three kinds of assessments/recommendations are made: 1) assigning taxa to New IUCN Red List Category of Threat; 2) making recommendations for research and management activities to contribute to the taxon's conservation. Research management can be defined as an interactive management program based upon learning from the management actions taken. 3) making recommendations for *ex situ* cultivation programs if they can contribute to the conservation of the taxon.

The CAMP process provides an opportunity to test the applicability of the new IUCN Red List Categories. The threatened species categories used in Red Data Books and Red Lists for almost 30 years (Mace et al., 1994) have been replaced with criteria for categories explicitly defined in population biology terms. These new IUCN Red List Categories provide a system that facilitates comparisons across widely different taxa, and is based both on population and distribution criteria. These criteria can be applied to any taxonomic unit at or below the species level, with sufficient spectrum of criteria to enable the appropriate listing of taxa across the complete range of eukaryotic taxa, with the exception of micro-organisms (Mace et al., 1994).

The New IUCN Red List Categories are: Extinct (EX); Extinct in the Wild (EW); Critically Endangered (CR); Endangered (EN); Vulnerable (VU); Conservation Dependent (CD); Lower Risk (LR); Data Deficient (DD); Not Evaluated (NE).

Results and Recommendations

The 41 species, from seven families, selected for review (Table 1 and CAMP Summary Table) were chosen because of concerns about their current status and future threats to them and their habitat. Therefore it is not a random sample of Costa Rican plant species. Eleven species were classified as Critical (27%), 15 as Endangered (36%) and 6 as Vulnerable (15%) for a total of 32 of 41 species classified as threatened (78%) according to the new IUCN criteria of threat (Tables 2-4). The primary criterion used information on population reduction in recent years and projections of possible possible population reductions over the next 10 - 100 years. The details of the information and the criteria applied are given on the individual taxon data sheets which are a part of this report.

For example, a taxon classified as Critical is considered to have a probability of extinction in the wild of at least 50% within 10 years or 3 generations, whichever is the longer. This assessment may be based upon any one of 4 sets of criteria derived from numerical estimates of 1) extent of occurrence (EO), or 2) population reduction (PR), or 3) population size (PS), or 4) number of mature individuals in the population (NM). The same criteria, with different values, are the basis for the definitions of the other categories as well. An iIndicator of threatened status is for a species to be reduced in numbers to exist in one or a few fragmented small populations (Table 8). Thus the majority of the species classified as Critical or Endangered now exist in only one to five small populations.

Conservation action recommendations were made for implementation of more intensive *in situ* management for 39 species, the development of management plans for 26 species using a structured process such as the PHVA, and for cultivation programs for 40 of the species in recognition of the severity of the threats and the need for a protection against extinction of the continued loss of genetic heterozygosity (Table 5). Specific research recommendations included the need for more extensive surveys for 23 species, continued monitoring for 26 species, taxonomic studies on 25 species, genetic studies for 19 species, and work on requirements for successful cultivation for 24 species. Selection among these recommendations could be accomplished through a structured process for assigning priorities using as a paired ranking technique an a group process.

An important part of the task is to identify as explicitly as possible the threats to the continued existence of the species and its habitat. The major threats for these species are population fragmentation due to loss of habitat (Lf) for 28 or 68% of the species, Ov for 15 or 36%, and human interference (I) for 13 or 32%. Other significant threats included genetic loss, harvesting, and loss of habitat due to other causes.

Lago de Nicaragua

San Carlos

Liberia○

Boca Arenal

San Juan
del Norte Río San Juan

Puntarenas
Desamparados
Cabuya

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C O S T A   R I C A

BAJO CHIRRIP

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LA AMISTAD
N.P.

San Isidro○

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Bocas
del Toro

Volcán Barú

David○   P A N A M A

0 km   50   100   150   200   250
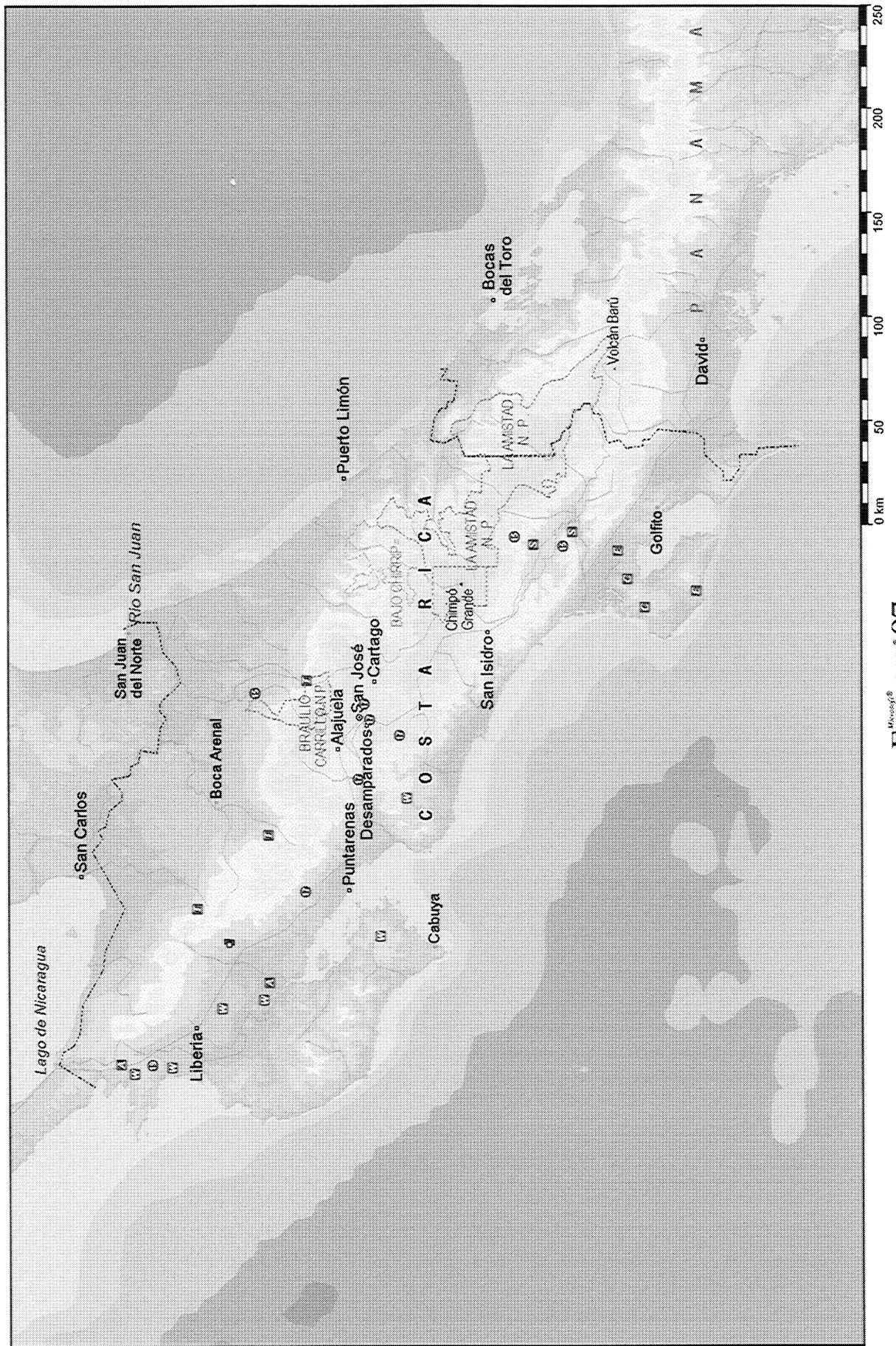
Lista de Especies a Tratar en el CAMP

(Especies Amenazadas o en Vias de Extincion)

Familia Meliaceae
 Carapa guianensis
 Cedrela odorata
 Cedrela salvadorensis
 Cedrela fissilis
 Cedrela tonduzii
 Swietenia humilis
 Swietenia macrophylla

Familia Zygophyllaceae
 Guaiacum sanctum

Familia Lecythidaceae
 Couratari guianensis
 Couratari scottmori
 Lecythis ampla
 Lecythis mesophylla

Familia Papilionaceae
 Dalbergia brownei
 Dalbergia calycina
 Dalbergia ecastophyllum
 Dalbergia glabra
 Dalbergia hypoleuca
 Dalbergia melanocardium
 Dalbergia monetaria
 Dalbergia retusa
 Dalbergia tucurensis
 Dipterix panamensis
 Hymenolobium mesoamericanum
 Myroxylum balsamum
 Platymiscium pinnatum
 Platymiscium pleiostachyum

Familia Caesalpiniaceae
Cynometra bahuiniaefolia
Cynometra hemitomophylla
Cynometra retusa
Prioria copaifera
Sclerolobium costaricense
Tachigali versicolor

Familia Podocarpaceae
Podocarpus costaricensis
Podocarpus guatemalensis
Podocarpus macrostachyus
Podocarpus monteverdeensis
Prumnopitys standleyi

Familia Caryocaraceae
Anthodiscus chocoensis
Caryocar coataricense

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SECTION 2

SUMMARY DATA TABLES AND MAPS

Cuadro 2. Número de taxones en cada categoría de UICN y criterio utilizado para clasificar les taxones.

CATEGORÍA UICN	Número en Categoría	Criterio Utilizado para la Clasificación			
		EO	PR	NM	PE
Extinto	0				
Extinto en Vida Libre	0				
Crítico	11	2	10	6	4
Amenazado	15	2	15	1	3
Vulnerable	6		5	1	1
Dependiente Conservación	1		1		
Bajo Roesgo	6		6		
Información Deficiente	2		1		
No Evaluado	0				
Totales	41	4	38	8	8

Cuadro 3. Rango de distribución del Taxon por Categoría de Amenaza de la UICN

CATEGORÍA UICN	Número en Categoría	Rango de Categoría		
		A	B	C
Extinto				
Extinto en Vida Libre				
Crítico	11	4	3	3
Amenazado	15	3	6	6
Vulnerable	6		2	4
Dependiente Conservación	1			1
Bajo Roesgo	6	2		4
Información Deficiente	2	2		
No Evaluado				
Totales	41	11	11	18

Cuadro 4. Área de Ocupación por Categoría de Amenaza de la UICN

CATEGORÍA UICN	Número en Categoría	Area de Ocupación		
		A	B	C
Extinto				
Extinto en Vida Libre				
Crítico	11	6	5	
Amenazado	15	7	5	3
Vulnerable	6			6
Dependiente Conservación	1			1
Bajo Roesgo	6		2	3
Información Deficiente	2	2		
No Evaluado				
Totales	41	15	12	13

Cuadro 5. Acciones de Conservación Recomendadas por Categoría de Amenaza de la UICN.

CATEGORÍA UICN	Número en Categoría	Recomendaciones de Conservation		
		Manejo	PHVA	Propagación
Extinto				
Extinto en Vida Libre				
Crítico	11	11	10	11
Amenazado	15	15	15	15
Vulnerable	6	5	1	6
Dependiente Conservación	1	1		1
Bajo Roesgo	6	6		6
Información Deficiente	2	1		1
No Evaluado				
Totales	41	39	26	40

Cuadro 6. Recomendaciones de Investigación por Estado de Amenaza de Categoría de UICN

CATEGORÍA UICN	Recomendaciones							
	M	Gm	H	Hm	Lh	T	O	S
Extinto								
Extinto en Vida Libre								
Crítico	8	5	4	6	6	6	3	6
Amenazado	12	12	13	13	12	11	9	11
Vulnerable	3	2	2	3	4	3	3	4
Dependiente Conservación	1			1	1	1		1
Bajo Roesgo	2		4	1	1	4	1	1
Información Deficiente								
No Evaluado								
Totales	26	19	23	24	24	25	16	23

Cuadro 7. Amenazas Identificadas por Estado de Amenaza de Categoría de UICN

CATEGORÍA UICN	Amenazas - Actual y Futuras							
	Lf	Ov	I	G	H	L	Lm	Lt
Extinto								
Extinto en Vida Libre								
Crítico	5	2	6	6	6	5		3
Amenazado	13	8	3	1	2	2	2	
Vulnerable	5	2	2		1	2		1
Dependiente Conservación		1				1		
Bajo Roesgo	4	1	1					
Información Deficiente	1	1	1	1				
No Evaluado								
Totales	28	15	13	8	9	10	2	4

Cuadro 8. Número de Pobulaciones del Taxón por Estado de Amenaza de Categoría de UICN

CATEGORÍA UICN	Número en Categoría	Número de Localedades		
		1	2 - 5	> 5
Extinto				
Extinto en Vida Libre				
Crítico	11	4	6	1
Amenazado	15	4	7	3
Vulnerable	6	1*	2	3
Dependiente Conservación	1			1
Bajo Roesgo	6	1*	4	
Información Deficiente	2	1	1	
No Evaluado				
Totales	41	11	20	8

Table 2. Number of taxa in each IUCN category and the Criteria used to classify the taxa.

IUCN CATEGORY	Number in Category	Criteria Used to Classify			
		EO	PR	NM	PE
Extinct	0				
Extinct in Wild	0				
Critical	11	2	10	6	4
Endangered	15	2	15	1	3
Vulnerable	6		5	1	1
Conservation Dependent	1		1		
Low Risk	6		6		
Data Deficient	2		1		
Not Evaluated	0				
Totals	41	4	38	8	8

Table 3. Distribution Range of Taxa by IUCN Category of Threat

IUCN CATEGORY	Number in Category	Range Category		
		A	B	C
Extinct				
Extinct in Wild				
Critical	11	4	3	3
Endangered	15	3	6	6
Vulnerable	6		2	4
Conservation Dependent	1			1
Low Risk	6	2		4
Data Deficient	2	2		
Not Evaluated				
Totals	41	11	11	18

Table 4. Fragmentation and Area of Occupancy by IUCN Category of Threat

IUCN CATEGORY	Number in Category	Area of Occupancy		
		A	B	C
Extinct				
Extinct in Wild				
Critical	11	6	5	
Endangered	15	7	5	3
Vulnerable	6			6
Conservation Dependent	1			1
Low Risk	6		2	3
Data Deficient	2	2		
Not Evaluated				
Totals	41	15	12	13

Table 5. Conservation Action Recommendations by IUCN Category of Threat.

IUCN CATEGORY	Number in Category	Conservation Recomendations		
		Management	PHVA	Propagation
Extinct				
Extinct in Wild				
Critical	11	11	10	11
Endangered	15	15	15	15
Vulnerable	6	5	1	6
Conservation Dependent	1	1		1
Low Risk	6	6		6
Data Deficient	2	1		1
Not Evaluated				
Totals	41	39	26	40

Table 6. Research Recommendations by IUCN Category of Threat Status

IUCN CATEGORY	Research Management Recommendations							
	M	Gm	H	Hm	Lh	T	O	S
Extinct								
Extinct in Wild								
Critical	8	5	4	6	6	6	3	6
Endangered	12	12	13	13	12	11	9	11
Vulnerable	3	2	2	3	4	3	3	4
Conservation Dependent	1			1	1	1		1
Low Risk	2		4	1	1	4	1	1
Data Deficient								
Not Evaluated								
Totals	26	19	23	24	24	25	16	23

Table 7. Threats Identified by IUCN Category of Threat Status

IUCN CATEGORY	Threats - Current and Future							
	Lf	Ov	I	G	H	L	Lm	Lt
Extinct								
Extinct in Wild								
Critical	5	2	6	6	6	5		3
Endangered	13	8	3	1	2	2	2	
Vulnerable	5	2	2		1	2		1
Conservation Dependent		1				1		
Low Risk	4	1	1					
Data Deficient	1	1	1	1				
Not Evaluated								
Totals	28	15	13	8	9	10	2	4

Table 8. Number of Populations of Taxa by IUCN Category of Threat

IUCN CATEGORY	Number in Category	Number of Locations		
		1	2 - 5	>5
Extinct				
Extinct in Wild				
Critical	11	4	6	1
Endangered	15	4	7	3
Vulnerable	6	1*	2	3
Conservation Dependent	1			1
Low Risk	6	1*	4	
Data Deficient	2	1	1	
Not Evaluated				
Totals	41	11	20	8

CUADRO RESUMEN DE INFORMACION DEL CAMP: PLANTAS AMENAZADAS DE COSTA RICA

Especies	Localidad	Rang	Area	# de Loca.	% Decli	Ano s/Gen	N Pobl.	Cal. Inf	Amen aza	UICN	Criter. Utilizad	Rec de Manejo	PH VA	Rec Cult ivo	Dific
Caesalpiniaceae															
1 *Cynometra bahuiniaefolia*	Bosque Humedo Golfito	A	A	1	-	-	-	-	G, I	DD	PR	T, M	No	-	-
2 *Cynometra hemitomophylla*	Bosque Humedo PC, PS, ZA Tierras bajas	C	B?	4 (f)	<50	30	-	2, 3	I, Lf, Ov	EN	A1d PR	GN,H,H m, Lm,	Si	Si	1
3 *Cynometra retusa*	Bosque Humedo Zonas bajas	C	-	4	25	30	-	2, 3	Lf	LR	Lc PR	M, Lh	No	Si	1
4 *Prioria copaifera*	Bosques muy humedos ZA, ZS, Zonas bajas	B	B	3	50	25	-	2, 3	I, Lf, Ov	EN	A1acd PR,PX	M, H, Lh	Si	Si	1
5 *Sclerolobium costaricense*	Bosque Humedo Zona Norte Atlant Norte	B	A	2	25	20	-	2, 3	Lf	EN	A1acd PR,PX	GM,H,H m,Lh,M, T	Si	Si	3
6 *Tachigali versicolor*	Bosque Humedo Pacif Central y Pacif Sur	B	B	2	50	25	-	2, 3	Lf	EN	A1c PR	GM,H,H m,Lh,M, S,T, Tl	Si	Si	3
Podocarpaceae															
7 *Podocarpus costaricensis*	Bosque Montano Zona Los Santos	A	A	1	50	15	<100 0	2, 3	Lf, Ov	EN	A1cd PR	M,Gm,H, Hm, Lh, O,S,T,Tl	Si	Si	3
8 *Podocarpus guatemalensis*	Bosque PS Humedo PC, ZN 200-500 m	C	C	4 amplias	50	30	-	2, 3	Lf, Ov	EN	A1cd PR	M,Gm,H, Hm, Lh, O,S,T,Tl	Si	Si	3

CUADRO RESUMEN DE INFORMACION DEL CAMP: PLANTAS AMENAZADAS DE COSTA RICA

Especies	Localidad	Rang	Area	# de Loca.	% Decli	Ano s/Gen	N Pobl.	Cal. Inf	Amenaza	UICN	Criter. Utilizad	Rec de Manejo	PH VA	Rec Cultivo	Dific
9 Podocarpus macrostachyus	Bosque Montano Cordilleras	C	C	4 amplias	25	30	-	2, 3	Lf, Ov	VU	A1cd PR	M,Gm,H, Hm, Lh, O,S,T,R	No	Si	3
10 Podocarpus monteverdensis	Bosque Montano Tilaran	A	A	2?	-	-	<3000	2, 3	-	EN	B2b PR	M,Gm,H, Hm, Lh O,S,T,Tl	Si	Si	3
11 Prumnopitys standleyi	Bosque Montano Dota - Villa Mill	A	A	1 f amplia	50	15	<4000	2, 3	Lf, Ov, G	EN	A1cd PR	M,Gm,H, Hm, Lh, O,S,T,Tl	Si	Si	3
Caryocaraceae															
12 Caryocar costaricensis	Bosque muy Humedo Pen Osa	B	C	1 ±amplia	50	15	-	2, 3	Lf, Ov	EN	A1cd PR	M,Gm,H, Hm, Lh ,O,S,T,Tl	Si	Si	3
13 Anthodiscus chocoensis	Bosque Humedo Pen. Osa	B	B	1	25	20	-	2, 3	Lf, Ov	EN	A1cd PR	M,Gm,H, Hm, Lh, O,S,T,Tl	Si	Si	3
Meliaceae															
14 Carapa guianensis	Bh-Bmh 0-400 m	C	D	10-12	>25	30	-	2, 3	H,I,T, Lf	VU	A1cd P?R	R, Lh	No	Si	2
15 Cedrela fissilis	Bh 200-900 m	-	A	1				2, 3	Lh	CR	A1ad PR	T	Si	Si	3
16 Cedrela odorata	Bs, Bh, Bmh 0-1200	D	D	amplica	<50	25	-	2	P	VU	A1cd PR	-	No	Si	1
17 Cedrela salvadorensis	Bs - Bh 100-1000	A	A	4	50	30	-	2	H,I,G, Lf	CR	B1,2de PR	S, M	Si	Si	3

