

**IMPLEMENTATION SCHEDULE FOR THE  
SOUTH FLORIDA MULTI-SPECIES RECOVERY PLAN**

Prepared by

South Florida Field Office  
U.S. Fish and Wildlife Service  
Vero Beach, Florida

for

U.S. Fish and Wildlife Service  
Southeast Region  
Atlanta, Georgia

Approved:     //s// Cindy Dohner      
    Regional Director, Southeast Region    

Date:     12 | 27 | 2006

# **IMPLEMENTATION SCHEDULE FOR THE SOUTH FLORIDA MULTI-SPECIES RECOVERY PLAN**

## **Introduction**

The U.S. Fish and Wildlife Service's (Service) South Florida Multi-Species Recovery Plan (MSRP), approved in May 1999, provides an ecosystem-based approach to ensure a viable future for all federally listed species as well as other native species in the south Florida landscape.

The final chapter of the MSRP discusses implementation of the recovery and restoration tasks included in the MSRP through the creation of a Multi-species/Ecosystem Recovery Implementation Team (MERIT). MERIT was appointed by the Service in 1999. Because many stakeholders are involved in the south Florida restoration process, this team is comprised of approximately 40 members representing Federal, State, and local governmental agencies; Tribal governments; academia; industry; and the private sector. One of the primary goals of MERIT is to produce this implementation schedule that prioritizes the recovery tasks of the MSRP.

## **Species and Communities Included in the Implementation Schedule**

The MSRP implementation schedule includes only those species that occur in south Florida for which the South Florida Ecological Services Office has recovery lead (Table 1). Other Service field offices have recovery responsibility for species that occur in south Florida but also occur elsewhere (Table 1). The MSRP outlines how south Florida will contribute to their rangewide recovery objective, but does not replace their approved, rangewide recovery plans. As a result, those species for which the South Florida Ecological Services Office does not have recovery lead are not included in this implementation schedule.

The 42 species included in the implementation schedule are representative of 14 of the 23 ecological communities in the MSRP. Those communities and species are listed in Table 2. The communities not included in the implementation schedule are: high pine, maritime hammock, mesic temperate hammock, cutthroat grass, the three forested wetland types, seagrasses, and nearshore/midshore reefs. These communities were excluded because they do not comprise the primary habitat for species for which the South Florida Ecological Services Office has recovery lead. The Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.), requires that priority numbers and costs be assigned to individual species tasks in the implementation schedule, so there are no direct priority numbers assigned to the community-level restoration actions.

## **Organization of the Implementation Schedule**

The implementation schedule is organized according to community types, and includes the task priority, task number, task description, task duration, participating parties, and estimated cost per task for each of the 42 species that occupy those communities. These tasks, when accomplished, will bring about the recovery of those species. Although many of the species occur in more than

one ecological community, they were included in this implementation schedule according to the most predominant community type in which they occur (Table 2).

Parties with authority, responsibility, or expressed interest to implement a specific recovery task are identified in the implementation schedule as “participants.” When more than one party has been identified, the proposed lead party is indicated by an asterisk (\*). The inclusion of a participant in the implementation schedule does not imply a requirement or that prior approval has been given by those identified to participate or expend funds. However, participants can benefit by being able to show in their own budget submittals that their funding request is for a recovery task which has been identified in an approved recovery plan and is, therefore, part of the overall coordinated effort to recover the species. Also, section 7(a)(1) of the Act directs all Federal agencies to utilize their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of threatened and endangered species.

Following are definitions to column headings and keys to abbreviations and acronyms used in the implementation schedule:

### **Priority Number**

Priority 1 - An action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.

Priority 2 - An action that must be taken to prevent a significant decline in species population/habitat quality or some other significant impact short of extinction.

Priority 3 - All other actions necessary to provide for full recovery of the species.

Recovery actions that have been completed since the MSRP was approved are denoted by a “+” next to the priority number.

### **Task Number and Task Description**

Species-level (s) and habitat-level (h) recovery actions are numbered in the MSRP. A four-letter code is used in the implementation schedule for each of the species and the associated community-level restoration task(s) (Table 2).