CUADRO RESUMEN DE INFORMACION DEL CAMP: PLANTAS AMENAZADAS DE COSTA RICA

Especies	Localidad	Rang	Area	# de Loca.	% Decli	Ano s/Gen	N Pobl.	Cal. Inf	Amen aza	UICN	Criter. Utilizad	Rec de Manejo	PH VA	Rec Cult ivo	Dific
18 Cedrela tonduzii	B pluviales 1200-2800	C	D	-	10	10	-	2, 4	I	LR-1	A1ad PR	S, M	No	Si	2
19 Swietenia humilis	B seco 0-200	A	A	1	80	50	<100	3, 4	G	CR	B2bd EO PR NM	M, T	Si	Si	3
20 Swietenia macrophylla	B seco B humeda 50-900	C	B	6	>80	50	<2000	1, 2	H,G, Lf,L	CR	A1acd PR NM PE	Gm, T	No	Si	1
Zygophyllaceae															
21 Guaiacum sanctum	Bosque seco	A	A	3	80	100	<100	2	Lf,H, G,I	CR	B2e A1acd PR PE NM PX	Hm,H,Lh,S,T,O,V,Lm	Si	Si	3
Lecythidaceae															
22 Couratari guianensis	Bosque Humedo Pacifica	B	C	4	50	30	<300	2, 4	L, Lf	VU	A1cda PR	Hm,Lh,S,T,O,V,Lm	No	Si	2
23 Couratari scottmori	Bosque muy Humedo	B	B	1 fragm	50	15	<200	2, 4	H, I, G	CR	A1acd PE,PX	Hm,Lh,S,T,O,V,Lm	Si	Si	2
24 Lecythis ampla	Bosque muy Humedo	C	C	1 amplica	50	30	<600	2	Lv, Ov, I	VU	A1d PR	Hm,Lh,S,T,O,Lm	No	Si	2
25															

CUADRO RESUMEN DE INFORMACION DEL CAMP: PLANTAS AMENAZADAS DE COSTA RICA

Especies	Localidad	Rang	Area	# de Loca.	% Decli	Anos/Gen	N Pobl.	Cal. Inf	Amenaza	UICN	Criter. Utilizad	Rec de Manejo	PH VA	Rec Cultivo	Dific
26 *Lecythis mesophylla*	Bosque muy Humedo	A	A	2	25	30	-	4	L, I	CR	A1cd NM	Hm, Lm, Lh	Si	Si	3
Papilionaceae															
27 *Dalbergia brownei*	Manglaves Pacifics	C	C	5	5	10	-	3	Lf	LR	cd PR	H, T	No	Si	2
28 *Dalbergia calycina*	Bosque Montane	A	A	2	20	30	-	2, 3	Lf, Ov	DD	pobl descon	A,Hm, Lh,M,O, S,T	Dep estu dio pobl	Si	3
29 *Dalbergia ecastophyllum*	Zonas Isajas Humedas Atlanti	A	B	1 amplica	20	30	-	2, 3	Lf	LR	cd PR	H, T	No	Si	2
30 *Dalbergia glabra*	Bosque secos Pac Norte	A	B	1 amplica	10	30	-	2, 3	Lf	LR	cd PR	H, T	No	Si	2
31 *Dalbergia retusa*	Bosque secos Pac. N, Pac. C	C	A	3	50	15	<2000	2, 3	Lf, Ov	CR	A1cd PR	M,Gm,H, Hm,Lh,O ,S,T,Tl	Si	Si	3
32 *Dalbergia melanocardium*	Bosque Humedo Zona Norte Valle del General	C	A	2	30	20	-	2, 3	Lf, Ov	EN	A1acd PR	Gm,H,H m,Lm,Lh ,M,O,S	Si	Si	3
33 *Dalbergia monetaria*	Humedales Zona Atlantica	C	C	1 amplica	10	20	-	2, 3	No	LR	A1cd PR	H, T	No	Si	2
34 *Dalbergia tucurensis*	Bosque Humedo Zona Norte	B	B	1	50	30	-	2, 3	Lf	EN	A1cd PR	M,Gm,H, Hm,Lh,O ,S,T,Tl	Si	Si	3
35															

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CUADRO RESUMEN DE INFORMACION DEL CAMP: PLANTAS AMENAZADAS DE COSTA RICA

Especies	Localidad	Rang	Area	# de Loca.	% Decli	Anos s/Gen	N Pobl.	Cal. Inf	Amenaza	UICN	Criter. Utilizad	Rec de Manejo	PH VA	Rec Cultivo	Dific
36 *Dipterix panamensis*	Bosque Humedo	C	C	12	40	15		2, 4	L, Ov	CD	A1d PR	Hm,Lh,S,T,M,Lm	No	Si	1
37 *Hymenolobium mesoamericanum*	Bosque Humedo	C	B	8	40	30	<2000	2, 4	L, Lf, I	EN	A1ad PR EO NM	Hm	Si	Si	3
38 *Myroxylum balsamum*	Bosque Humedo	C	A	6	80	30	<1000	2, 4	H,Lm, Hm	EN	A1d PR	Hm,H, Lh,S,T,O ,V,Lm	Si	Si	3
39 *Platymiscium pinnatum pinnatum*	Bosque Humedo 300-350 mcna B. seco	B	B	1	<50	50	-	4	H,L, Lt,I	CR	A1cd NM PR EO PE	H,Hm,G m,Lm, Lr,M,S	Si	Si	3
40 *Platymiscium pinnatum polystachyum*	Bosque muy Humedo	C	B	2	50	50	-	2, 4	I, L, Lt,Ov	CR	A1a-d PR	S, M	Si	Si	3
41 *Platymiscium yucatanum*	B. m. Humedo 1200-1800 mcna B. premont	B	C	6 (F)	25	20	-	2, 4	L, Lt	VU	A1a-d PE, PX NM	S, M	Si	Si	3
42 *Platymiscium curvense*	B. m. Humedo 20-500 mcna	C	C	6	50	40	-	2, 4	L, H	EN	A1cd PE,EO PR	S, M	Si	Si	2
43 *Platymiscium parviflorum*	Bosque seco trans hum 0-600 mcna	B	B	2	80	100	<500	2, 4	H, G, Lt, L	CR	A1a-d PN, NM	M, Hm Lr	Si	Si	3

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CAMP SUMMARY DATA TABLE: COSTA RICA THREATENED PLANTS

Species	Location	Range	Area	# of Loca.	% Decli	Yr./ Gen	Pop. N	Data Qual	Threat	IUCN	Critera Used	Mgmt Rec	PH VA	Cultivat	Difficul
Caesalpiniaceae															
1 Cynometra bahuiniaefolia	Bosque Humedo Golfito	A	A	1	-	-	-	-	G, I	DD	PR	T, M	No	-	-
2 Cynometra hemitomophylla	Bosque Humedo PC,PS,ZA Tierras bajas	C	B?	4 (f)	<50	30	-	2, 3	I, Lf, Ov	EN	A1d PR	GN,H,Hm, Lm,	Si	Si	1
3 Cynometra retusa	Bosque Humedo Zonas bajas	C	-	4	25	30	-	2, 3	Lf	LR	Lc PR	M, Lh	No	Si	1
4 Prioria copaifera	Bosques muy humedos ZA, ZS, Zonas bajas	B	B	3	50	25	-	2, 3	I, Lf, Ov	EN	A1acd PR,PX	M, H, Lh	Si	Si	1
5 Sclerolobium costaricense	Bosque Humedo Zona Norte Atlant Norte	B	A	2	25	20	-	2, 3	Lf	EN	A1acd PR,PX	GM,H,Hm,Lh,M,T	Si	Si	3
6 Tachigali versicolor	Bosque Humedo Pacif Central y Pacif Sur	B	B	2	50	25	-	2, 3	Lf	EN	A1c PR	GM,H,Hm,Lh,M,S,T, Tl	Si	Si	3
Podocarpaceae															
7 Podocarpus costaricensis	Bosque Montano Zona Los Santos	A	A	1	50	15	<1000	2, 3	Lf, Ov	EN	A1cd PR	M,Gm,H,Hm,Lh,O,S,T,Tl	Si	Si	3
8 Podocarpus guatemalensis	Bosque PS Humedo PC, ZN 200-500 m	C	C	4 amplias	50	30	-	2, 3	Lf, Ov	EN	A1cd PR	M,Gm,H,Hm,Lh,O,S,T,Tl	Si	Si	3

CAMP SUMMARY DATA TABLE: COSTA RICA THREATENED PLANTS

Species	Location	Range	Area	# of Loca.	% Decli	Yr./Gen	Pop. N	Data Qual	Threat	IUCN	Critera Used	Mgmt Rec	PH VA	Cult ivat	Diffi cul
9 *Podocarpus macrostachyus*	Bosque Montano Cordilleras	C	C	4 amplias	25	30	-	2, 3	Lf, Ov	VU	A1cd PR	M,Gm,H,Hm,Lh,O,S,T,R	No	Si	3
10 *Podocarpus monteverdensis*	Bosque Montano Tilaran	A	A	2?	-	--	<3000	2, 3	-	EN	B2b PR	M,Gm,H,Hm,Lh,O,S,T,Tl	Si	Si	3
11 *Prumnopitys standleyi*	Bosque Montano Dota - Villa Mill	A	A	1 f amplia	50	15	<4000	2, 3	Lf, Ov, G	EN	A1cd PR	M,Gm,H,Hm,Lh,O,S,T,Tl	Si	Si	3
Caryocaraceae															
12 *Caryocar costaricensis*	Bosque muy Humedo Pen Osa	B	C	1 ±amplia	50	15	-	2, 3	Lf, Ov	EN	A1cd PR	M,Gm,H,Hm,Lh,O,S,T,Tl	Si	Si	3
13 *Anthodiscus chocoensis*	Bosque Humedo Pen. Osa	B	B	1	25	20	-	2, 3	Lf, Ov	EN	A1cd PR	M,Gm,H,Hm,Lh,O,S,T,Tl	Si	Si	3
Meliaceae															
14 *Carapa guianensis*	Bh-Bmh 0-400 m	C	D	10-12	>25	30	-	2, 3	H,I,T,Lf	VU	A1cd PR	R, Lh	No	Si	2
15 *Cedrela fissilis*	Bh 200-900 m	-	A	1			-	2, 3	Lh	CR	A1ad PR	T	Si	Si	3
16 *Cedrela odorata*	Bs, Bh, Bmh 0-1200	D	D	amplica	<50	25	-	2	P	VU	A1cd PR	-	No	Si	1

CAMP SUMMARY DATA TABLE: COSTA RICA THREATENED PLANTS

Species	Location	Range	Area	# of Loca.	% Decli	Yr./Gen	Pop. N	Data Qual	Threat	IUCN	Critera Used	Mgmt Rec	PH VA	Cult ivat	Diffi cul
17 Cedrela salvaidorensis	Bs - Bh 100-1000	A	A	4	50	30	-	2	H,I,G,Lf	CR	B1,2de PR	S, M	Si	Si	3
18 Cedrela tonduzii	B pluviales 1200-2800	C	D	-	10	10	-	2, 4	I	LR-1	A1ad PR	S, M	No	Si	2
19 Swietenia humilis	B seco 0-200	A	A	1	80	50	<100	3, 4	G	CR	B2bd EO PR NM	M, T	Si	Si	3
20 Swietenia macrophylla	B seco B humeda 50-900	C	B	6	>80	50	<2000	1, 2	H,G, Lf,L	CR	A1acd PR NM PE	Gm, T	No	Si	1
Zygophyllaceae															
21 Guaiacum sanctum	Bosque seco	A	A	3	80	100	<100	2	Lf,H,G, I	CR	B2e A1acd PR PE NM PX	Hm,H,Lh,S,T,O, V,Lm	Si	Si	3
Lecythhidaceae															
22 Couratari guianensis	Bosque Humedo Pacifica	B	C	4	50	30	<3000	2, 4	L, Lf	VU	A1cda PR	Hm,Lh,S ,T,O, V,Lm	No	Si	2
23 Couratari scottmori	Bosque muy Humedo	B	B	1 fragm	50	15	<2000	2, 4	H, I, G	CR	A1acd PE,PX	Hm,Lh,S ,T,O, V,Lm	Si	Si	2
24 Lecyhis ampla	Bosque muy Humedo	C	C	1 amplica	50	30	<6000	2	Lv, Ov, I	VU	A1d PR	Hm,Lh,S ,T,O, Lm	No	Si	2

CAMP SUMMARY DATA TABLE: COSTA RICA THREATENED PLANTS

Species	Location	Range	Area	# of Loca.	% Decli	Yr./Gen	Pop. N	Data Qual	Threat	IUCN	Critera Used	Mgmt Rec	PH VA	Cultivat	Difficul
25															
26 Lecythis mesophylla	Bosque muy Humedo	A	A	2	25	30	-	4	L, I	CR	A1cd NM	Hm, Lm, Lh	Si	Si	3
Papilionaceae															
27 Dalbergia brownei	Manglaves Pacifics	C	C	5	5	10	-	3	Lf	LR	cd PR	H, T	No	Si	2
28 Dalbergia calycina	Bosque Montane	A	A	2	20	30	-	2, 3	Lf, Ov	DD	pobl descon	A,Hm, Lh,M,O, S,T	Dep estu dio pobl	Si	3
29 Dalbergia ecastophyllum	Zonas Isajas Humedas Atlanti	A	B	1 amplica	20	30	-	2, 3	Lf	LR	cd PR	H, T	No	Si	2
30 Dalbergia glabra	Bosque secos Pac Norte	A	B	1 amplica	10	30	-	2, 3	Lf	LR	cd PR	H, T	No	Si	2
31 Dalbergia retusa	Bosque secos Pac. N, Pac. C	C	A	3	50	15	<2000	2, 3	Lf, Ov	CR	A1cd PR	M,Gm,H ,Hm,Lh, O,S,T,Tl	Si	Si	3
32 Dalbergia melanocardium	Bosque Humedo Zona Norte Valle del General	C	A	2	30	20	-	2, 3	Lf, Ov	EN	A1acd PR	Gm,H,H m,Lm,L h,M,O,S	Si	Si	3
33 Dalbergia monetaria	Humedales Zona Atlantica	C	C	1 amplica	10	20	-	2, 3	No	LR	A1cd PR	H, T	No	Si	2
34 Dalbergia tucurensis	Bosque Humedo Zona Norte	B	B	1	50	30	-	2, 3	Lf	EN	A1cd PR	M,Gm,H ,Hm,Lh, O,S,T,Tl	Si	Si	3

CAMP SUMMARY DATA TABLE: COSTA RICA THREATENED PLANTS

Species	Location	Range	Area	# of Loca.	% Decli	Yr./Gen	Pop. N	Data Qual	Threat	IUCN	Critera Used	Mgmt Rec	PH VA	Cult ivat	Diffi cul
35															
36 Dipterix panamensis	Bosque Humedo	C	C	12	40	15		2, 4	L, Ov	CD	A1d PR	Hm,Lh,S T,M,L m	No	Si	1
37 Hymenolobium mesoamericanum	Bosque Humedo	C	B	8	40	30	<2000	2, 4	L, Lf, I	EN	A1ad PR EO NM	Hm	Si	Si	3
38 Myroxylum balsamum	Bosque Humedo	C	A	6	80	30	<1000	2, 4	H,Lm, Hm	EN	A1d PR	Hm,H, Lh,S,T, O,V,Lm	Si	Si	3
39 Platymiscium pinnatum pinnatum	Bosque Humedo 300-350 mcna B. seco	B	B	1	<50	50	-	4	H,L, Lt,I	CR	A1cd NM PR EO PE	H,Hm,G m,Lm, Lr,M,S	Si	Si	3
40 Platymiscium pinnatum polystachyum	Bosque muy Humedo	C	B	2	50	50	-	2, 4	I, L, Lt,Ov	CR	A1a-d PR	S, M	Si	Si	3
41 Platymiscium yucatanum	B. m. Humedo 1200-1800 mcna B. premont	B	C	6 (F)	25	20	-	2, 4	L, Lt	VU	A1a-d PE, PX NM	S, M	Si	Si	3
42 Platymiscium curvense	B. m. Humedo 20-500 mcna	C	C	6	50	40	-	2, 4	L, H	EN	A1cd PE,EO PR	S, M	Si	Si	2
43 Platymiscium parviflorum	Bosque seco trans hum 0-600 mcna	B	B	2	80	100	<500	2, 4	H, G, Lt, L	CR	A1a-d PN, NM	M, Hm Lr	Si	Si	3

THREATENED PLANTS OF COSTA RICA

CONSERVATION ASSESSMENT AND MANAGEMENT PLANNING WORKSHOP

San José, Costa Rica

4 - 6 October 1996

Report

SECTION 3

TAXON DATA SHEET KEYS AND CRITERIA

Conservation Assessment and Management Plan (CAMP) Process

Taxon Data Sheet Categories

The Conservation Assessment and Management Plan (CAMP) taxon data sheet is a working document that provides information that can be used to assess the degree of threat and recommend conservation action. The first part of the sheet summarizes information on the status of the wild and captive populations of each taxon. It contains taxonomic, distributional, and demographic information useful in determining which taxa are under greatest threat of extinction. This information can be used to identify priorities for intensive management action for taxa.

SCIENTIFIC NAME: Scientific names of extant taxa: genus and species (or subspecies where appropriate).

TENTATIVE IUCN: Tentative Status according to the New IUCN Red List criteria (additional materials will be provided at the CAMP)
    CR = Critically Endangered
    EN = Endangered
    VU = Vulnerable
    CD = Conservation Dependent
    LR = Low Risk
    DD = Data Deficient
    NE = Not Evaluated

CRITERIA BASED ON: Indicate which of the New IUCN Red List criteria were used to assign a category of threat:
    PR = Population reduction (A1a, or A2b, etc.)
    EO = Extent of occurrence (B1, or B2a, B3c, etc.)
    PE = Population estimates (C1, or C2a, etc.)
    NM = Number of mature individuals (D)
    PX = Probability of extinction (E)

CITES: List the CITES Appendix on which the species is listed, if appropriate.

OTHER: List whether the species has been assigned threatened status in other venues, e.g., nationally or in other conservation assessments.

TAXONOMIC STATUS: This indicates the taxonomic status of the extant taxa. Taxonomic uncertainties may be discussed in this section. Subspecies not considered separately should be listed here along with their distribution.

CURRENT DISTRIBUTION (BREEDING AND WINTERING): List the geographical extent of the breeding and wintering locations of the species.

CONCENTRATED MIGRATION REGIONS: List the regions in which migration is concentrated, especially those in which the birds may face some degree of threat.

HISTORICAL DISTRIBUTION: List the historical distribution of the species

EXTENT OF OCCURRENCE: List the actual size of the area in which the species occurs, if possible. Also list the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred, or projected sites of present occurrence of a taxon, excluding cases of vagrancy (Figure 1). This measure does not take account of discontinuities or disjunctions in the spatial distributions of taxa. Extent of occurrence can often be measured by a minimum convex polygon (the smallest polygon in which no internal angle exceeds 180 degrees and which contains all the sites of occurrence).

 A: < 100 km2
 B: 101 km2 - 5,000 km2
 C: 5,001 km2 - 20,000 km2
 D: larger than 20,001 km2

AREA OF OCCUPANCY: List the area within the 'extent of occurrence' which is actually occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may, for example, contain unsuitable habitats. The area of occupancy is the smallest area essential at any stage to the survival of a taxon (e.g., colonial nesting sites, feeding sites for migratory taxa). The size of the area of occupancy will be a function of the scale at which it is measured, and should be at a scale appropriate to relent biological aspects of the taxon. The criteria include values in km2, and thus to avoid errors in classification the area of occupancy should be measured on grid squares or equivalents which are sufficiently small (see Figure 1).

A: < 10 km2
B: 11 km2 - 500 km2
C: 501 km2 - 2,000 km2

(b)

D: larger than 2,001 km2
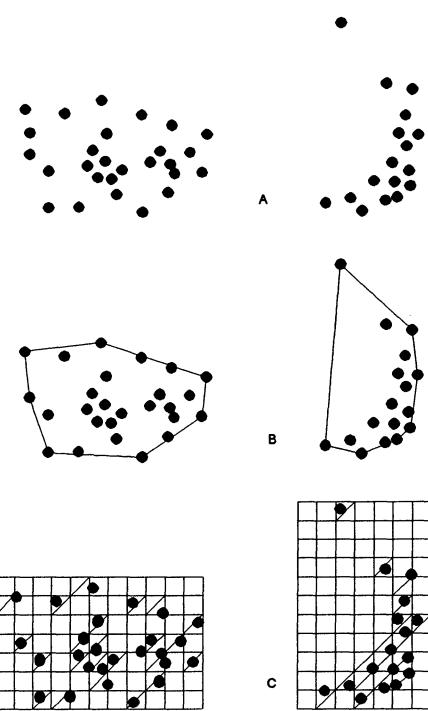
Fig. 1. Two examples of the distinction between the extent of occurrence and area of occupancy. (a) and

are the spatial distribution of known, inferred, or
    projected sites of occurrence. (c) and (d) show one
possible boundary to the extent of occurrence, which is
the measured area within this boundary. (e) and (f) show one measure of area of occupancy which can be measures by the sum of the occupied grid squares.

LOCATIONS: Note the number of locations in which the taxon is found. If the population is fragmented, indicate "F" after the number of locations.

POPULATION TRENDS - % CHANGE IN YEARS OR IN GENERATIONS: If possible, list the trend of the population (stable, declining, or increasing). If possible, list the percent of change over a particular time frame (e.g., 10 or 20 years) or number of generations. Specify the number of years or generations over which the decline has occurred, e.g., 10%/2g or 20%/20 yrs.

GENERATION TIME: Indicate the number of years in a generation. A generation is defined as the average age of parents in the population.

WORLD POPULATION: List the estimated numbers of pairs in the wild. If specific numbers are unavailable, estimate the general range of the population size.

REGIONAL POPULATION(S): List the estimated number of pairs in any particular region for which there are data, followed by the location.

DATA QUALITY:
List the actual age of the data used to provide the population estimates. Also list the type of data from which the estimates are provided.
1 = Reliable census or population monitoring
2 = General field study
3 = Informal field sightings
4 = Indirect information (trade numbers, habitat availability).

Any combination of above = different data quality in parts of range.

RECENT FIELD STUDIES: List any current or recent field studies, the name of the researcher and the location of the study.

THREATS: List immediate or predicted events that are or may cause significant population declines. These may include:
    A = Aircraft
    C = Climate
    D = Disease
    Dp = Decline in prey species
    Dr = Drowning
    F = Fishing
    G = Genetic problems
    H = Harvest
    Hf = Harvest for food
    Hm = Harvest for medicine
    Ho = Harvest for ornamental purposes
    Hyb = Hybridization
    I = Human interference, persecution, or disturbance
    Ic = Interspecific competition
    Ice = Interspecific competition from exotics
    Il = Interspecific competition with domestic livestock
    L = Loss of habitat
    La = Loss of habitat because of exotic animals

Lf = Loss of habitat because of fragmentation
Lp = Loss of habitat because of exotic plants
M = Marine perturbations, including El Niño and other shifts
N = Nutritional disorders or problems
P = Predation
Pe = Predation by exotics
Ps= Pesticides
Pl= Power lines
Po= Poisoning
Pu= Pollution
S = Catastrophic events
    Sd: drought
    Sf: fire
    Sh: hurricane
    St: tsunami
    Sv: volcano
T = Trade for parts for medicine and domestic or commercial purposes
W = War

TRADE:
Was the species present in Trade according to CITES records? If so, list year(s).

COMMENTS: Note any additional information that is important with respect to the conservation of the species.

RECOMMENDATIONS

RESEARCH MANAGEMENT: It should be noted that there is (or should be) a clear relationship between threats and subsequent outlined research/management actions. The "Research/Management" column provides an integrated view of actions to be taken, based on the listed threats. Research management can be defined as a management program which includes a strong feedback between management activities and an evaluation of the efficacy of the management, as well as response of the bird species to that activity. The categories within the column are as follows:

T = Taxonomic and morphological genetic studies
Tl = Translocations
S = Survey - search and find
M = Monitoring - to determine population information
H = Husbandry research
Hm = Habitat management - management actions primarily intended to protect and/or enhance the species' habitat (e.g., forest management)

Lm   =   Limiting factor management - "research management" activities on known or suspected limiting factors. Management projects have a research component that provide scientifically defensible results.

Lr   =   Limiting factor research - research projects aimed at determining limiting factors. Results from this work may provide management recommendations and future research needs

Lh   =   Life history studies

O   =   Other (record in detail on taxon data sheet)

CULTIVATION PROGRAM RECOMMENDATIONS

1.   Level 1. A captive population is recommended as a component of a conservation program. This program has a tentative goal of developing and managing a population sufficient to preserve 90% of the genetic diversity of a population for 100 years (90%/100). The program should be further defined with a species management plan encompassing the wild and cultivated populations and implemented immediately with available stock in cultivation. If the current stock is insufficient to meet program goals, a species management plan should be developed to specify the need for additional founder stock. If no stock is present in cultivation then the program should be developed collaboratively with appropriate management agencies, SSC Specialist Groups, and cooperating institutions.

2.   Level 2. Similar to the above except a species/subspecies management plan would include periodic reinforcement of cultivated population with new genetic material from the wild. The levels and amount of genetic exchange needed should be defined in terms of the program goals, a population model, and species management plan. It is anticipated that periodic supplementation with new genetic material will allow management of a smaller cultivated population. The time period for implementation of a Level 2 program will depend on recommendations made at the CAMP workshop.

3.   Level 3. A cultivation program is not currently recommended as a demographic or genetic contribution to the conservation of the species/subspecies. Taxa already in cultivation may be included in this category. In this case the species/subspecies should be evaluated either for management toward a decrease in numbers or for complete elimination from cultivation programs as part of a strategy to accommodate as many species/subspecies as possible of higher conservation priority as identified in the CAMP or in SSC Action Plans.

P.   Pending (P). A decision on a cultivation program will depend upon further data either from a PHVA, a survey, or existing identified sources to be queried.

LEVEL OF DIFFICULTY IN CULTIVATION

What is the level of difficulty in maintaining the species in captive conditions?

1.   Least difficult. Techniques are in place for cultivation and propagation of similar taxa presumably could be applied to the taxon.

2.   Moderate difficulty. Techniques are only partially in place for cultivation and propagation of similar taxa in captivity, and many cultivation and propagation techniques still need refinement.

3.   Very difficult. Techniques are not in place for cultivation and propagation of similar taxa in cultivation, and propagation techniques still need to be developed.

PHVA: Is a Population and Habitat Viability Assessment process recommended to develop an intensive management/recovery plan for the species?

   Yes, No or Pending further data from surveys or other research.
   NOTE**A detailed model of a species' biology is frequently not needed to make sound management decisions.

EXISTING CULTIVATED POPULATION: Number of individuals in captivity according to available surveys. Please add other information, when available, as the numbers listed consist of only a portion of the cultivated population.

SOURCES: List sources used for information for the above data. (Author's name, year, title of article or book, journal, issue, and page numbers).

COMPILERS: List the names of the people who contributed information for this taxon data sheet.

Table 1. Assigning New IUCN Red List Categories of Threat

ANY of the following criteria may be used to assign categories:	CRITICAL	ENDANGERED	VULNERABLE
A. Population reduction	1) ≥ 80% decline in last 10 yrs based on: a) direct observation OR b) decline in area of occupancy, occurrence and/or habitat quality OR c) actual or potential levels of exploitation OR d) introd. taxa, hybridization, pathogens, pollutants, competitors or parasites OR 2) ≥ 80% decline/10yrs predicted in near future based on (b), (c), (d), or (e) above	1) ≥ 50% decline in last 10 yrs or 2 generations OR 2) ≥ 50% decline/10 yrs or 2 generations predicted in near future based on (b), (c), (d), or (e) above	1) ≥ 50% decline in last 20 yrs or 5 generations based on: OR 2) ≥ 50% decline/20 yrs or 5 generations predicted in near future based on (b), (c), (d), or (e) above
B. Extent of occurrence	Est. <100 km² or area of occupancy est. <10 km², AND TWO of the following: 1) Severely fragmented OR single location. 2) Continuing decline observed, inferred, or projected in ANY of the following: a) extent of occurrence b) area of occupancy c) area, extent, and/or quality of habitat d) # of locations or subpopulations e) # of mature individuals 3) Extreme fluctuations in ANY of the following: a) extent of occurrence b) area of occupancy c) # of locations or subpopulations	Est. <5,000 km² or area of occupancy est. <500 km², AND TWO of the following: 1) Severely fragmented OR ≤ 5 locations	Est. <20,000 km² or area of occupancy est. <2,000 km², AND TWO of the following: 1) Severely fragmented OR ≤ 10 locations
C. Population estimates	Est. <250 mature indivs. AND: 1) Decline ≥25% within 3 yrs or one generation, whichever is longer OR 2) Continuing decline, observed, projected, or inferred in mature individuals AND population structure EITHER a) no pop. w/>50 mature indivs OR b) all indivs. in single subpop.	Est. <2,500 mature indivs. AND: 1) Decline ≥15% within 5 yrs or 2 generations, whichever is longer OR 2) Continuing decline, observed, projected, or inferred in mature individuals AND population structure EITHER a) no pop. w/>250 mature indivs. OR b) all indivs. in single subpop.	Est. <10,000 mature indivs. AND: 1) Decline ≥20% within 10 yrs or 3 generations, whichever is longer OR 2) Continuing decline, observed, projected, or inferred in mature individuals AND population structure EITHER a) no. pop. w/>1,000 mature indivs. OR b) all indivs. in single subpop.
D. # of mature individuals	Est. < 50 mature individuals	Est. < 250 mature individuals	1) Est. < 1,000 mature individuals OR 2) Area of occupancy < 100km² or <5 locations
E. Probability of extinction	≥ 50% within in 5 yrs or 2 generations, whichever is longer	≥ 20% within 20 yrs or 5 generations, whichever is longer	≥ 10% within 100 yrs

TAXON DATA SHEET

Species (& synonyms):

Family:

Taxonomic Status:

Habit:

Habitat:

Historical Distribution:

Current Distribution
  - Range (km^2):
  -Area occupied (km^2):
  -Number of locations:

Population trends
  -% Change in yrs or gens:
  -% Decline:
  -Time / Rate (Yrs or gens):
  - No. Of mature individuals:

Global Population trend:

Regional Population trend:

Data Quality (Sources & dates):

Recent Field Studies:
  (Who, dates, ref.);

Threats:

Trade:

Other Comments:

Taxon Data Sheet -

Status
    -IUCN (Revised):

  -Criteria based on:

  -CITES:

Recommendations:
    - Research Management:

    - PHVA:

    - Cultivation Program:

    - Level of Difficulty:

Existing Cultivations:
    - Names of facilities:

THREATENED PLANTS OF COSTA RICA

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SECTION 4

Taxon Data Sheets

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): *Carapa guianensis*

Familia: Meliaceae

Estado Taxonómico: Confusión a nivel de especie

Hábito: Arbol

Habitat: Bosque húmedo y muy húmedo, 0 - 900 m.s.n.m.

Distribución Histórica: Belize a Brazil y las Antillas (algunas Jamaica). En Costa
Rica, Zona Norte, Zona Atlántica, Pacífico Sur y

Central

Distribución Actual:
  - Rango (km^2): 10 - 15.000
  -Area ocupada(km^2): > a 5.000
  -Número de localidades: 6 - 12 localidades. Fragmentada

Tendencia de la Población
  -% De cambio en años o generaciones   más de 50 % últimos 30 años
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones): últimos 10 años ± 25%
  - N° de individuos maduros::

Tendencia de la Población a Nivel Global: Declinando, común

Tendencia de la Población a Nivel Regional: Declinando

Calidad de la Información (Fuentes y fechas): Datos de compra con estudios de
información

(2 - 3)

Estudios de Campo Recientes: Inventarios, Planes de Manejo
(Quién, fechas, referencias); Pórtico, Sistema Nacional de Areas de
  Coservación (SINAC) (Antigua
  Dirección General Forestal (DGF),
  ventanilla única de información)

Amenazas: Aprovechamiento (H), pérdida de habitat (L -F),

extención bananera (I), comercio internacional (T).

Tráfico: No incluida en CITES

Otros Comentarios: Amenazada por comercio internacional

HOJA DE INFORMACIÓN DEL TAXON -

Estado
   -UICN (Revisado):   Vulnerable

   -El criterio se basó en: Reducción de la población perdida de habitat
                                        aprovechamiento
   -CITES:

Recomendaciones:
   -Investigacion para el manejo: - Estudio taxonómico
                                    - Monitoreo para determinar información sobre la
                                                población
                                    - Estudios sobre historia natural

   - PHVA:

   - Programa de Cultivo: Programas de conservación in-situ y ex-situ

   - Nivel de Dificultad: Moderadamente difícil

Cultivos Existentes:
   - Nombre de los Viveros: - Forestales 4 Esquinas, Golfito de Sarapiquí, 45 Ha.
                                    - Pórtico S.A., Guápiles
                                    - E.R.T.H., Guácimo, 5 Ha..

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Cedrela fissilis*

Familia: Meliaceae

Estado Taxonómico: Taxón con estatus poco definido

Hábito: Arbol

Habitat: Bosque húmedo, 200 - 700 m.s.n.m.

Distribución Histórica: Tirimbina - Sarapiquí y, posiblemente, Palmar Norte
                                  y Península de Osa

Distribución Actual:
  - Rango (km^2):
  -Area ocupada(km^2):
  -Número de localidades: 2

Tendencia de la Población
  -% De cambio en años o generaciones   Especie naturalmente escasa en Costa Rica
  -% Declinación: "   "   "   "   "   "
  -Tiempo / Tasa (Años o generaciones):   "   "   "   "   "   "
  - N° de individuos maduros: "   "   "   "   "   "

Tendencia de la Población a Nivel Global: Rara

Tendencia de la Población a Nivel Regional: Rara

Calidad de la Información (Fuentes y fechas):   No hay datos

Estudios de Campo Recientes: Faltan estudios
(Quién, fechas, referencias);

Amenazas: - Pérdida de hábitat
                                  - Aprovecahmiento escaso

Tráfico:

Otros Comentarios: Especie muy rara

Estado
   -UICN (Revisado):

   -El criterio se basó en: Críticamente en peligro

   -CITES: - Población naturalmente escasa
                                 - Falta información

Recomendaciones:
   - Investigación para el Manejo: - Estudio taxonómico
                                 - Conservación in-situ
   - PHVA:

   - Programa de Cultivo: - Producción en vivero
                                 - Recolección de semillas
   - Nivel de Dificultad: Muy difícil

Cultivos Existentes:
   - Nombre de los Viveros: No hay

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): *Cedrela odorata* (sin. *Cedrela mexicana*)

Familia: Meliaceae

Estado Taxonómico: Taxón claro

Hábito: Arbol

Habitat: Bosques secos y húmedos, 0 - 1200 m.s.n.m.

Distribución Histórica: Todo el país, excepto las cordilleras

Distribución Actual:
  - Rango (km^2): 30 - 40.000
  -Area ocupada(km^2):
  -Número de localidades: Distribución amplia

Tendencia de la Población
  -% De cambio en años o generaciones   < 50% en bosque natural
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones): > 50% en últimos 25 años
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global: Declinando, común

Tendencia de la Población a Nivel Regional: Declinando, común

Calidad de la Información (Fuentes y fechas): Datos de campo y observación (2-3-4)

Estudios de Campo Recientes: Inventarios
(Quién, fechas, referencias); Ventanilla única de información (SINAC)
  CATIE

Amenazas: H, P, L

Tráfico: No incluida en CITES

Otros Comentarios: Comercio a nivel nacional

HOJA DE INFORMACIÓN DEL TAXON -   2

Estado
   -UICN (Revisado):

   -El criterio se basó en: Vulnerable   - Reducción población
                                                 - Mucho comercio
   -CITES:

Recomendaciones:
   - Investigación para el Manejo: Monitorear la población

   - PHVA:

   - Programa de Cultivo: Conservación in-situ y ex-situ

   - Nivel de Dificultad: Moderadamente difícil

Cultivos Existentes:
   - Nombre de los Viveros: Plantación en parcelas experimentales < a 1 Ha., por el
                                     ataque de hipsiphila

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Cedrela salvadorensis*

Familia: Meliaceae

Estado Taxonómico: Taxón claro

Hábito: Arbol

Habitat: Bosques secos o húmedos del Pacífico Central y Valle
                                         Central, 100 - 1000 ms.n.m.

Distribución Histórica:

Distribución Actual:
  - Rango (km^2):   Ca. 5.000
  -Area ocupada(km^2):   100
  -Número de localidades: 10 localidades conocidas

Tendencia de la Población
  -% De cambio en años o generaciones   Declinando
  -% Declinación: < 50 %
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros: < 500 árboles

Tendencia de la Población a Nivel Global: Declinando, escasa

Tendencia de la Población a Nivel Regional: Declinando, escasa

Calidad de la Información (Fuentes y fechas):   Datos de campo y observación (3-4)

Estudios de Campo Recientes: No hay estudios
(Quién, fechas, referencias);

Amenazas: - Aprovechamiento
                                         - Expansión urbana
                                         - Problemas genéticos
Tráfico: No incluida en CITES

Otros Comentarios: Comercio escaso

HOJA DE INFORMACIÓN DEL TAXON -

Estado
   -UICN (Revisado):   En peligro crítico   - Escasa
                                           - Comercio
                                         - Reducción hábitat

   -El criterio se basó en:

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: Monitorear la población
                                          Conservación in-situ y ex-situ
   - PHVA:

   - Programa de Cultivo: Producción en vivero

   - Nivel de Dificultad: Difícil

Cultivos Existentes:
   - Nombre de los Viveros: No hay

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Cedrela tonduzii*

Familia: Meliaceae

Estado Taxonómico:

Hábito: Arbol

Habitat: Bosques pluviales en las cordillerasx

Distribución Histórica: Cordilleras 1.200 - 2.800 m.s.n.m.

Distribución Actual:
  - Rango (km^2):   10.000
  -Area ocupada(km^2):   5.000
  -Número de localidades: Amplia distribución

Tendencia de la Población
  -% De cambio en años o generaciones   30 % en su distribución, últimos 100 años
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones): 10 % últimos 10 años
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global: Población estable

Tendencia de la Población a Nivel Regional: Población estable

Calidad de la Información (Fuentes y fechas):   Datos de campo y observación

Estudios de Campo Recientes: No hay estudios
(Quién, fechas, referencias);

Amenazas: Aprovechamiento

Tráfico: No incluida en CITES

Otros Comentarios: Comercio escaso, poblaciones protegidas

Estado
   -UICN (Revisado):   Bajo Riesgo   - Frecuente
                                                        - Muy protegida
   -El criterio se basó en:

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: Monitoreo de la población

   - PHVA:

   - Programa de Cultivo: Producción en vivero

   - Nivel de Dificultad: Moderado

Cultivos Existentes:
   - Nombre de los Viveros: Pocos árboles plantados experimentalmente

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Swictenia humilis*

Familia: Meliaceae

Estado Taxonómico: pobremente definido, estado poco claro

Hábito: arbol

Habitat: bosques secos caducifolios

Distribución Histórica: Guanacaste, 0-200 msnm
                                          (Parque Nacional Santa Rosa, Playas
Nancite
                                       y Naranjo)

Distribución Actual:
  - Rango (km²):   5 Km°
  -Area ocupada(km²):   1kM"
  -Número de localidades: 1

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones): 80% en los ultimos 50 años
  - N° de individuos maduros: menos de 100

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: escasa, rara

Calidad de la Información (Fuentes y fechas): datos de campo y observacion

Estudios de Campo Recientes: Voucher, D. sin publicar. Oxford University
 (Quién, fechas, referencias)   Ensayo para huertos, semilleros. CATIE, ACG

Amenazas: Degradacion genetica por pequeña poblacion

Tráfico: Si, esta en CITES, apendice II

Otros Comentarios:

HOJA DE INFORMACIÓN DEL TAXON -

2

Estado
   -UICN (Revisado):   En peligro critico   Poblacion poco viable
                                                       Escasa, aunque
protegida
   -El criterio se basó en:

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: Monitorear la poblacion fuera de Santa Rosa

   - PHVA: Si

   - Programa de Cultivo: fomentar la plantacion

   - Nivel de Dificultad: dificil

Cultivos Existentes: Ensayo procedencia 1 ha 1-2 en ACG
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Swietenia macrophylla*

Familia: Meliaceae

Estado Taxonómico: pobremente definida, status poco claro

Hábito: arbol

Habitat: bosques secos y humedos, 50- 900m.