### **Participants and Other Parties Referenced in the Implementation Schedule**

Archbold	Archbold Biological Station
BLM	U.S. Bureau of Land Management
Bok	Bok Tower Gardens
CLNWR	Crocodile Lake National Wildlife Refuge
COE	U.S. Army Corps of Engineers
counties	South Florida counties
county parks	South Florida county parks

DERM	Department of Environmental Resources Management
DOF	Florida Division of Forestry
DOT	Florida Department of Transportation
EPA	U.S. Environmental Protection Agency
Fairchild	Fairchild Tropical Garden
FDACS	Florida Department of Agriculture and Consumer Services
FDACS/DPI	Florida Department of Agriculture and Consumer Services/Division of Plant Industry
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
FWS	U.S. Fish and Wildlife Service
IRC	Institute for Regional Conservation
KWTFBG	Key West Tropical Forest and Botanical Garden
local governments	City and county agencies
NASKW	Naval Air Station Key West
NGO	Non-governmental organization
NKDR	National Key Deer Refuge
NPS	National Park Service
NRCS	Natural Resources Conservation Service
private	Private industry, landowners, etc.
state parks	South Florida state parks
TAMU	Texas A&M University
TNC	The Nature Conservancy
Tribes	Miccosukee and Seminole Indian Tribes
universities	Public and private universities
USAF	U.S. Air Force
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USGS/BRD	U.S. Geological Survey/Biological Resources Division
WEA	Wildlife and Environmental Area
WMD	Water Management Districts

**Estimated Cost of Recovery**

The implementation schedule includes the estimated cost of accomplishing each recovery task. These costs were calculated as totals per community for the multiple species that occur within each community (Table 3). The costs for those specific tasks are provided in the implementation schedule. Costs for land acquisition, management, and restoration will be more accurately determined as the MSRP is implemented.

**Estimated Cost of Recovery for Implementation of the MSRP (Dollars x 1,000)**

Community	Year 1	Year 2	Year 3	Total
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Florida Scrub/Scrubby Flatwoods/Scrubby High Pine	3615	3131	2738	9484
Beach Dune/Coastal Strand	488	478	448	1414
Tropical Hardwood Hammock	1888	1811	1311	5010
Pine Rocklands	2622	2405	1465	6492
Mesic and Hydric Pine Flatwoods	421	411	301	1133
Dry Prairie	1104	1014	954	3072
Freshwater Marsh/Wet Prairie	93369	93229	92994	279592
Mangrove	25782	25768	25753	77303
Coastal Salt Marsh	969	907	736	2612
<b>Total</b>	<b>130258</b>	<b>129154</b>	<b>126700</b>	<b>386112</b>

These total cost estimates do not include amounts for habitat acquisition, management, or restoration because those tasks are expressed as costs per acre and could not be combined with overall costs per species.

### **Acknowledgements**

#### **Multi-species/Ecosystem Recovery Implementation Team - Species/Communities Subteam**

<b><u>Member Name</u></b>	<b><u>Affiliation</u></b>
Dave Addison	The Conservancy of Southwest Florida
Thomas Bancroft	The Wilderness Society
Robert Bonde	USGS/BRD
George Dalrymple	Everglades Research Group
Sheryan Epperly	National Marine Fisheries Service
Dennis Hardin	FDACS
Deborah Jansen	NPS
Laurie Macdonald	Defenders of Wildlife
Peter Merritt	Treasure Coast Regional Planning Council
Jim Newman	Pandion Systems, Inc.
Skip Snow	NPS
Dawn Zattau	FWS
David Zeigler	DOT

#### **Ad Hoc Members Appointed to Assist with the Implementation Schedule**

##### **Florida Scrub/Scrubby Flatwoods/Scrubby High Pine**

<b><u>Member Name</u></b>	<b><u>Affiliation</u></b>
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Eric Menges  
Carl Weekley  
Dan Austin  
Henry Mushinsky

Archbold  
Archbold  
Florida Atlantic University  
University of South Florida

**Beach Dune/Coastal Strand**

<u>Member Name</u>	<u>Affiliation</u>
Cynthia Lane	Fairchild Tropical Garden
Ernie Link	Miami-Dade Parks and Recreation Department