Distribución Histórica: Guanacaste, Pacifico Central, Los Chiles, Zona Norte

Distribución Actual:
  - Rango (km^2):   10 000 Km^a
  -Area ocupada(km^2):   100 Km^a
  -Número de localidades: G, fragmentada

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):   mas de 80% en los ultimos 50 años
  - N° de individuos maduros: menos de 2000

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: escasa, declinando

Calidad de la Información (Fuentes y fechas): datos de campo y observacion

Estudios de Campo Recientes: Navarro, Diversidad Genetica, CATIE
(Quién, fechas, referencias);

Amenazas: Explotacion, degradacion genetica, fragmentacion

Tráfico: Apendice III CITES

Otros Comentarios: La mejor poblacion esta en Los Chiles

Estado
    -UICN (Revisado):   En peligro critico

    -El criterio se basó en: poblacion poco viable
                                        escasa
                                        explotada

    -CITES:

Recomendaciones:
    - Investigación para el Manejo: monitorear la poblacion mas ampliamente
                                              conservacion ex-situ
    - PHVA: No

    - Programa de Cultivo: plantaciones mixtas

    - Nivel de Dificultad: mediano

Cultivos Existentes: pequeñas plantaciones, 5 ha en Guanacaste,
    - Nombre de los Viveros: Upala y Orotina

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Guaiacum sanctum***

Familia: Zygophyllaceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosques secos, 0-250 msnm

Distribución Histórica: Guanacaste

Distribución Actual:
  - Rango (km^2):   menos de 1 000 Km^a
  -Area ocupada(km^2):   menos de 10 Km^a
  -Número de localidades: 3

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación: mas de 80% en los ultimos 100 años
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros: menos de 100

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: escasa, declinando, rara

Calidad de la Información (Fuentes y fechas): datos de campo y observacion

Estudios de Campo Recientes: Dinamica de la poblacion de Palo Verde
(Quién, fechas, referencias);

Amenazas: Explotacion
                    degradacion genetica

Tráfico: apendice II CITES

Otros Comentarios: especie degradada

HOJA DE INFORMACIÓN DEL TAXON -

Estado
-   UICN (Revisado):   en peligro critico

-   El criterio se basó en: poblacion poco viable
                                        escasa
                                        explotacion del arbol y del brinzal
-CITES:

Recomendaciones:
-   Investigación para el Manejo: monitoreo de las poblaciones
                                    recoleccion de semilla
                                    conservacion in -situ y ex -situ

-   PHVA: Si

-   Programa de Cultivo: estudios de propagacion vegetativa

-   Nivel de Dificultad: dificil

Cultivos Existentes: no existen
-   Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Couratari guianensis***

Familia: Lecythidaceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosque Humedo y muy Humedo, 100-600m

Distribución Histórica: Costa Pacifica, de la Reserva Biologica de Carara
                             hasta Osa

Distribución Actual:
  - Rango (km^2):   5000 Km^a
  -Area ocupada(km^2):   1000 Km^a
  -Número de localidades: 4, fragmentado

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones): 50% en los ultimos 30 años
  - N° de individuos maduros: menos de 3000 arboles

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: escasa, explotada

Calidad de la Información (Fuentes y fechas): datos de campo y observacion

Estudios de Campo Recientes: solo estudios taxonomicos realizados por personal
 (Quién, fechas, referencias)   del Jardin Botanico de Nueva York

Amenazas: explotacion
                      reduccion de habitat

Tráfico: no esta en CITES

Otros Comentarios:

Estado
   -UICN (Revisado):   VU

   -El criterio se basó en: disminucion de habitat
                               explotacion
   -CITES:

Recomendaciones:
   - Investigación para el Manejo: monitoreo poblacion
                                      recoleccion de semillas
                                      conservacion in-situ

   - PHVA: No

   - Programa de Cultivo: viveros
                                plantacion
   - Nivel de Dificultad: moderado

Cultivos Existentes: no existen
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **_Couratari scottmori_**

Familia: Lecythidaceae

Estado Taxonómico: taxon claro

Hábito: arbol

Habitat: Bosque muy Humedo

Distribución Histórica: Solo Peninsula de Osa, 50-300 msnm

Distribución Actual:
  - Rango (km^2): 1000Km^a
  -Area ocupada(km^2): 200 Km^a
  -Número de localidades: 1, fragmentada

Tendencia de la Población
  -% De cambio en años o generaciones   50% en los ultimos 15 años
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros: menos de 2000 arboles

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: escasa y explotada

Calidad de la Información (Fuentes y fechas): datos de campo y observacion

Estudios de Campo Recientes: solo estudios taxonomicos
(Quién, fechas, referencias);

Amenazas: explotacion
                             reduccion habitat

Tráfico: no esta en CITES

Otros Comentarios:

Estado
  -UICN (Revisado):   En peligro de extincion

  -El criterio se basó en: explotacion
                                          escasa
  -CITES:

Recomendaciones:
  - Investigación para el Manejo: monitoreo poblacion
                                          recoleccion de semilla
  - PHVA:

  - Programa de Cultivo: estudios en vivero
                                          plantacion
  - Nivel de Dificultad: moderado

Cultivos Existentes: No
  - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): ***Lecythis ampla***

Familia: Lecythidaceae

Estado Taxonómico: taxon claro

Hábito: arbol

Habitat: Bosques muy Humedos

Distribución Histórica: Zona Norte y Atlantica, 0-250 msnm

Distribución Actual:
- Rango (km^2): 10 000 Km^a
- Area ocupada(km^2): 2 500 Km^a
- Número de localidades:

Tendencia de la Población
- % De cambio en años o generaciones 50% en los ultimos 30 años
- % Declinación:
- Tiempo / Tasa (Años o generaciones):
- N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: explotada

Calidad de la Información (Fuentes y fechas): datos de campo y observacion

Estudios de Campo Recientes: estudios taxonomicos
(Quién, fechas, referencias); Scottmori, Jardin Botanico de Nueva York
Ecologia y usos de las especies de Lecythis en
Centro America. Turrialba. 1970

Amenazas: explotacion
reduccion del habitat
fragmentacion
Tráfico:

Otros Comentarios:

Estado
   -UICN (Revisado):   VU

   -El criterio se basó en: frecuente en algunos sitios protegidos
                                                   explotado
                                                   reduccion habitat

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: monitoreo de la poblacion en la Zona Atlantica
                                                   estudios geneticos
   - PHVA: No

   - Programa de Cultivo: hacer plantaciones, silvicultura

   - Nivel de Dificultad: moderado

Cultivos Existentes: pequeñas plantaciones experimentales menores
   - Nombre de los Viveros: de 1 ha. en la zona norte (EARTH, La Selva)

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Lecythis mesophylla*

Familia: Lecythidaceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosques muy Humedos

Distribución Histórica: Zona de Osa y Zona al Sur de Puriscal, 50- 500m

Distribución Actual:
  - Rango (km^2):   menos de 2000 Km^a
  -Area ocupada(km^2):   100 Km^o
  -Número de localidades: 2, fragmentada

Tendencia de la Población
  -% De cambio en años o generaciones   25% en los ultimos 30 años
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros: menos de 250

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: rara

Calidad de la Información (Fuentes y fechas): datos de campo y observacion

Estudios de Campo Recientes: estudios taxonomicos
(Quién, fechas, referencias);

Amenazas: perdida de habitat

Tráfico: no esta en CITES

Otros Comentarios:

Estado
    -UICN (Revisado):   peligro critico

    -El criterio se basó en: poblacion escasa
                                        bajo numero de individuos
                                        muy localizada
-CITES:

Recomendaciones:
    - Investigación para el Manejo: - Monitoreo de población
                                        - Conservación in-situ y ex-situ
                                        - Producción en vivero
                                        - Estudios de Historia Natural
    - PHVA:

    - Programa de Cultivo:

    - Nivel de Dificultad: Difícil

Cultivos Existentes:
    - Nombre de los Viveros: Ninguna

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Dalbergia brownei*

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbusto

Habitat: Manglares del Pacifico

Distribución Histórica: Ampliamente distribuido en América Tropical

Distribución Actual:
  - Rango (km^2):   C
  -Area ocupada(km^2):   C
  -Número de localidades: 5 (Costera)

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Común

Calidad de la Información (Fuentes y fechas):   No

Estudios de Campo Recientes: No
  (Quién, fechas, referencias);

Amenazas: Lf

Tráfico: No

Otros Comentarios:

HOJA DE INFORMACIÓN DEL TAXON -

Estado
 -UICN (Revisado):   LR

 -El criterio se basó en: cd

 -CITES:

Recomendaciones:
 - Investigación para el Manejo: H, T

 - PHVA: No

 - Programa de Cultivo: Si

 - Nivel de Dificultad: 2

Cultivos Existentes:
 - Nombre de los Viveros: No

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): *Dalbergia calycina*

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbol

Habitat: Bosque montano (El Empalme, V. Cacao)

Distribución Histórica: México, Nicaragua, Costa Rica

Distribución Actual:
  - Rango (km²): A
  -Area ocupada(km²): A
  -Número de localidades: 2

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Muy escaso

Calidad de la Información (Fuentes y fechas): 2, 3

Estudios de Campo Recientes: No
  (Quién, fechas, referencias);

Amenazas: Lf, Ov (por corta de otros árboles)

Tráfico:

Otros Comentarios:

Estado
   -UICN (Revisado):   DD

   -El criterio se basó en: Poblaciones desconocidas

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: G, H, Hm, Lh, M, O, S, T, Tl

   - PHVA: Depende de estudios de poblaciones

   - Programa de Cultivo: Si

   - Nivel de Dificultad: 3

Cultivos Existentes: No

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   **Dalbergia ecastophyllum**

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbusto escandente

Habitat: Zonas bajas y húmedas del Atlántico, en las costas

Distribución Histórica: América Tropical y Africa

Distribución Actual:
- Rango (km^2):   A
  -Area ocupada(km^2):   A
  -Número de localidades: 1 ampia

Tendencia de la Población
- -% De cambio en años o generaciones
- -% Declinación:
- -Tiempo / Tasa (Años o generaciones):
- - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Común en el Atlántico costero

Calidad de la Información (Fuentes y fechas): 2, 3

Estudios de Campo Recientes: No
 (Quién, fechas, referencias);

Amenazas: Lf

Tráfico:

Otros Comentarios:

HOJA DE INFORMACIÓN DEL TAXON -

Estado
  -UICN (Revisado):   LR

  -El criterio se basó en: cd

  -CITES:

Recomendaciones:
  - Investigación para el Manejo: H, T

  - PHVA: No

  - Programa de Cultivo: Si

  - Nivel de Dificultad: 2

Cultivos Existentes:
  - Nombre de los Viveros: No

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **_Dalbergia glabra_**

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbol pequeño, escandente

Habitat: Pacífico Norte. Bosques secos

Distribución Histórica: Sur de México hasta Costa Rica

Distribución Actual:
  - Rango (km^2): A
  - Area ocupada(km^2): B
  - Número de localidades: 1 amplia y protegida

Tendencia de la Población
  - % De cambio en años o generaciones
  - % Declinación:
  - Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: En poblaciones fragmentadas cerca de esteros y costas. Semiescaso

Calidad de la Información (Fuentes y fechas): 2, 3

Estudios de Campo Recientes:
 (Quién, fechas, referencias);

Amenazas: Lf

Tráfico:

Otros Comentarios:

Estado
   -UICN (Revisado):   LR

   -El criterio se basó en: cd

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: H, T

   - PHVA: No

   - Programa de Cultivo: Si

   - Nivel de Dificultad: 2

Cultivos Existentes:
   - Nombre de los Viveros: No

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **_Dalbergia hypoleuca_**

Familia: Papilionaceae

Estado Taxonómico: Es la misma especie que la _Dalbergia retusa_

Hábito:

Habitat:

Distribución Histórica:

Distribución Actual:
  - Rango (km^2):
  -Area ocupada(km^2):
  -Número de localidades:

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional:

Calidad de la Información (Fuentes y fechas):

Estudios de Campo Recientes:
 (Quién, fechas, referencias);

Amenazas:

Tráfico:

Otros Comentarios:

Estado
  -UICN (Revisado):

 -El criterio se basó en:

 -CITES:

Recomendaciones:
  - Investigación para el Manejo:

  - PHVA:

  - Programa de Cultivo:

  - Nivel de Dificultad:

Cultivos Existentes:

  - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Dalbergia melanocardium***

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbol

Habitat: Bosque húmedo de Zona Norte y Valle Central

Distribución Histórica: México hasta Costa Rica

Distribución Actual:
  - Rango (km²):   C
  -Area ocupada(km²):   A
  -Número de localidades: 2

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Muy escasa

Calidad de la Información (Fuentes y fechas):   2, 3

Estudios de Campo Recientes: No
 (Quién, fechas, referencias);

Amenazas: Lf, Ov

Tráfico:

Otros Comentarios:

Estado
   -UICN (Revisado):   EN

   -El criterio se basó en: A1, a, cd (PR)

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: GH, H, Hm, Lm, Lh, M, O, S, T, TL

   - PHVA: Si

   - Programa de Cultivo: Si

   - Nivel de Dificultad: 3

Cultivos Existentes:
   - Nombre de los Viveros: No

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Dalbergia monetaria*

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbusto

Habitat: Humedales Zona Atlántica

Distribución Histórica: Guatemala a Región Amazónica y Antilla Mayores

Distribución Actual:
- Rango (km^2):   C
- Area ocupada(km^2):   C
- Número de localidades: 1 amplia

Tendencia de la Población
- % De cambio en años o generaciones
- % Declinación:
- Tiempo / Tasa (Años o generaciones):
- N° de individuos maduros:

Tendencia de la Población a Nivel Global: Muy común

Tendencia de la Población a Nivel Regional: Muy común

Calidad de la Información (Fuentes y fechas):   2, 3

Estudios de Campo Recientes: No
(Quién, fechas, referencias);

Amenazas: No

Tráfico:

Otros Comentarios:

Estado
   -UICN (Revisado):   LR

   -El criterio se basó en: cd

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: H, T

   - PHVA: No

   - Programa de Cultivo: Si

   - Nivel de Dificultad: 2

Cultivos Existentes:
   - Nombre de los Viveros: No

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Dalbergia retusa*

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbol

Habitat: Pacífico Norte y Central (Zonas secas). Zona Norte muy escasa

Distribución Histórica: De México a Panamá

Distribución Actual:
   - Rango (km^2):   C
    -Area ocupada(km^2):   A
    -Número de localidades: 3

Tendencia de la Población
    -% De cambio en años o generaciones   Declinando
    -% Declinación:
    -Tiempo / Tasa (Años o generaciones):
    - N° de individuos maduros:

Tendencia de la Población a Nivel Global: Muy escaso

Tendencia de la Población a Nivel Regional: Muy escaso

Calidad de la Información (Fuentes y fechas):   2, 3

Estudios de Campo Recientes: Maderas y vivero (germinación)
(Quién, fechas, referencias);   Arboles Maderables Nativos en
                                     Vías de   Extinción (Quírico Jiménez)

Amenazas: Lf, Ov

Tráfico: No

Otros Comentarios: Muy explotado

Estado
   -UICN (Revisado):   CR

   -El criterio se basó en: A1, cd

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: M, Gm, H, Hm, Lh, O, S, T, TL

   - PHVA: Si

   - Programa de Cultivo: Si

   - Nivel de Dificultad: 3

Cultivos Existentes: Si
   - Nombre de los Viveros: Ensayos experimentales FERCO
                               Parque Nacional Guanacaste

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **_Dalbergia glomerata (sin. Dalbergia tucurensis)_**

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbol

Habitat: Bosque Húmedo Zona Norte

Distribución Histórica: Belice a Costa Rica

Distribución Actual:
 - Rango (km²):   B
 -Area ocupada(km²):   B
 -Número de localidades: 1

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global: Muy escaso

Tendencia de la Población a Nivel Regional: Muy escaso

Calidad de la Información (Fuentes y fechas):   2,3

Estudios de Campo Recientes: No
(Quién, fechas, referencias);

Amenazas: Lf

Tráfico:

Otros Comentarios:

HOJA DE INFORMACIÓN DEL TAXON -
2

Estado
   -UICN (Revisado):   EN

   -El criterio se basó en: cd

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: M,Gm,H,Hm,Lh,O,S,T,TL

   - PHVA: Sí

   - Programa de Cultivo: Sí

   - Nivel de Dificultad: 3

Cultivos Existentes: No
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **_Dipterix panamensis_**

Familia: Papilionaceae

Estado Taxonómico: Taxón Claro

Hábito: Arbol

Habitat: Bosque Húmedo 2.Norte y 2.Atlántica, 20-400 m

Distribución Histórica: Limón hasta Upala

Distribución Actual:
- Rango (km^2): 12000 km²
- Area ocupada(km^2): 5000 km²
- Número de localidades: 8-12 localidades fragmentadas

Tendencia de la Población
- % De cambio en años o generaciones   40% últimos 15 años
- % Declinación:
- Tiempo / Tasa (Años o generaciones):   Dificil cuantificar
- N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Frecuente

Calidad de la Información (Fuentes y fechas):   Datos de campo, observación

Estudios de Campo Recientes: Tecnología (ITCR)
(Quién, fechas, referencias);   cuantificación de población (en proceso)

Amenazas: Explotación
Pérdida de hábitat

Tráfico: No están en CITES

Otros Comentarios:

HOJA DE INFORMACIÓN DEL TAXON -

Estado
   -UICN (Revisado):   Dependiente de la conservación   - bajo decreto de veda
                                                         - Disminución población
                                                         - Frecuente

   -El criterio se basó en:

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: - Monitoreo población
                                        - Estudios historia natural
   - PHVA:

   - Programa de Cultivo:

   - Nivel de Dificultad: Fácil

Cultivos Existentes: Parcelas demostrativas menores a 2 há.
   - Nombre de los Viveros: Zona Norte (La Selva), EARTH.

Especie (o sinónimo):   *Hymenolobium mesoamericanum*

Familia: Papilionaceae

Estado Taxonómico: Taxón claro

Hábito: Arbol

Habitat: Bosques húmedos Zona Norte y Atlántica, 50-300 m.

Distribución Histórica: Limón (2.Atlántica) S.Carlos, Sarapiquí, Guatuso
                             (Z.Norte)

Distribución Actual:
  - Rango (km²):   10000 km²
  -Area ocupada(km²):   500 km²
  -Número de localidades: 8-10 fragmentada

Tendencia de la Población
  -% De cambio en años o generaciones   40% últimos 30 años
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros: < 2000 individuos

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Escaso

Calidad de la Información (Fuentes y fechas):   Datos de campo y observación

Estudios de Campo Recientes: No, monitoreo sólo en La Selva
(Quién, fechas, referencias);

Amenazas: Lf, F

Tráfico: No está en CITES

Otros Comentarios:

HOJA DE INFORMACIÓN DEL TAXON -

Estado
   -UICN (Revisado):   Peligro   - Escaso
                                                                    - Explotado
                                                                    - Población fragmentada

   -El criterio se basó en:

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: -Monitoreo de la población
                                          -Estudios genéticos
                                          -Estudio en vivero
                                          -Plantación
                                          -Estudios Historia natural

   - PHVA: Sí

   - Programa de Cultivo:

   - Nivel de Dificultad: Dificil

Cultivos Existentes: Pocos estudios en La Selva, Sarapiquí.
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **_Myroxylum balsamum_**

Familia: Papilionaceae

Estado Taxonómico: taxón claro

Hábito: Arbol

Habitat: Bosques húmedos y muy húmedos del Pacífico

Distribución Histórica: Cordillera de Guanacaste-Pacífico Central, Osa, Palmar Norte

Distribución Actual:
  - Rango (km^2): 8000 km²
  -Area ocupada(km^2): 2500 km²
  -Número de localidades: 6 (F)

Tendencia de la Población
  -% De cambio en años o generaciones 80% últimos 30 años
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros: No se puede definir

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Escaso

Calidad de la Información (Fuentes y fechas): Datos de campo y observación

Estudios de Campo Recientes: No
(Quién, fechas, referencias);

Amenazas: -Destrucción del hábitat
-Medicinal
-Explotación
-Fragmentación del hábitat

Tráfico: No está en CITES

Otros Comentarios:

Estado
   -UICN (Revisado):   Peligro   - Escasa
                                                       - Explotada
                                                     - Poco Protegida
                                                     - Reducción del hábitat

   -El criterio se basó en:

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: - Monitoreo de la explotación
                                                   - Estudios genéticos
                                                   - Estudios en vivero
                                                   - Plantación.

   - PHVA:

   - Programa de Cultivo:

   - Nivel de Dificultad: Difícil

Cultivos Existentes: No hay.
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **_Platymiscium yucatanum_**

Familia: Papilionaceae

Estado Taxonómico: Especie

Hábito: Arbol

Habitat: Bosque muy húmedo, Bosque pluvial

Distribución Histórica: Tierras altas en las cordilleras

Distribución Actual:
- Rango (km^2): 5 - 10.000
- Area ocupada(km^2): 1.000
- Número de localidades: 6 fragmentada

Tendencia de la Población
- % De cambio en años o generaciones
- % Declinación: 25
- Tiempo / Tasa (Años o generaciones):
- N° de individuos maduros: Descnocido

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Escasa

Calidad de la Información (Fuentes y fechas): Taxonomía

Estudios de Campo Recientes: No
(Quién, fechas, referencias);

Amenazas: L, Lf

Tráfico: No

Otros Comentarios:

Estado
  -UICN (Revisado):   Vulnerable

  -El criterio se basó en: Población escasa pero con cierto grado de protección en
Parques Nacionales

  -CITES:

Recomendaciones:
  - Investigación para el Manejo:

  - PHVA: Si

  - Programa de Cultivo:

  - Nivel de Dificultad: 3

Cultivos Existentes: No
  - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **Platymiscium pleiostachyum = parviflorum**

Familia: Papilionaceae

Estado Taxonómico:

Hábito:

Habitat:

Distribución Histórica:

Distribución Actual:
  - Rango (km^2):
  -Area ocupada(km^2):
  -Número de localidades:

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional:

Calidad de la Información (Fuentes y fechas):

Estudios de Campo Recientes:
  (Quién, fechas, referencias);

Amenazas:

Tráfico:

Otros Comentarios:

HOJA DE INFORMACIÓN DEL TAXON -

Estado
  -UICN (Revisado):

  -El criterio se basó en:

  -CITES:

Recomendaciones:
  - Investigación para el Manejo:

  - PHVA:

  - Programa de Cultivo:

  - Nivel de Dificultad:

Cultivos Existentes:
  - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Platymiscium curvense*

Familia: Papilionaceae

Estado Taxonómico: Especie inédita

Hábito: Arbol

Habitat: Bosque húmedo y muy húmedo

Distribución Histórica: Osa, Carara, Curú, Golfito, Quepos

Distribución Actual:
  - Rango (km^2):   8.000
  -Area ocupada(km^2):   2.000
  -Número de localidades: 6 fragmentada

Tendencia de la Población
  -% De cambio en años o generaciones   50 % en los últimos 40 años
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros: No se puede definir

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Escasa

Calidad de la Información (Fuentes y fechas):   Datos de campo y observación

Estudios de Campo Recientes: Datos de vivero, Boscosa, ITCR
(Quién, fechas, referencias);

Amenazas: Lf

Tráfico: No está en CITES

Otros Comentarios:

Estado

    -UICN (Revisado):   En peligro   - Muy explotado

                                                         - Población fragmentada

                                                         - Reducción de hábitat

    -El criterio se basó en:

    -CITES:

Recomendaciones:

    - Investigación para el Manejo: - Monitoreo de población

                                                       - Estudios y manejo en viveros

                                                     - Plantaciones

    - PHVA:

    - Programa de Cultivo:

    - Nivel de Dificultad: Moderada

Cultivos Existentes: No hay

    - Nombre de los Viveros: Escasos ensayos en parcelas

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Platymiscium pinnatum pinnatum***

Familia: Papilionaceae

Estado Taxonómico: Especie con dos variedades

Hábito: Arbol

Habitat: Bosque húmedo

Distribución Histórica: Cuenca del río Térraba, Buenos Aires Puntarenas, hasta
                               Palmar Norte

Distribución Actual:
  - Rango (km^2):   500
  -Area ocupada(km^2):   〈 100
  -Número de localidades: 1 (F)

Tendencia de la Población   Declinando
  -% De cambio en años o generaciones 〉50
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones): 20 años
  - N° de individuos maduros: 〈 500

Tendencia de la Población a Nivel Global: Muy escasa

Tendencia de la Población a Nivel Regional: Muy escasa

Calidad de la Información (Fuentes y fechas):   4

Estudios de Campo Recientes: No
(Quién, fechas, referencias);

Amenazas: M, L, Lf, I (dentro del proyecto hidroeléctrico Buruca)

Tráfico: No

Otros Comentarios:

Estado
    -UICN (Revisado):   CR

    -El criterio se basó en: PR, EO, PE

    -CITES: No

Recomendaciones:
    - Investigación para el Manejo: Todos los niveles menos taxonomía

    - PHVA: Si

    - Programa de Cultivo: Si

    - Nivel de Dificultad: 3

Cultivos Existentes: No
    - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Platymiscium pinnatum polystachyum***

Familia: Papilionaceae

Estado Taxonómico: Especie con dos variedades

Hábito: Arbol

Habitat: Bosques muy húmedos, San Carlos

Distribución Histórica: Zona Norte

Distribución Actual:
  - Rango (km^2):   5.000
  -Area ocupada(km^2):   500
  -Número de localidades: 2

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación: 50
  -Tiempo / Tasa (Años o generaciones):   50
  - N° de individuos maduros: Indefinido

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Escasa

Calidad de la Información (Fuentes y fechas):

Estudios de Campo Recientes: Taxonomía
  (Quién, fechas, referencias);

Amenazas: I

Tráfico: No

Otros Comentarios:

HOJA DE INFORMACIÓN DEL TAXON -

Estado
    -UICN (Revisado):   CR

    -El criterio se basó en: PR

    -CITES:

Recomendaciones:
    - Investigación para el Manejo: Todos los niveles excepto taxonomía

    - PHVA: Si

    - Programa de Cultivo:

    - Nivel de Dificultad: 3

Cultivos Existentes:
    - Nombre de los Viveros: Zona Sur, OET-DUKE

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): ***Platymiscium parviflorum* (sin. *Platymiscium pleiostachyum*)**

Familia: Papilionaceae

Estado Taxonómico: Taxón claro

Hábito: Arbol

Habitat: Bosque seco y húmedo

Distribución Histórica: Guanacaste, Pacífico Central

Distribución Actual:
  - Rango (km²): 5.000
  - Area ocupada(km²): 500
  - Número de localidades: 2 (F)

Tendencia de la Población
  -% De cambio en años o generaciones 80 % últimos 100 años
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros: ⟨ 500 árboles

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Muy escasa, declinando

Calidad de la Información (Fuentes y fechas): Observación de campo

Estudios de Campo Recientes: Estudios de vivero
(Quién, fechas, referencias); ACG y FERCO

Amenazas: G, Lf, Ov

Tráfico: Apéndice II CITES

Otros Comentarios:

Estado
   -UICN (Revisado):   Peligro crítico   - Población Baja
                                                            - Pocos individuos
                                                            - Explotación
   -El criterio se basó en:

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: - Conservación ex-situ
                                            - Monitoreo de población
   - PHVA:

   - Programa de Cultivo: - Estudios en vivero
                                            - Plantación
   - Nivel de Dificultad: Difícil

Cultivos Existentes:
   - Nombre de los Viveros: A nivel de parcelas experimentales ⟨ 1 Ha.

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Cynometra bahuiniaefolia***

Familia: Caesalpiniaceae

Estado Taxonómico: Especie

Hábito: Arbol

Habitat: 2 Km. arriba Coto Colorado, Reserva Nacional Fauna Silvestre Golfito (solo se conoce una localidad)

Distribución Histórica: No hay información. Muy localizada

Distribución Actual:
- Rango (km^2):   A
- Area ocupada(km^2):   A
- Número de localidades: 1

Tendencia de la Población
- % De cambio en años o generaciones
- % Declinación:
- Tiempo / Tasa (Años o generaciones):
- N° de individuos maduros:

Tendencia de la Población a Nivel Global: ?

Tendencia de la Población a Nivel Regional: Poco común

Calidad de la Información (Fuentes y fechas):   Solamente se conoce la especie por información de herbarios

Estudios de Campo Recientes: No existen
(Quién, fechas, referencias);

Amenazas: G,I

Tráfico: NO

Otros Comentarios:

Estado
   -UICN (Revisado):

   -El criterio se basó en:

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: T, M

   - PHVA:

   - Programa de Cultivo:

   - Nivel de Dificultad:

Cultivos Existentes:
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Cynometra hemitomophylla***

Familia: Caesalpiniaceae

Estado Taxonómico:

Hábito:

Habitat: Bosques húmedos Pacífico Central, Zona Sur, Zona
                               Atlántica, Zonas Bajs

Distribución Histórica: Endémica de Costa Rica

Distribución Actual:
 - Rango (km^2):   C
 -Area ocupada(km^2):   B?
 -Número de localidades: H, F

Tendencia de la Población
   -% De cambio en años o generaciones
   -% Declinación:
   -Tiempo / Tasa (Años o generaciones):
   - N° de individuos maduros:

Tendencia de la Población a Nivel Global: Declinando

Tendencia de la Población a Nivel Regional: Declinando, poco frecuente

Calidad de la Información (Fuentes y fechas):   Estudios de campo (2-3)

Estudios de Campo Recientes:
(Quién, fechas, referencias);   "Germinación, información básica de semillas,
                               viverización adaptabilidad" (Arias & Sánchez, 1947,
                               Inédito. OET, ITCR, Museo Nacional)
                               "Arboles de Costa Rica" (Holdrigde y Poveda)
                               "Arboles maderables en peligro de extinción en Costa
                               Rica" (Quírico Jiménez)
Amenazas: I, Lf, explotacion
Tráfico:
Otros Comentarios: Los madereros la confunden con Hymenaea courbaril

Estado
  -UICN (Revisado): EN

  -El criterio se basó en: A1d

  -CITES:

Recomendaciones:
  - Investigación para el Manejo: GM, H, Hm, Lm, Lr, Lh, M, T, Tl

  - PHVA: SI

  - Programa de Cultivo: SI

  - Nivel de Dificultad: 1

Cultivos Existentes: Ensayos experimentales.
  - Nombre de los Viveros: OET- ITCR
                          Proyecto de reforestacion con especies nativas
                          en la zona sur

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Cynometra retusa***

Familia: Caesalpiniaceae

Estado Taxonómico: especie

Hábito: arbol pequeño

Habitat: bosques humedos, zonas bajas

Distribución Histórica: no se conoce

Distribución Actual:
  - Rango (km^2):   C
  -Area ocupada(km^2):
  -Número de localidades: 4

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: escasa

Calidad de la Información (Fuentes y fechas):

Estudios de Campo Recientes:
  (Quién, fechas, referencias);

Amenazas: Lf

Tráfico: No

Otros Comentarios:

Estado
    -UICN (Revisado): Bajo riesgo

  -El criterio se basó en: Lc (PR)

  -CITES: NO

Recomendaciones:
    - Investigación para el Manejo: M, Lh

  - PHVA: No

  - Programa de Cultivo: Si

  - Nivel de Dificultad: 1 (bajo)

Cultivos Existentes: No
    - Nombre de los Viveros: No

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): *Prioria copaifera*

Familia: Caesalpiniaceae

Estado Taxonómico: Especie

Hábito: Arbol

Habitat: Bosques muy humedos, precipitacion mayor
a 4000 mm. anuales
Zonas bajas del Atlantico y zona sur

Distribución Histórica: Jamaica, y de Nicaragua a Colombia

Distribución Actual:
- Rango (km²): B
-Area ocupada(km²): B
-Número de localidades: 3, Pacifico Central muy escaso

Tendencia de la Población
-% De cambio en años o generaciones
-% Declinación:
-Tiempo / Tasa (Años o generaciones):
- N° de individuos maduros:

Tendencia de la Población a Nivel Global: localizada, escasa

Tendencia de la Población a Nivel Regional: escaso

Calidad de la Información (Fuentes y fechas):

Estudios de Campo Recientes: Arboles maderables en peligro de extincion (Quirico Jimenez)

(Quién, fechas, referencias);

Amenazas: I, Ov, Lf

Tráfico: No

Otros Comentarios: especie muy localizada en zonas de humedales

Estado
   -UICN (Revisado): EN

   -El criterio se basó en: a, c, d, (PR, Px)

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: M, H, Lh

   - PHVA: Si

   - Programa de Cultivo: Si

   - Nivel de Dificultad: Bajo

Cultivos Existentes: No
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Sclerolobium costaricense*

Familia: Caesalpiniaceae

Estado Taxonómico: especie

Hábito: àrbol

Habitat: Bosques humedo a muy humedo, Zona Norte
                                         y Atlantico Norte

Distribución Histórica: endèmica

Distribución Actual:
  - Rango (km²):   B
  -Area ocupada(km²):   A
  -Número de localidades: 2

Tendencia de la Población
    -% De cambio en años o generaciones
    -% Declinación:
    -Tiempo / Tasa (Años o generaciones):
    - N° de individuos maduros:

Tendencia de la Población a Nivel Global: muy escaso

Tendencia de la Población a Nivel Regional : muy escaso

Calidad de la Información (Fuentes y fechas): no hay datos

Estudios de Campo Recientes: Germinacion arboles y semillas del Neotropico. Eugenia
Flores   (Quién, fechas, referencias)   (inedito)

Amenazas: Lf 1

Tráfico: No

Otros Comentarios: Algunas personas lo explotan para madera

Estado
   -UICN (Revisado):   EN

   -El criterio se basó en: 1 acd (PR, Px)

   -CITES: No

Recomendaciones:
   - Investigación para el Manejo: GM, H, Hm, Ch, M, T

   - PHVA: Si

   - Programa de Cultivo: Si

   - Nivel de Dificultad: alto

Cultivos Existentes: No
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Tachigali versicolor***

Familia: Caesalpiniaceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosques humedos Pacifico Central y Pacifico Sur

Distribución Histórica: De Costa Rica al Norte de Colombia

Distribución Actual:
  - Rango (km²):   B
  -Area ocupada(km²):   B
  -Número de localidades: 2

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global: escaso

Tendencia de la Población a Nivel Regional: escaso

Calidad de la Información (Fuentes y fechas): no se han hecho ensayos, no hay datos

Estudios de Campo Recientes: Arboles maderables en vias de extincion de Costa Rica
(Quién, fechas, referencias)   (Quirico Jimenez)

Amenazas: Lf

Tráfico: No

Otros Comentarios: especie con muy poca regeneracion

Estado
   -UICN (Revisado):   EN

   -El criterio se basó en: A1c (PR)

   -CITES: No

Recomendaciones:
   - Investigación para el Manejo: Gm, H, Hm, Lh, M, S, T, Tl

   - PHVA: Si

   - Programa de Cultivo: Si

   - Nivel de Dificultad: alto (3)

Cultivos Existentes: No
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Podocarpus costaricensis*

Familia: Podocarpaceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosque Montano, Zona Norte de los Santos

Distribución Histórica: endemico

Distribución Actual:
  - Rango (km²):   A
  -Area ocupada(km²):   A
  -Número de localidades: 1

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: escaso

Calidad de la Información (Fuentes y fechas): no hay datos

Estudios de Campo Recientes: No
(Quién, fechas, referencias);

Amenazas: Lf (no esta conservado), OV

Tráfico: No

Otros Comentarios:

Estado
    -UICN (Revisado):   EN   (CR)

    -El criterio se basó en: A1cd

    -CITES: No

Recomendaciones:
    - Investigación para el Manejo: M, Gm, H, Hm, Lh, O, S, T, TL

    - PHVA: Si

    - Programa de Cultivo: Si

    - Nivel de Dificultad: alto (3)

Cultivos Existentes: No
    - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Podocarpus guatemalensis***

Familia: Podocarpaceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosque humedo, 200- 500 msnm. Pacifico Sur,
                                  Zona Norte, Pacifico Central

Distribución Histórica: Guatemala, Nicaragua, Costa Rica

Distribución Actual:
  - Rango (km²):   C
  -Area ocupada(km²):   C
  -Número de localidades: 4 (amplias)

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: raro

Calidad de la Información (Fuentes y fechas):

Estudios de Campo Recientes: no hay
 (Quién, fechas, referencias);

Amenazas: Lf, Ov

Tráfico: No

Otros Comentarios: Arbol no estudiado

Estado
  -UICN (Revisado):   EN

  -El criterio se basó en: Aj cd

  -CITES:

Recomendaciones:
  - Investigación para el Manejo: M, Gm, H, Hm, Lh, O, S, T, Tl

  - PHVA: Si

  - Programa de Cultivo: Si

  - Nivel de Dificultad: Alto (3)

Cultivos Existentes: No
  - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Podocarpus macrostachyus***

Familia: Podocarpaceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosque Montano, Cordilleras Talamanca, Volcanica
                            Central, Guanacaste

Distribución Histórica: Del Sur de Mexico hasta el Norte de Sur America

Distribución Actual:
  - Rango (km²):   C
  -Area ocupada(km²):   C
  -Número de localidades: 4 (muy amplias)

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: localizada (escaso). Poblaciones estables

Calidad de la Información (Fuentes y fechas): no hay

Estudios de Campo Recientes: CATIE, Ciencias Ambientales (UNA). Adelaida Chaverri

(Quién, fechas, referencias);

Amenazas: Lf, Ov

Tráfico: No

Otros Comentarios:

Estado
   -UICN (Revisado):   VU

   -El criterio se basó en: A1cd

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: M, GM, H, Hm, Lh, O, S, T, TL

   - PHVA: No

   - Programa de Cultivo: Si

   - Nivel de Dificultad: Alto (3)

Cultivos Existentes:
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   **_Podocarpus monteverdeensis_**

Familia: Podocarpaceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosques Montao Humedo. Monteverde, Cordilleras Tilaran y Talamanca, Fila Matama

Distribución Histórica: endemica

Distribución Actual:
- Rango (km^2):   A
- Area ocupada(km^2):   A
- Número de localidades: 2?