**Tropical Hardwood Hammock**

<u>Member Name</u>	<u>Affiliation</u>
Thomas Emmel	University of Florida

**Pine Rocklands**

<u>Member Name</u>	<u>Affiliation</u>
Keith Bradley	Institute for Regional Conservation
Roel Lopez	TAMU
Suzanne Koptur	Florida International University

**Mesic and Hydric Pine Flatwoods**

<u>Member Name</u>	<u>Affiliation</u>
Rick Joyce	Lee County

**Dry Prairie**

<u>Member Name</u>	<u>Affiliation</u>
Peter Vickery	Massachusetts Audubon Society
Joan Morrison	Trinity College

**Freshwater Marsh/Wet Prairie**

<u>Member Name</u>	<u>Affiliation</u>
Stuart Pimm	Columbia University
Robert Bennetts	USGS
Marc Minno	St. Johns River WMD

**Mangrove**

<u>Member Name</u>	<u>Affiliation</u>
Joe Wasilewski	Natural Selections of South Florida

**Coastal Salt Marsh**

<u>Member Name</u>	<u>Affiliation</u>
Beth Forys	Eckerd College

**Other Contributors to the Implementation Schedule**

<b><u>Contributor Name</u></b>	<b><u>Affiliation</u></b>	<b><u>Contribution</u></b>
Sonny Bass	Everglades NP	Management/Ecology
Kelly Bibb	FWS	Technical support
Mike Bodle	South Florida WMD	Management
Dorothy Brazis	Bok	Management
Linda Chafin	FNAI	Ecology
Ann Cox	DOF	Ecology
Tylan Dean	FWS	Coordinator/Ecology
Deena Decker-Walters	Cucurbit Network	Ecology
Mike Delany	FWC	Ecology
Nancy Douglass	FWC	Ecology
Phil Frank	FWS	Ecology
Betty Grizzle	FWS	Management
Lorraine Heisler	FWS	Ecology
Dan Hipes	FNAI	Ecology
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Ron John	Sebastian Inlet State Park	Management
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Steve Klett	FWS	Ecology
KrisAnn Kosel	TNC (Disney Wilderness Preserve)	Management
Rob Loflin	City of Sanibel	Management
Joe Maguire	Miami-Dade County	Management
Dave Martin	FWS	Ecology
Frank Mazzotti	University of Florida	Management/Ecology
Heather McSharry	FWS	Ecology
Dan Miller	FWC	Management
Steve Miller	St. Johns River WMD	Management
Paul Moler	FWC	Ecology
Rosi Mulholland	FDEP	Management
Robert Pace	FWS	Ecology
Zach Prusack	Brevard County	Management
John G. Rae	Francis Marion University	Ecology
Bob Reppenning	FDEP	Ecology
Jodie Smithem	FWS	Technical support
Walt Thompson	TNC	Management
Grant Webber	FWS	Technical support
Kent Wiliges	FWC	Ecology
Mark Zeller	FDEP	Management

## **Disclaimer**

Documents published by the Service are sometimes prepared with the assistance of recovery teams, contractors, State agencies, and others. Officially-appointed teams serve as independent advisors to the Service. The documents are reviewed by the public and submitted for additional peer review before they are adopted by the Service. The recommendations identified in this implementation schedule will only be attained contingent upon appropriations, priorities, and other budgetary constraints. This implementation schedule does not necessarily represent the views or the official positions of any individuals or agencies involved in the plan formulation, other than the Service. This implementation schedule represents the official position of the Service only after it has been signed by the Regional Director as approved. The information in this document is subject to modification as dictated by new findings, changes in species' status, and the completion of recovery tasks.

By approving this implementation schedule for the MSRP, the Regional Director certifies that the data used in its development represent the best scientific and commercial data available at the time it was written. Copies of all documents reviewed in development of the implementation schedule are available in the administrative record, located at U.S. Fish and Wildlife Service, South Florida Ecological Services Office, 1339 20<sup>th</sup> Street, Vero Beach, Florida, 32960.

References to this document should be written as follows:

U.S. Fish and Wildlife Service. 2006. South Florida multi-species recovery plan implementation schedule. U.S. Fish and Wildlife Service. Atlanta, Georgia.