Tendencia de la Población
- % De cambio en años o generaciones
- % Declinación:
- Tiempo / Tasa (Años o generaciones):
- N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: escaso

Calidad de la Información (Fuentes y fechas): solo taxonomia

Estudios de Campo Recientes: no se conocen
(Quién, fechas, referencias);

Amenazas: no se conocen

Tráfico: No

Otros Comentarios: Revisar muestras de la localidad de Fila Matama

Estado
   -UICN (Revisado):   EN

  -El criterio se basó en: B 2 b

  -CITES: No

Recomendaciones:
  - Investigación para el Manejo: M, GM, H, Hm, Lh, O, S, T, Tl

  - PHVA: Si

  - Programa de Cultivo: Si

  - Nivel de Dificultad: Alto (3)

Cultivos Existentes: No
  - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo): **_Prumnopitys standleyi_**

Familia: Podocarpaceae

Estado Taxonómico: Especie   Prumnopitys   Malasia, Costa Rica

Hábito: Arbol

Habitat: Bosque Montano, Dota- La Georgina (Villa Mills)

Distribución Histórica: Endemica

Distribución Actual:
  - Rango (km^2): A
  -Area ocupada(km^2): A
  -Número de localidades: 1 (amplia) - subpoblaciones

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: localizada, muy escaso

Calidad de la Información (Fuentes y fechas): No

Estudios de Campo Recientes: CATIE, Escuela Ciencias Ambientales, UNA (Adelaida
      (Quién, fechas, referencias)   Chaverri)

Amenazas: Lf, Ov, G

Tráfico: No

Otros Comentarios: poblaciones fragmentadas, endemico

Estado
   -UICN (Revisado):   EN

   -El criterio se basó en: A1cd

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: M, GM, H, Hm, Lh, O, S, T, TL

   - PHVA: Si

   - Programa de Cultivo: Si

   - Nivel de Dificultad: Alto (3)

Cultivos Existentes: No
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   ***Caryocar costaricense***

Familia: Caryocaraceae

Estado Taxonómico: Especie

Hábito: Arbol

Habitat: Bosque muy Humedo- Humedo hasta 500 msnm
Peninsula Osa

Distribución Histórica: Costa Rica hasta Colombia

Distribución Actual:
- Rango (km^2):   B
- Area ocupada(km^2):   C
- Número de localidades: 1 mas o menos amplia (Peninsula Osa)

Tendencia de la Población
- % De cambio en años o generaciones
- % Declinación:
- Tiempo / Tasa (Años o generaciones):
- N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: Fragmentacion

Calidad de la Información (Fuentes y fechas): 2

Estudios de Campo Recientes: Estudios sobre la madera
(Quién, fechas, referencias)   Arboles maderables en peligro de extincion en CR (Quirico Jimenez)

Amenazas: Lf, Ov

Tráfico: Apendice II CITES

Otros Comentarios:

Estado
  -UICN (Revisado):   EN

  -El criterio se basó en: A1 cd

  -CITES: Especie amenazada

Recomendaciones:
  - Investigación para el Manejo: M, Gm, H, Hm, Lh, O, S, T, TL

  - PHVA: Si

  - Programa de Cultivo: Si

  - Nivel de Dificultad: alto (3)

Cultivos Existentes: No
  - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):   *Anthodiscus chocoensis*

Familia: Caryocaraceae

Estado Taxonómico: especie

Hábito: arbol

Habitat: Bosque Humedo, Peninsula de Osa

Distribución Histórica: Costa Rica, Panama y Colombia

Distribución Actual:
  - Rango (km^2):   B
  -Area ocupada(km^2):   B
  -Número de localidades: 1 (Peninsula Osa)

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional: muy escaso

Calidad de la Información (Fuentes y fechas): No

Estudios de Campo Recientes: No
  (Quién, fechas, referencias);

Amenazas: Lf, Ov

Tráfico: No

Otros Comentarios:

Estado
   -UICN (Revisado):   EN

   -El criterio se basó en: A1cd

   -CITES:

Recomendaciones:
   - Investigación para el Manejo: M, Gm, H, Hm, Lh, O, S, T, TL

   - PHVA: Si

   - Programa de Cultivo: Si

   - Nivel de Dificultad: alto (3)

Cultivos Existentes: No
   - Nombre de los Viveros:

HOJA DE INFORMACIÓN DEL TAXON

Especie (o sinónimo):

Familia:

Estado Taxonómico:

Hábito:

Habitat:

Distribución Histórica:

Distribución Actual:
  - Rango (km^2):
  -Area ocupada(km^2):
  -Número de localidades:

Tendencia de la Población
  -% De cambio en años o generaciones
  -% Declinación:
  -Tiempo / Tasa (Años o generaciones):
  - N° de individuos maduros:

Tendencia de la Población a Nivel Global:

Tendencia de la Población a Nivel Regional:

Calidad de la Información (Fuentes y fechas):

Estudios de Campo Recientes:
 (Quién, fechas, referencias);

Amenazas:

Tráfico:

Otros Comentarios:

Estado
  -UICN (Revisado):

  -El criterio se basó en:

  -CITES:

Recomendaciones:
  - Investigación para el Manejo:

  - PHVA:

  - Programa de Cultivo:

  - Nivel de Dificultad:

Cultivos Existentes:
  - Nombre de los Viveros:

THREATENED PLANTS OF COSTA RICA

CONSERVATION ASSESSMENT AND MANAGEMENT PLANNING WORKSHOP

San José, Costa Rica

4 - 6 October 1996

Report

SECTION 5

IUCN RED LIST CATEGORIES

IUCN RED LIST CATEGORIES

Prepared by the

IUCN Species Survival Commission

As approved by the
40th Meeting of the IUCN Council
Gland, Switzerland

30 November 1994

IUCN RED LIST CATEGORIES

I) Introduction

1.   The threatened species categories now used in Red Data Books and Red Lists have been in place, with some modification, for almost 30 years. Since their introduction these categories have become widely recognised internationally, and they are now used in a whole range of publications and listings, produced by IUCN as well as by numerous governmental and non-governmental organisations. The Red Data Book categories provide an easily and widely understood method for highlighting those species under higher extinction risk, so as to focus attention on conservation measures designed to protect them.

2.   The need to revise the categories has been recognised for some time. In 1984, the SSC held a symposium, 'The Road to Extinction' (Fitter & Fitter 1987), which examined the issues in some detail, and at which a number of options were considered for the revised system. However, no single proposal resulted. The current phase of development began in 1989 with a request from the SSC Steering Committee to develop a new approach that would provide the conservation community with useful information for action planning.

In this document, proposals for new definitions for Red List categories are presented. The general aim of the new system is to provide an explicit, objective framework for the classification of species according to their extinction risk.

The revision has several specific aims:

-    to provide a system that can be applied consistently by different people;

-    to improve the objectivity by providing those using the criteria with clear guidance on how to evaluate different factors which affect risk of extinction;

-    to provide a system which will facilitate comparisons across widely different taxa;

-    to give people using threatened species lists a better understanding of how individual species were classified.

3.   The proposals presented in this document result from a continuing process of drafting, consultation and validation. It was clear that the production of a large number of draft proposals led to some confusion, especially as each draft has been used for classifying some set of species for conservation purposes. To clarify matters, and to open the way for modifications as and when they became necessary, a system for version numbering was

applied as follows:

Version 1.0: Mace & Lande (1991)
The first paper discussing a new basis for the categories, and presenting numerical criteria especially relevant for large vertebrates.

Version 2.0: Mace *et al.* (1992)
A major revision of Version 1.0, including numerical criteria appropriate to all organisms and introducing the non-threatened categories.

Version 2.1: IUCN (1993)
Following an extensive consultation process within SSC, a number of changes were made to the details of the criteria, and fuller explanation of basic principles was included. A more explicit structure clarified the significance of the non-threatened categories.

Version 2.2: Mace & Stuart (1994)
Following further comments received and additional validation exercises, some minor changes to the criteria were made. In addition, the Susceptible category present in Versions 2.0 and 2.1 was subsumed into the Vulnerable category. A precautionary application of the system was emphasised.

Final Version
This final document, which incorporates changes as a result of comments from IUCN members, was adopted by the IUCN Council in December 1994.

All future taxon lists including categorisations should be based on this version, and not the previous ones.

4. In the rest of this document the proposed system is outlined in several sections. The Preamble presents some basic information about the context and structure of the proposal, and the procedures that are to be followed in applying the definitions to species. This is followed by a section giving definitions of terms used. Finally the definitions are presented, followed by the quantitative criteria used for classification within the threatened categories. It is important for the effective functioning of the new system that all sections are read and understood, and the guidelines followed.

References:

Fitter, R., and M. Fitter, ed. (1987) The Road to Extinction. Gland, Switzerland: IUCN.

IUCN. (1993) Draft IUCN Red List Categories. Gland, Switzerland: IUCN.

Mace, G. M. *et al.* (1992) "The development of new criteria for listing species on the IUCN Red List." Species 19: 16-22.

Mace, G. M., and R. Lande. (1991) "Assessing extinction threats: toward a reevaluation of IUCN threatened species categories." Conserv. Biol. 5.2: 148-157.

Mace, G. M. & S. N. Stuart. (1994) "Draft IUCN Red List Categories, Version 2.2". Species 21-22: 13-24.

II) Preamble

The following points present important information on the use and interpretation of the categories (= Critically Endangered, Endangered, etc.), criteria (= A to E), and sub-criteria (= a,b etc., i,ii etc.):

1. Taxonomic level and scope of the categorisation process

The criteria can be applied to any taxonomic unit at or below the species level. The term 'taxon' in the following notes, definitions and criteria is used for convenience, and may represent species or lower taxonomic levels, including forms that are not yet formally described. There is a sufficient range among the different criteria to enable the appropriate listing of taxa from the complete taxonomic spectrum, with the exception of micro-organisms. The criteria may also be applied within any specified geographical or political area although in such cases special notice should be taken of point 11 below. In presenting the results of applying the criteria, the taxonomic unit and area under consideration should be made explicit. The categorisation process should only be applied to wild populations inside their natural range, and to populations resulting from benign introductions (defined in the draft IUCN Guidelines for Re-introductions as "..an attempt to establish a species, for the purpose of conservation, outside its recorded distribution, but within an appropriate habitat and eco-geographical area").

2. Nature of the categories

All taxa listed as Critically Endangered qualify for Vulnerable and Endangered, and all listed as Endangered qualify for Vulnerable. Together these categories are described as 'threatened'. The threatened species categories form a part of the overall scheme. It will be possible to place all taxa into one of the categories (see Figure 1).

Figure 1: Structure of the Categories

```
                                                              ┌─────────── Extinct
                                                    ┌─────────┤
                                                    │         └─────────── Extinct in the Wild
                                                    │                      ┌──── Critically Endangered
                                                    │         ┌ (Threatened) ┤──── Endangered
                                    ┌ (Adequate data) ┤        │             └──── Vulnerable
                                    │               │        │                      ┌──── Conservation Dependent
                        ┌ (Evaluated) ┤             └─────────┤ Lower Risk ──────────┤──── Near Threatened
                        │           │                                                └──── Least Concern
    ────────────────────┤           │
                        │           └──────────────────────────── Data Deficient
                        │
                        └──────────────────────────────────────── Not Evaluated
```
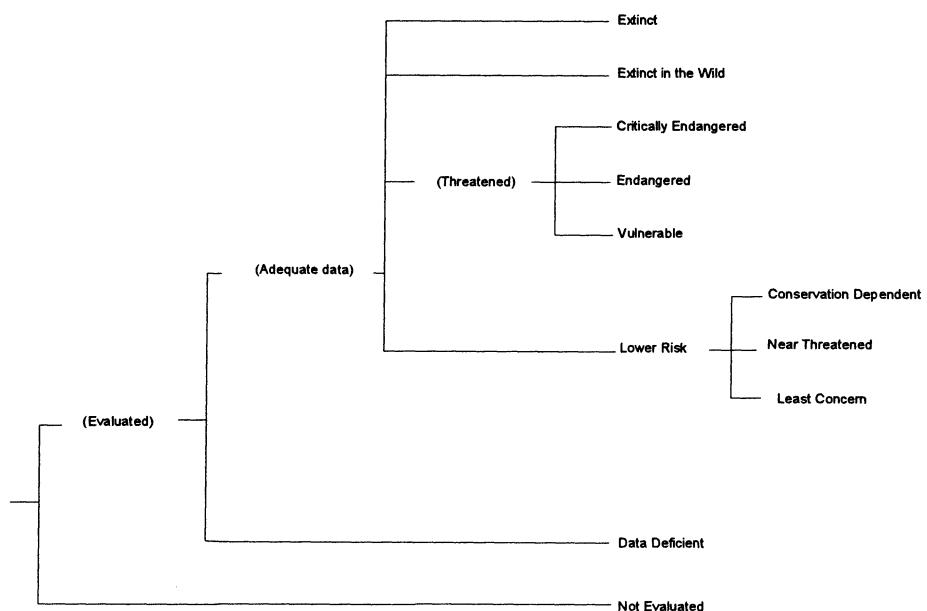
3. Role of the different criteria

For listing as Critically Endangered, Endangered or Vulnerable there is a range of quantitative criteria; meeting any one of these criteria qualifies a taxon for listing at that level of threat. Each species should be evaluated against all the criteria. The different criteria (A-E) are derived from a wide review aimed at detecting risk factors across the broad range of organisms and the diverse life histories they exhibit. Even though some criteria will be inappropriate for certain taxa(some taxa will never qualify under these however close to extinction they come), there should be criteria appropriate for assessing threat levels for any taxon (other than micro-organisms). The relevant factor is whether any one criterion is met, not whether all are appropriate or all are met. Because it will never be clear which criteria are appropriate for a particular species in advance, each species should be evaluated against all the criteria, and any criterion met should be listed.

4. Derivation of quantitative criteria

The quantitative values presented in the various criteria associated with threatened categories were developed through wide consultation and they are set at what are generally judged to be appropriate levels, even if no formal justification for these values exists. The levels for different criteria within categories were set independently but against a common standard. Some broad consistency between them was sought. However, a given taxon should not be expected to meet all criteria (A-E) in a category; meeting any one criterion is sufficient for listing.

5. Implications of listing

Listing in the categories of Not Evaluated and Data Deficient indicates that no assessment of extinction risk has been made, though for different reasons. Until such time as an assessment is made, species listed in these categories should not be treated as if they were non-threatened, and it may be appropriate (especially for Data Deficient forms) to give them the same degree of protection as threatened taxa, at least until their status can be evaluated.

Extinction is assumed here to be a chance process. Thus, a listing in a higher extinction risk category implies a higher expectation of extinction, and over the time-frames specified more taxa listed in a higher category are expected to go extinct than in a lower one (without effective conservation action). However, the persistence of some taxa in high risk categories does not necessarily mean their initial assessment was inaccurate.

6. Data quality and the importance of inference and projection

The criteria are clearly quantitative in nature. However, the absence of high quality data should not deter attempts at applying the criteria, as methods involving estimation, inference and projection are emphasised to be acceptable throughout. Inference and projection may be based on extrapolation of current or potential threats into the future (including their rate of change), or of factors related to population abundance or distribution (including dependence on other taxa), so long as these can reasonably be supported. Suspected or inferred patterns in either the recent past, present or near future can be based on any of a series of related factors, and these factors should be specified.

Taxa at risk from threats posed by future events of low probability but with severe consequences (catastrophes) should be identified by the criteria (e.g. small distributions, few locations). Some threats need to be identified particularly early, and appropriate actions taken, because their effects are irreversible, or nearly so (pathogens, invasive organisms, hybridization).

7.   Uncertainty

The criteria should be applied on the basis of the available evidence on taxon numbers, trend and distribution, making due allowance for statistical and other uncertainties. Given that data are rarely available for the whole range or population of a taxon, it may often be appropriate to use the information that is available to make intelligent inferences about the overall status of the taxon in question. In cases where a wide variation in estimates is found, it is legitimate to apply the precautionary principle and use the estimate (providing it is credible) that leads to listing in the category of highest risk.

Where data are insufficient to assign a category (including Lower Risk), the category of 'Data Deficient' may be assigned. However, it is important to recognise that this category indicates that data are inadequate to determine the degree of threat faced by a taxon, not necessarily that the taxon is poorly known. In cases where there are evident threats to a taxon through, for example, deterioration of its only known habitat, it is important to attempt threatened listing, even though there may be little direct information on the biological status of the taxon itself. The category 'Data Deficient' is not a threatened category, although it indicates a need to obtain more information on a taxon to determine the appropriate listing.

8.   Conservation actions in the listing process

The criteria for the threatened categories are to be applied to a taxon whatever the level of conservation action affecting it. In cases where it is only conservation action that prevents the taxon from meeting the threatened criteria, the designation of 'Conservation Dependent' is appropriate. It is important to emphasise here that a taxon require conservation action even if it is not listed as threatened.

9.   Documentation

All taxon lists including categorisation resulting from these criteria should state the criteria and sub-criteria that were met. No listing can be accepted as valid unless at least one criterion is given. If more than one criterion or sub-criterion was met, then each should be listed. However, failure to mention a criterion should not necessarily imply that it was not met. Therefore, if a re-evaluation indicates that the documented criterion is no longer met, this should not result in automatic down-listing. Instead, the taxon should be re-evaluated with respect to all criteria to indicate its status. The factors responsible for triggering the criteria, especially where inference and projection are used, should at least be logged by the evaluator, even if they cannot be included in published lists.

10.   Threats and priorities

The category of threat is not necessarily sufficient to determine priorities for conservation

action. The category of threat simply provides an assessment of the likelihood of extinction under current circumstances, whereas a system for assessing priorities for action will include numerous other factors concerning conservation action such as costs, logistics, chances of success, and even perhaps the taxonomic distinctiveness of the subject.

11. Use at regional level

The criteria are most appropriately applied to whole taxa at a global scale, rather than to those units defined by regional or national boundaries. Regionally or nationally based threat categories, which are aimed at including taxa that are threatened at regional or national levels (but not necessarily throughout their global ranges), are best used with two key pieces of information: the global status category for the taxon, and the proportion of the global population or range that occurs within the region or nation. However, if applied at regional or national level it must be recognised that a global category of threat may not be the same as a regional or national category for a particular taxon. For example, taxa classified as Vulnerable on the basis of their global declines in numbers or range might be Lower Risk within a particular region where their populations are stable. Conversely, taxa classified as Lower Risk globally might be Critically Endangered within a particular region where numbers are very small or declining, perhaps only because they are at the margins of their global range. IUCN is still in the process of developing guidelines for the use of national red list categories.

12. Re-evaluation

Evaluation of taxa against the criteria should be carried out at appropriate intervals. This is especially important for taxa listed under Near Threatened, or Conservation Dependent, and for threatened species whose status is known or suspected to be deteriorating.

13. Transfer between categories

There are rules to govern the movement of taxa between categories. These are as follows:
(A) A taxon may be moved from a category of higher threat to a category of lower threat if none of the criteria of the higher category has been met for 5 years or more. (B) If the original classification is found to have been erroneous, the taxon may be transferred to the appropriate category or removed from the threatened categories altogether, without delay (but see Section 9). (C) Transfer from categories of lower to higher risk should be made without delay.

14. Problems of scale

Classification based on the sizes of geographic ranges or the patterns of habitat occupancy is complicated by problems of spatial scale. The finer the scale at which the distributions or habitats of taxa are mapped, the smaller will be the area that they are found to occupy. Mapping at finer scales reveals more areas in which the taxon is unrecorded. It is impossible to provide any strict but general rules for mapping taxa or habitats; the most appropriate scale will depend on the taxa in question, and the origin and comprehensiveness of the distributional data. However, the thresholds for some criteria (e.g. Critically Endangered) necessitate mapping at a fine scale.

III) Definitions

1. Population
Population is defined as the total number of individuals of the taxon. For functional reasons, primarily owing to differences between life-forms, population numbers are expressed as numbers of mature individuals only. In the case of taxa obligately dependent on other taxa for all or part of their life cycles, biologically appropriate values for the host taxon should be used.

2. Subpopulations
Subpopulations are defined as geographically or otherwise distinct groups in the population between which there is little exchange (typically one successful migrant individual or gamete per year or less).

3. Mature individuals
The number of mature individuals is defined as the number of individuals known, estimated or inferred to be capable of reproduction. When estimating this quantity the following points should be borne in mind:
- Where the population is characterised by natural fluctuations the minimum number should be used.

- This measure is intended to count individuals capable of reproduction and should therefore exclude individuals that are environmentally, behaviourally or otherwise reproductively suppressed in the wild.

- In the case of populations with biased adult or breeding sex ratios it is appropriate to use lower estimates for the number of mature individuals which take this into account (e.g. the estimated effective population size).

- Reproducing units within a clone should be counted as individuals, except where such units are unable to survive alone (e.g. corals).

- In the case of taxa that naturally lose all or a subset of mature individuals at some point in their life cycle, the estimate should be made at the appropriate time, when mature individuals are available for breeding.

4. Generation
Generation may be measured as the average age of parents in the population. This is greater than the age at first breeding, except in taxa where individuals breed only once.

5. Continuing decline
A continuing decline is a recent, current or projected future decline whose causes are not known or not adequately controlled and so is liable to continue unless remedial measures are taken. Natural fluctuations will not normally count as a continuing decline, but an observed

decline should not be considered to be part of a natural fluctuation unless there is evidence for this.

6. Reduction

A reduction (criterion A) is a decline in the number of mature individuals of at least the amount (%) stated over the time period (years) specified, although the decline need not still be continuing. A reduction should not be interpreted as part of a natural fluctuation unless there is good evidence for this. Downward trends that are part of natural fluctuations will not normally count as a reduction.

7. Extreme fluctuations

Extreme fluctuations occur in a number of taxa where population size or distribution area varies widely, rapidly and frequently, typically with a variation greater than one order of magnitude (i.e., a tenfold increase or decrease).

8. Severely fragmented

Severely fragmented is refers to the situation where increased extinction risks to the taxon result from the fact that most individuals within a taxon are found in small and relatively isolated subpopulations. These small subpopulations may go extinct, with a reduced probability of recolonisation.

9. Extent of occurrence

Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy. This measure may exclude discontinuities or disjunctions within the overall distributions of taxa (e.g., large areas of obviously unsuitable habitat) (but see 'area of occupancy'). Extent of occurrence can often be measured by a minimum convex polygon (the smallest polygon in which no internal angle exceeds 180 degrees and which contains all the sites of occurrence).

10. Area of occupancy

Area of occupancy is defined as the area within its 'extent of occurrence' (see definition) which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may, for example, contain unsuitable habitats. The area of occupancy is the smallest area essential at any stage to the survival of existing populations of a taxon (e.g. colonial nesting sites, feeding sites for migratory taxa). The size of the area of occupancy will be a function of the scale at which it is measured, and should be at a scale appropriate to relevant biological aspects of the taxon. The criteria include values in km^2, and thus to avoid errors in classification, the area of occupancy should be measured on grid squares (or equivalents) which are sufficiently small (see Figure 2).

11. Location

Location defines a geographically or ecologically distinct area in which a single event (e.g. pollution) will soon affect all individuals of the taxon present. A location usually, but not always, contains all or part of a subpopulation of the taxon, and is typically a small proportion of the taxon's total distribution.

12. Quantitative analysis

A quantitative analysis is defined here as the technique of population viability analysis (PVA), or any other quantitative form of analysis, which estimates the extinction probability of a taxon or population based on the known life history and specified management or non-management options. In presenting the results of quantitative analyses the structural equations and the data should be explicit.
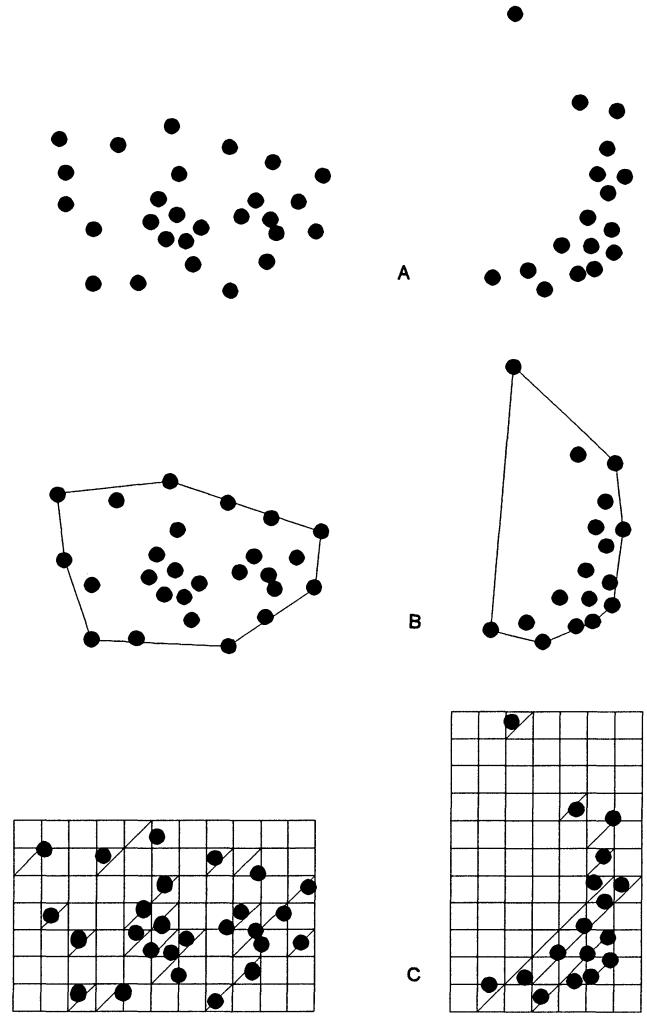
Figure 2:

Two examples of the distinction between extent of occurrence and area of occupancy. (a) is the spatial distribution of known, inferred or projected sites of occurrence. (b) shows one possible boundary to the extent of occurrence, which is the measured area within this boundary. (c) shows one measure of area of occupancy which can be measured by the sum of the occupied grid squares.

IV) The categories [1]

EXTINCT (EX)
A taxon is Extinct when there is no reasonable doubt that the last individual has died.

EXTINCT IN THE WILD (EW)
A taxon is Extinct in the wild when it is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR)
A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the criteria (A to E) on pages 12 and 13.

ENDANGERED (EN)
A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the criteria (A to E) on pages 14 and 15.

VULNERABLE (VU)
A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by any of the criteria (A to D) on pages 16 and 17.

LOWER RISK (LR)
A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Taxa included in the Lower Risk category can be separated into three subcategories:

1. **Conservation Dependent (cd).** Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in

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[1] Note: As in previous IUCN categories, the abbreviation of each category (in parenthesis) follows the English denominations when translated into other languages.

question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.

2. **Near Threatened (nt).** Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.

3. **Least Concern (lc).** Taxa which do not qualify for Conservation Dependent or Near Threatened.

DATA DEFICIENT (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution is lacking. Data Deficient is therefore not a category of threat or Lower Risk. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and threatened status. If the range of a taxon is suspected to be relatively circumscribed, if a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

NOT EVALUATED (NE)

A taxon is Not Evaluated when it is has not yet been assessed against the criteria.

V) The Criteria for Critically Endangered, Endangered and Vulnerable

CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

1) An observed, estimated, inferred or suspected reduction of at least 80% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:

   a) direct observation
   b) an index of abundance appropriate for the taxon
   c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

d) actual or potential levels of exploitation

e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

2) A reduction of at least 80%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d) or (e) above.

B) Extent of occurrence estimated to be less than 100 km^2 or area of occupancy estimated to be less than 10 km^2, and estimates indicating any two of the following:

1) Severely fragmented or known to exist at only a single location.

2) Continuing decline, observed, inferred or projected, in any of the following:

a) extent of occurrence
b) area of occupancy
c) area, extent and/or quality of habitat
d) number of locations or subpopulations
e) number of mature individuals.

3) Extreme fluctuations in any of the following:

a) extent of occurrence
b) area of occupancy
c) number of locations or subpopulations
d) number of mature individuals.

C) Population estimated to number less than 250 mature individuals and either:

1) An estimated continuing decline of at least 25% within 3 years or one generation, whichever is longer or

2) A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:

a) severely fragmented (i.e. no subpopulation estimated to contain more than 50 mature individuals)
b) all individuals are in a single subpopulation.

D) Population estimated to number less than 50 mature individuals.

E) Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or 3 generations, whichever is the longer.

ENDANGERED (EN)

A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

   1) An observed, estimated, inferred or suspected reduction of at least 50% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:

      a) direct observation
      b) an index of abundance appropriate for the taxon
      c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
      d) actual or potential levels of exploitation
      e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

   2) A reduction of at least 50%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d), or (e) above.

B) Extent of occurrence estimated to be less than 5000 km^2 or area of occupancy estimated to be less than 500 km^2, and estimates indicating any two of the following:

   1) Severely fragmented or known to exist at no more than five locations.

   2) Continuing decline, inferred, observed or projected, in any of the following:

      a) extent of occurrence
      b) area of occupancy
      c) area, extent and/or quality of habitat
      d) number of locations or subpopulations
      e) number of mature individuals.

3) Extreme fluctuations in any of the following:

   a) extent of occurrence
   b) area of occupancy
   c) number of locations or subpopulations
   d) number of mature individuals.

C) Population estimated to number less than 2500 mature individuals and either:

   1) An estimated continuing decline of at least 20% within 5 years or 2 generations, whichever is longer, or

   2) A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:

      a) severely fragmented (i.e. no subpopulation estimated to contain more than 250 mature individuals)
      b) all individuals are in a single subpopulation.

D) Population estimated to number less than 250 mature individuals.

E) Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or 5 generations, whichever is the longer.

VULNERABLE (VU)

A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

   1) An observed, estimated, inferred or suspected reduction of at least 20% over the last 10 years or three generations, whichever is the longer,, based on (and specifying) any of the following:

      a) direct observation
      b) an index of abundance appropriate for the taxon
      c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
      d) actual or potential levels of exploitation
      e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

2) A reduction of at least 20%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d) or (e) above.

B) Extent of occurrence estimated to be less than 20,000 km^2 or area of occupancy estimated to be less than 2000 km^2, and estimates indicating any two of the following:

1) Severely fragmented or known to exist at no more than ten locations.

2) Continuing decline, inferred, observed or projected, in any of the following:

   a) extent of occurrence
   b) area of occupancy
   c) area, extent and/or quality of habitat
   d) number of locations or subpopulations
   e) number of mature individuals.

3) Extreme fluctuations in any of the following:

   a) extent of occurrence
   b) area of occupancy
   c) number of locations or subpopulations
   d) number of mature individuals.

C) Population estimated to number less than 10,000 mature individuals and either:

1) An estimated continuing decline of at least 10% within 10 years or 3 generations, whichever is longer, or

2) A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:

   a) severely fragmented (i.e. no subpopulation estimated to contain more than 1000 mature individuals)
   b) all individuals are in a single subpopulation.

D) Population very small or restricted in the form of either of the following:

1) Population estimated to number less than 1000 mature individuals.

2) Population is characterised by an acute restriction in its area of occupancy (typically less than 100 km²) or in the number of locations (typically less than 5). Such a taxon would thus be prone to the effects of human activities (or stochastic events whose impact is increased by human activities) within a very short period of time in an unforeseeable future, and is thus capable of becoming Critically Endangered or even Extinct in a very short period.

E) Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.

THREATENED PLANTS OF COSTA RICA

CONSERVATION ASSESSMENT AND MANAGEMENT PLANNING WORKSHOP

San José, Costa Rica

4 - 6 October 1996

Report

SECTION 6

CAMP and CBSG PROCESSES

Introduction

There is a lack of generally accepted tools to evaluate and integrate the interaction of biological, physical, and social factors on the population dynamics of the broad range of threatened species. There is a need for tools and processes to characterize the risk of species and habitat extinction, on the possible effects of future events, on the effects of management interventions, and on how to develop and sustain learning-based cross-institutional management programs.

The Conservation Breeding Specialist Group (CBSG) of IUCN's Species Survival Commission (SSC) has 10 years experience in developing, testing, and applying a series of scientifically-based tools and processes to assist risk characterization and species management decision making. These tools, based on small population and conservation biology (biological and physical factors), human demography, and the dynamics of social learning are used in intensive, problem-solving workshops to produce realistic and achievable recommendations for both *in situ* and *ex situ* population management.

Our Workshop processes provide an objective environment, expert knowledge, and a neutral facilitation process that supports sharing of available information across institutions and stakeholder groups, reaching agreement on the issues and available information, and then making useful and practical management recommendations for the taxon and habitat system under consideration. These processes have been remarkably successful in unearthing and integrating previously unpublished significant information for the decision-making process. Their proven heuristic value and constant refinement and expansion have made the PHVA process one of the most imaginative and productive organizing forces for species conservation today (Conway, 1995).

Integration of Science, Management, and Stakeholders

The CBSG PHVA Workshop process is based upon biological and sociological science. Effective conservation action is best built upon a synthesis of available biological information, but is dependent on actions of people living within the range of the threatened species as well as established national and international interests. There are characteristic patterns of human behavior that are cross-disciplinary and cross-cultural which affect the processes of communication, problem solving, and collaboration: 1) in the acquisition, sharing, and analysis of information; 2) in the perception and characterization of risk; 3) in the development of trust among individuals; and, 4) in 'territoriality' (personal, professional, institutional, local, national). Each of these has strong emotional components that shape our interactions.

Recognition of these patterns has been essential in the development of processes to assist people in working groups to reach agreement on needed conservation actions, collaboration needed, and to establish new working relationships.

Frequently, management actions have been identified by local management agencies, external consultants, and local experts. However, an isolated narrow professional approach which focuses primarily on the perceived biological problem seems to have little effect on the needed political and social changes (social learning) for collaboration, effective management, and conservation of habitat fragments or protected areas and their species components. CBSG workshops are organized to bring together the full range of groups with a strong interest in conserving and managing the species in its habitat or the consequences of such management. One goal in all workshops is to reach a common understanding of the state of scientific knowledge available and its possible application to the decision-making process and needed management actions.. We have found that the decision-making driven workshop processes with risk characterization tools, stochastic simulation modeling, scenario testing, and deliberation among stakeholders are powerful tools for extracting, assembling, and exploring information. This process encourages developing a shared understanding across wide boundaries of training and expertise. These tools also support building of working agreements and instill local ownership of the problems, the decisions required, and their management during the workshop processes. As participants appreciate the complexity of the problems as a group, they take more ownership of the process as well as the ultimate recommendations made to achieve workable solutions. This is essential if the management recommendations generated by the workshops are to succeed.

CBSG participants have learned a host of lessons in more than 100 workshop experiences in 40 countries. Traditional approaches to endangered species problems have tended to emphasize our lack of information and the need for additional research. This has been coupled with a hesitancy to make explicit risk assessments of species and habitat status and a reluctance to make immediate or non-traditional management recommendations. The result has been long delays in preparing action plans, loss of momentum, dependency on crisis-driven actions or broad recommendations that do not provide useful guidance to the managers.

CBSG's interactive and participatory workshop approach produces positive effects on management decision-making and in generating political and social support for conservation actions by local people. Modeling is an important tool as part of the process and provides a continuing test of assumptions, data consistency, and of scenarios. CBSG participants recognize that the present science is imperfect and that management policies and actions need to be designed as part of a biological and social learning process. The Workshop process essentially provides a means for designing management decisions and programs on the basis of sound science while allowing new information and unexpected events to be used for learning and to adjust management practices.

Workshop Processes and Multiple Stakeholders

Experience: The Chairman and 3 Program Officers of CBSG have conducted and facilitated more than 100 species and ecosystem Workshops in 40 countries including the USA during the past 6 years. *Reports from these workshops are available from the CBSG Office.* We have worked on a continuing basis with agencies on some taxa (e.g., Florida panther, Sumatran tiger) and have assisted in the development of national conservation strategies for other taxa (e.g., Sumatran elephant, Sumatran tiger, Indonesia). Our *Population Biology Program Officer (Dr. P. Miller)* received his doctoral training with Dr. P. Hedrick and is familiar with the genetic and demographic aspects of a range of vertebrate species. He has worked extensively with VORTEX and other population models.

Facilitator's Training and Manual: A manual has been prepared to assist CBSG workshop conveners, collaborators, and facilitators in the process of organizing, conducting, and completing a CBSG workshop. It was developed with the assistance of two management science professionals and 30 people from 11 countries with experience in CBSG workshops. These facilitator's training workshops have proven very popular with 2 per year planned for 1996 and 1997 in several countries including the USA. *Copies of the facilitator's manual are available from the CBSG Office.*

Scientific Studies of Workshop Process: The effectiveness of these workshops as tools for eliciting information, assisting the development of sustained networking among stakeholders, impact on attitudes of participants, and in achieving consensus on needed management actions and research has been extensively debated. We initiated a scientific study of the process and its long term aftermath three years ago in collaboration with an independent team of researchers (Vredenburg and Westley, 1995). A survey questionnaire is administered at the beginning and end of each workshop. They also have conducted extensive interviews with workshop participants in workshops in five countries. *Three manuscripts on CBSG Workshop processes and their effects are available from the team and the CBSG office.* The study also is undertaking follow up interviews about two years after each workshop to assess longer term effects. To the best of our knowledge there is no comparable systematic scientific study of conservation management processes. *We apply the same scientific study tools to all of the workshops in our programs and provide an analysis of the results after each workshop.*

CBSG Workshop Toolkit

Our basic set of tools for workshops include small group dynamics skills, explicit use in small groups of problem restatement, divergent thinking sessions, identification of the history and chronology of the problem, causal flow diagraming (elementary systems analysis), matrix methods for qualitative data and expert judgements, paired and weighted ranking for making comparisons between sites, criteria, and options, utility analysis, stochastic simulation modeling for single populations and meta-population and deterministic and stochastic modeling of local human populations. Several computer packages are used to assist collection and

analysis of information with these tools. We provide training in several of these tools in each workshop as well as intensive special training workshops for people wishing to organize their own workshops.

Stochastic Simulation Modeling

Integration of Biological, Physical and Social Factors: The Workshop process, as developed by CBSG, generates population and habitat viability assessments based upon in-depth analysis of information on the life history, population dynamics, ecology, and population history of the populations. Information on demography, genetics, and environmental factors pertinent to assessing population status and risk of extinction under current management scenarios and perceived threats are assembled in preparation for and during the workshops. Modeling and simulations provide a neutral externalization focus for assembly of information, identifying assumptions, projecting possible outcomes (risks), and examining the data for internal consistency. Timely reports from the workshop are necessary to have an impact on stakeholders and decision makers. Draft reports are distributed within 3 weeks of the workshop and final reports within 60 days.

Human Dimension: We have collaborated with human demographers in 4 CBSG workshops on endangered species and habitats. They have utilized computer models incorporating human population characteristics and events at the local village level in order to provide projections of the likely course of population growth and the utilization of local resources. This information was then incorporated into projections of the likely viability of the habitat of the threatened species and used as part of the population projections and risk assessments. We have prepared a draft manual on the human dimension of population and habitat viability assessment. It is our intention to further develop these tools and to utilize them as part of the scenario assessment process.

Risk Assessment and Scenario Evaluation: A stochastic population simulation model is a kind of model that attempts to incorporate the uncertainty, randomness or unpredictability of life-history and environmental events into the modeling process. Events whose occurrence is uncertain, unpredictable, and random are called stochastic. Most events in an animal's life have some level of uncertainty. Similarly, environmental factors, and their effect on the population process, are stochastic - they are not completely random, but their effects are only predictable within certain limits. Simulation solutions are usually needed for complex models including several stochastic parameters.

There are a host of reasons why simulation modeling is valuable for the workshop process and development of management tools. The primary advantage is to simulate scenarios and the impact of numerous variables on the population dynamics and potential for population extinction. Interestingly, not all advantages are related to generating useful management recommendations. The side-benefits are substantial.

- Population modeling supports consensus and instills ownership and pride during the workshop process. As groups begin to appreciate the complexity of the problems, they have a tendency to take more ownership of the process and the ultimate recommendations to achieve workable solutions.
- Population modeling forces discussion on biological and physical aspects of the problem and specification of assumptions, data, and goals. The lack of sufficient data of useable quality rapidly becomes apparent and identifies critical factors for further study (driving research and decision making), management, and monitoring. This not only influences assumptions, but also the group's goals.
- Population modeling generates credibility by using technology that non-biologically oriented groups can use to relate to population biology and the "real" problems. The acceptance of the computer as a tool for performing repetitive tasks has led to a common ground for persons of diverse backgrounds.
- Population modeling explicitly incorporates what we know about dynamics by allowing the simultaneous examination of multiple factors and interactions - more than can be considered in analytical models. The ability to alter these parameters in a systematic fashion allows testing a multitude of scenarios that can guide adaptive management strategies.
- Population modeling can be a neutral computer "game" that focuses attention while providing persons of diverse agendas the opportunity to reach agreements on difficult issues.
- Population modeling results can be of political value for people in governmental agencies by providing support for perceived population trends and the need for action. It helps managers to justify resource allocation for a program to their superiors and budgetary agencies as well as identify areas for intensifying program efforts.

Modeling Tools: At the present time, our preferred model for use in the population simulation modeling process is VORTEX. This model, developed by Lacy et al., is designed specifically for use in the stochastic simulation of the small population/extinction process. It has been developed in collaboration and cooperation with the CBSG PHVA process. The model simulates deterministic forces as well as demographic, environmental, and genetic events in relation to their probabilities. It includes modules for catastrophes, density dependence, metapopulation dynamics, and inbreeding effects. The VORTEX model analyzes a population in a stochastic and probabilistic fashion. It also makes predictions that are testable in a scientific manner, lending more credibility to the process of using population modeling tools.

There are other commercial population models, but presently they have some limitations such as failing to measure genetic effects, being difficult to use, expensive and so not readily available to all users, or failing to model individuals. VORTEX has been successfully used in more than 90 CBSG PHVA workshops in guiding management decisions. VORTEX is general enough for use when dealing with a broad range of species, but specific enough to incorporate most of the important processes. It is continually evolving in

conjunction with the PHVA process. VORTEX has, as do all models, its limitations which may restrict its utility. The VORTEX model analyzes a population in a stochastic and probabilistic fashion. It is now at Version 7.2 through the cooperative contributions of dozens of biologists. It has been the subject of a series of both published and in press validation studies and comparisons with other modeling tools. More than 2000 copies of VORTEX are in circulation and it is being used as a teaching tool in university courses.

We use this model and the experience we have with it as a central tool for the population dynamic aspects of our workshops. Additional modules, building on other simulation modeling tools for local human population dynamics (which we have used in 3 countries) with potential impacts on water usage, harvesting effects, and physical factors such as hydrology and water diversion need further development to provide input into the population and habitat models which can then be used to evaluate possible effects of different management scenarios. No such composite models are available.

CBSG Resources as Unique Asset

Expertise and Costs: The problems and threats to endangered species everywhere are complex and interactive with a need for information from diverse specialists. No agency or country encompasses all of the useful expert knowledge. Thus, there is a need to include a wide range of people as resources and analysts. It is important that the invited experts have reputations for expertise, objectivity, initial lack of a local stake, and for active transfer of needed skills. CBSG has a volunteer network of more than 700 experts with about 250 in the USA. More than 3,000 people from 400 organizations have assisted CBSG on projects and participated in workshops on a volunteer basis contributing tens of thousands of hours of time. We call upon individual experts to assist in all phases of each project.

Indirect cost contributions to support: Use of CBSG resources and the contribution of participating experts provide a matching contribution more than equaling proposed budget requests for projects.

Manuals and Reports: We have manuals available which provide guidance on the goals, objectives, and preparations needed for CBSG workshops. These help reduce startup time and costs and allow us to begin work on organizing a project immediately with proposed participants and stockholders. We have a process manual for use by local organizers which goes into detail on all aspects of organizing, conducting, and preparing reports from the workshops. Draft reports are prepared during the workshop so that there is agreement by participants on its content and recommendations. Reports are also prepared on the mini-workshops (working groups) that are conducted in information gathering and diagnostic exercises with small groups of experts and stakeholders. We can print reports within 24-48 hours of preparation of final copy. We have CD-ROM preparation facilities and experience.

Conservation Assessment and Management Plan (CAMP)

Introduction

Reduction and fragmentation of wildlife populations and habitats are occurring at a rapid and accelerating rate. The results for an increasing number of taxa are small and isolated populations that are at risk of extinction. For such populations, more intensive management becomes necessary for their survival and recovery. To an ever increasing extent, this intensive management will include, but not be limited to, habitat management and restoration, intensified information gathering, and possibly captive breeding.

The problems for wildlife are so enormous that it is vital to apply the limited resources available for intensive management as efficiently and effectively as possible. Conservation Assessment and Management Plans (or CAMPs) are being developed to respond to this need.

CONSERVATION ASSESSMENT AND MANAGEMENT PLANS (CAMPS)

CAMPs are intended to provide strategic guidance for application of intensive management and information collection techniques to threatened taxa. CAMPs provide a rational and comprehensive means of assessing priorities for intensive management within the context of the broader conservation needs of threatened taxa.

Within the Species Survival Commission (SSC) of IUCN, the primary goal of the Conservation Breeding Specialist Group (CBSG) is to contribute to the development of holistic (i.e., integrating *in situ* and *ex situ)* and viable conservation strategies and action plans. The CAMP process assembles a broad spectrum of expertise on wild and captive management of the taxa under review. CAMPs are conducted as collaborative ventures of CBSG with the taxon-based Specialist Groups of the IUCN/SSC and BirdLife International, or with regional wildlife agencies or non-governmental organizations. Generally, representatives of the organized regional captive breeding programs of the zoo/aquarium world also are included.

A CAMP process brings together 10-40 experts (e.g., wildlife managers, Specialist Group members, scientists from the academic community and/or the private sector, land owners, and captive managers) to evaluate the threat status of all taxa in a broad group (e.g., an order or family), country, or geographic region to set conservation action and information-gathering priorities. The CAMP process also provides an opportunity to test the applicability of the New IUCN Red List Categories.

The New IUCN Red List Categories

The threatened species categories now used in Red Data Books and Red Lists have been in place, with some modification, for almost 30 years (Mace et al., 1994). The Mace-Lande criteria (Mace & Lande, 1991) were one developmental step in an attempt to make those categories more explicit, and were tested extensively in early CAMPs. These criteria subsequently have been revised and formulated into the New IUCN Red List Categories, which also are being tested in the CAMP process.

The New IUCN Red List Categories provide a system that facilitates comparisons across widely different taxa, and is based both on population and distribution criteria. These criteria can be applied to any taxonomic unit at or below the species level, with sufficient range among the different criteria to enable the appropriate listing of taxa from the complete spectrum of taxa, with the exception of micro-organisms (Mace et al., 1994).

The New IUCN Red List Categories are: Extinct (EX); Extinct in the Wild (EW); Critically Endangered (CR); Endangered (EN); Vulnerable (VU); Conservation Dependent (CD); Lower Risk (LR); Data Deficient (DD); Not Evaluated (NE).

The CAMP Process

The CAMP process itself is intensive and interactive and is unique in its ability to facilitate objective and systematic prioritization of research and management actions needed for species conservation, both *in* and *ex situ*. Participants develop the assessments of risks and formulate recommendations for action using a Taxon Data Sheet that allow recording of detailed information about each taxon under review, including data on the status of populations and habitat in the wild as well as recommendations for intensive conservation action. The Taxon Data Sheet is augmented by a spreadsheet that summarizes data written on the Taxon Data Sheet and provides for rapid review or comparison of taxa.

During a CAMP process, the wild and captive status for each taxon under consideration are reviewed, on a taxon-by-taxon basis (usually at the subspecies level). For each taxon, there is an attempt to estimate the total population. It is often very difficult, even agonizing, to be numerate because so little quantitative data on population sizes and distribution exists. However, it is frequently possible to provide order-of-magnitude estimates, especially whether the total population is greater or less than the numerical thresholds for the population data used in determining categories of threat. CAMP spreadsheets include a "data quality" column so that "guesstimates" can be distinguished from population estimates based on solid documentation. The CAMP process attempts to be as quantitative or numerate as possible for two major reasons:

- Action plans ultimately must establish numerical objectives for population sizes and distribution if they are to be viable.

- Numbers provide for more objectivity, less ambiguity, more comparability, better communication and hence cooperation.

Information about population fragmentation and trends, distribution, as well as habitat changes and environmental stochasticity also are considered.

The CAMP process utilizes information from SSC Action Plans that may already have been formulated by the taxon-based Specialist Groups as well as additional data, published and unpublished, from experts on the taxa. CAMPs have been endorsed by the SSC and by BirdLife International as the logical first step toward the development of taxonomic Action Plans where they do not yet exist.

For each taxon reviewed, three kinds of assessments/recommendations are made:

> 1) assigning taxa to New IUCN Red List Category of Threat;

> 2) making recommendations for research and management activities to contribute to the taxon's conservation. These recommendations aim to more fully integrate recommended research and management actions and known threats. Research management can be defined as an interactive management program including a strong feedback loop between management activities, evaluation of their effectiveness, and the response of the species;

> 3) making recommendations for captive programs if they can contribute to the conservation of the taxon. These form the foundation for development of Global Captive Action Recommendations (GCARs) and regional strategic captive collection plans for the zoo and aquarium community.

The CAMP process generally uses a conservative taxonomic approach. In most cases, initial risk assessment and management recommendations are made in terms of the maximal distinction among possible "subspecies" until taxonomic relationships are better elucidated. Splitting rather than lumping maximizes preservation of options. Taxa can always be merged ("lumped") later if further information invalidates the distinctions or if biological or logistic realities of sustaining viable populations precludes maintaining taxa as separate units for conservation.

THE REVIEW PROCESS FOR CAMPs

The results of the initial CAMP process are reviewed: 1) by distribution of a preliminary draft to a small cohort of process participants agreeing to serve as voluntary editors; 2) by distribution to a broader audience which includes CAMP participants, wildlife managers and regional captive programs worldwide; 3) at regional review sessions at various CBSG meetings and processes, taking advantage of local expertise with the taxonomic group in question. Thus CAMPs are not single events although sometimes they are singular events. Instead, they are part of a continuing and evolving process of developing conservation and recovery plans for the taxa

involved. The CAMP review process allows extraction of information from experts worldwide and prioritization of actions based on levels of threat. In nearly all cases, follow-up meetings are required to consider particular issues in greater depth or on a regional basis. Moreover, some form of follow-up will always be necessary to monitor the implementation and effectiveness of the recommendations resulting from the process. In many cases a range of Population and Habitat Viability Assessment (PHVA) process result from the CAMPs.

Over the past five years, CAMPs have been carried out for a wide spectrum of the vertebrates: boid and pythonid snakes; varanid and iguanid lizards; penguins; waterfowl; Falconiformes; megapodes; quail, partridges and francolins; pheasants; cracids; pigeons and doves; cranes; parrots; hornbills; marsupials; primates; canids and hyenas; procyonids; mustelids; viverrids; Felids; cervids; antelope; and Caprinae. Several regional CAMPs have also been conducted: Hawaiian forest birds; endemic Mexican lagomorphs; Costa Rican endemics; endemic bird and mammal species of Panama; South American felids; primate and carnivore species endemic to Mexico; and St. Helena Island endemic plants, invertebrates and vertebrates.

CAMPs are "living" documents that will be continually reassessed and revised as new information becomes available and as global and regional situations and priorities shift. The current CAMP process will continue both by its application to new groups of taxa and regions and the refinement of the ones already under way. Within the next five years CAMP processes will be initiated for all terrestrial vertebrate groups (the so-called tetrapods) and for selected fish, invertebrate, and plant groups. As more and more of the tetrapods are assessed by the CAMP process, the CAMP program is shifting to a regional approach, focusing on particular countries or regions.

The CAMP process is unique in its ability to prioritize intensive management action for species conservation, providing a framework for intensive management in the wild and in captivity. CAMP documents can be used as guidelines by national and regional wildlife agencies as well as regional captive breeding programs as they develop their own action plans. The long-term impact of the CAMP process on global priority setting has the potential to be profound. Within the near future, wildlife and zoo animal managers will have a set of comprehensive documents at their disposal, collaboratively and scientifically developed by the experts on the taxon or region, establishing priorities for global and regional species management and conservation. It is the intent that the CAMP process will ultimately contribute to the wise worldwide use of limited resources for species conservation.

The CAMP Process

A CAMP process brings together 10-40 experts (e.g., wildlife managers, Specialist Group members, scientists from the academic community and/or the private sector, land owners, and captive managers) to evaluate the threat status of all taxa in a broad group, country or region. CAMPs can be initiated by wildlife agencies, non-governmental organizations, or Specialist Groups; CAMPs are organized in collaboration with and facilitated by the IUCN/SSC Conservation Breeding Specialist Group. The list of invitees to a CAMP is generated by the host/organizer in collaboration with the appropriate SSC or BirdLife International Specialist Group and CBSG. CBSG may suggest additional participants, but the primary responsibility for generating a list of invitees lies with the host/organizer.

The CAMP process is intensive and interactive, generally taking place over a full three- or three-and-one-half day period, including evenings. Participants arrive the day before the CAMP begins and depart on the fourth day. CAMPs generally are held at a location that minimizes outside disturbance, with meals brought in to minimize distractions.

The meeting agenda is compiled by the host/organizer, with input from the CBSG office and/or the appropriate Specialist Group Chair. Usually, there are several overview presentations on the first morning which discuss the general status of the taxonomic group or region (e.g., conservation status and general threats), as well as a specific presentation on the CAMP process by CBSG. After preliminary presentations Working Groups are organized to review the taxonomic groups or taxa within the region coinciding with their expertise. Working Groups report back to the other participants in plenary sessions several times during the course of the process. Participants work to reach consensus on assessments and recommendations prior to the process' end. It is the aim to complete a draft CAMP document by the end of the third day.

There are several ground rules made explicit at the beginning of a CAMP process:

* Every idea or plan or belief about the Taxon or Region can be examined and discussed.
* Everyone participates in discussions and no one dominates.
* Set aside (temporarily) all special agendas except conserving the Taxon or Region in question.
* Assume good intent of all participants. Treat other participants with respect.
* Stick to the schedule .. begin and end promptly.

* The primary work will be conducted in sub-groups
* Facilitators of plenary sessions or working groups can call 'time out' when discussions reach an impasse or stray too far off the topic at hand.
* Agreements or recommendations are reached by consensus.
* Plan to complete and review a draft report by the end of the meeting.
* Flexibility is key. We will adjust our process and schedule as needed to achieve our goals.

Working Group Tasks: the CAMP Spreadsheet and Taxon Data Sheets

In each working group, two people are key: 1) the facilitator; and 2) the Taxon Data Sheet recorder. Working group facilitators are designated by the CAMP facilitators and organizers. It also is essential that in each working group one person keep master Taxon Data Sheets for each taxon. S/he generally enters them into a computer as they are discussed. **Taxon Data Sheet information should be checked as each is completed to be sure that all data have been recorded.**

Each participant is given a spreadsheet at the beginning of the process. An important step for each working group is to examine the taxonomic list on the spreadsheet to make sure that it is complete. After the list is checked for taxonomic correctness, working group participants begin to systematically work through the taxa, making assessments and making recommendations on the Taxon Data Sheets. A Taxon Data Sheet category explanation sheet, such as the one that follows, is provided to explain the various data categories. A sample Taxon Data Sheet typically used for mammals is included as Appendix I in this section; sample Taxon Data Sheets for Birds and for Plants are included as Appendices II and III. Sample spreadsheets for vertebrates are included as Appendix IV in this section. Blank taxon data sheets for mammals, birds and plants are included as Appendices IV - VI. Blank spreadsheets for vertebrates and plants are included as Appendices VII and VIII, respectively.

THREATENED PLANTS OF COSTA RICA

CONSERVATION ASSESSMENT AND MANAGEMENT PLANNING WORKSHOP

San José, Costa Rica

4 - 6 October 1996

Report

SECTION 7

SELECTED REPORTS

THREAT:
Calculating the likelihood of extinction and inferring changes in conservation status

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BACKGROUND

New methods for the inference of threat for endangered species have been developed, where the frequency of observations is used to calculate the probability that a species is not extinct. This report describes software written for the purposes of implementing several equations designed to provide such measures. The equations are described more completely in Burgman et al. (1995) and McCarthy and Burgman (1996). The program was developed by C. Boek in the C language, from code written by S. Ferson and M. Burgman in Turbo Pascal (using algorithms suggested by Knuth, 1973) and modified by M. McCarthy to include partial correlations. It is intended to be used in a DOS environment, and will run on machines with a 80486 processor or better. It assumes that a maths coprocessor is present.

PROGRAM INPUT

The most reliable way of using the program is by means of an input file. An example of an input file is provided on the distribution disk. It is called 'INACACIA'. The input file has the following form:

Line 1. The name of the data file containing the observations
Line 2. The name of the data file containing the values of the covariate for partial correlations. If you wish to use the program without partial correlations, type 'NO' on Line 2.
Line 3. Y (years) or D (decades)
Line 4. The first year for the purposes of calculations. If the year of the first observation for a species is to be used as the first year for calculations, then type '-1' on line 4.
Line 5. The last year for calculations.

Once the input file has been created, one may run the program from the DOS command line

by typing

threat -i infile

where 'infile' is the name of the input file. By default, output is directed to the screen. To capture the output, use the DOS redirection operator as follows:

threat -i infile > outfile

where 'outfile' is the name of file to which you want to direct the output.

OBSERVATION DATA FILE

An example of an observation data file is provided on the distribution disk by 'ACACIA.TXT'. The format of the observation data file is as follows:

Column 1 - year
Columns 2 to n - species name

Records are separated by a carriage return. Columns may be separated by tabs or spaces. Data in MicroSoft Excel or any other similar spreadsheet may be output in the appropriate format by selecting the appropriate columns and choosing 'Text' and 'Tab delimited' as the output format. The file may include the day and month preceding the year, but this information will be ignored by the program. The file may contain information for an almost unlimited number of species. However, the maximum number of observations for any single species is 500. The data for an individual species must be grouped together. That is, records from different species cannot be scattered through the file. Each line of output will correspond to each set of data grouped by the same species name. *The program is not designed to account for taxa for which there is only a single observation. The program will not fail, but the output for these records will be meaningless.*

COVARIATE DATA FILE

The partial correlations require that a file is supplied containing an index of collection effort. An example of a file containing a covariate is provided on the distribution disk by ACACIANS.TXT. This index will be used as a covariate, to account for changing collection effort. The format of the covariate data file is as follows:

Year Value
A value for the covariate should be supplied for each of the years over which calculations are to be made.

For the partial Solow's test to return meaningful results, the covariate data file must contain data on collection intensity.

PROGRAM OUTPUT

The output of the program consists of the species name followed by probabilities generated by the test. The order of the output is as follows:

Solow's test
Partial Solow's test
Grimson's test
Spearman's correlation test
Partial correlation test

The partial correlation will only be computed if a covariate file was supplied and noted on Line 2 of the input file. The partial Solow's test will only return meaningful results if the covariate data is based on collection intensity.

MORE INFORMATION

For more information on the specific algorithms or on the operation of the program, please contact the authors at their above addresses, or at boek@cs.mu.oz.au, mccarthy@cres20.anu.edu.au, m.burgman@botany.unimelb.edu.au, or c.todd@pgrad.unimelb.edu.au.

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acacia.txt
NO
Y
-1
1993

acacia.txt

acacians.txt
Y
-1
1993

1954 4
1955 4
1956 2
1957 6
1958 3
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1979 Acacia adinophylla
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1981 Acacia adinophylla
1984 Acacia adinophylla
1989 Acacia adinophylla
1990 Acacia adinophylla
1990 Acacia adinophylla
1990 Acacia adinophylla
1991 Acacia adinophylla
1964 Acacia aemula subsp. aemula
1966 Acacia aemula subsp. aemula
1970 Acacia aemula subsp. aemula
1979 Acacia aemula subsp. aemula
1980 Acacia aemula subsp. aemula
1985 Acacia aemula subsp. aemula
1989 Acacia aemula subsp. aemula
1960 Acacia alexandri
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1964 Acacia alexandri
1970 Acacia alexandri
1980 Acacia alexandri
1983 Acacia alexandri
1983 Acacia alexandri
1988 Acacia alexandri
1932 Acacia alocophylla subsp. compressa
1933 Acacia alocophylla subsp. compressa
1945 Acacia alocophylla subsp. compressa
1968 Acacia alocophylla subsp. compressa
1971 Acacia alocophylla subsp. compressa
1979 Acacia alocophylla subsp. compressa
1984 Acacia alocophylla subsp. compressa
1986 Acacia alocophylla subsp. compressa
1970 Acacia ampliata
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