Additional copies may be obtained from:

U.S. Fish and Wildlife Service  
South Florida Ecological Services Office  
1339 20<sup>th</sup> Street  
Vero Beach, Florida 32960  
(772) 562-3909

**Table 1. Status and Lead Fish and Wildlife Service Office for Recovery of Species Included in the MSRP.**

<b>Mammals (except whales)</b>			
Key deer	<i>Odocoileus virginianus clavium</i>	E	Vero Beach, FL
West Indian manatee	<i>Trichechus manatus</i>	E	Jacksonville, FL
Key Largo cotton mouse	<i>Peromyscus gossypinus allapaticola</i>	E	Vero Beach, FL
Southeastern beach mouse	<i>Peromyscus polionotus niveiventris</i>	T	Jacksonville, FL
Florida panther*	<i>Puma concolor coryi</i>	E	Vero Beach, FL
Lower Keys rabbit	<i>Sylvilagus palustris hefneri</i>	E	Vero Beach, FL
Rice rat (= silver rice rat)	<i>Oryzomys palustris natator</i> (= <i>O. argentatus</i> )	E	Vero Beach, FL
Key Largo woodrat	<i>Neotoma floridana smalli</i>	E	Vero Beach, FL
<b>Birds</b>			
Audubon's crested caracara	<i>Polyborus plancus audubonii</i>	T	Vero Beach, FL
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	Midwest Region
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	T	Jacksonville, FL
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E	Vero Beach, FL
Piping plover (Atlantic population)	<i>Charadrius melodus</i>	T	Northeast Region
Wood stork	<i>Mycteria americana</i>	E	Jacksonville, FL
Roseate tern	<i>Sterna dougallii dougallii</i>	T	Northeast Region
Cape Sable seaside sparrow	<i>Ammodramus</i> (= <i>Ammospiza</i> ) <i>maritimus mirabilis</i>	E	Vero Beach, FL
Florida grasshopper sparrow	<i>Ammodramus savannarum floridanus</i>	E	Vero Beach, FL
Bachman's warbler	<i>Vermivora bachmanii</i>	E	Charleston, SC
Kirtland's warbler	<i>Dendroica kirtlandii</i>	E	East Lansing, MI
Ivory-billed woodpecker	<i>Campephilus principalis</i>	E	Lafayette, LA
Red-cockaded woodpecker	<i>Picoides</i> (= <i>Dendrocopos</i> ) <i>borealis</i>	E	Clemson, SC

<b>Reptiles</b>			
American crocodile	<i>Crocodylus acutus</i>	E	Vero Beach, FL
Bluetail (= blue-tailed) mole skink	<i>Eumeces egregius lividus</i>	T	Vero Beach, FL
Sand skink	<i>Neoseps reynoldsi</i>	T	Vero Beach, FL
Atlantic salt marsh snake	<i>Nerodia clarkia</i> (= <i>fasciata</i> ) <i>taeniata</i>	T	Jacksonville, FL
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T	Jackson, MS
Green sea turtle	<i>Chelonia mydas</i> (incl. <i>agassizi</i> )	E	Jacksonville, FL
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E	Jacksonville, FL
Kemp's (= Atlantic) ridley sea turtle	<i>Lepidochelys kempii</i>	E	Southwest Region
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	Jacksonville, FL
Loggerhead sea turtle	<i>Caretta caretta</i>	T	Jacksonville, FL
<b>Invertebrates</b>			
Schaus swallowtail butterfly	<i>Heraclides</i> (= <i>Papilio</i> ) <i>aristodemus ponceanus</i>	E	Vero Beach, FL
Stock Island tree snail	<i>Orthalicus reses</i> (not incl. <i>nesodryas</i> )	T	Vero Beach, FL
<b>Plants</b>			
Crenulate lead-plant	<i>Amorpha crenulata</i>	E	Vero Beach, FL
Four-petal pawpaw	<i>Asimina tetramera</i>	E	Vero Beach, FL
Florida bonamia	<i>Bonamia grandiflora</i>	T	Jacksonville, FL
Fragrant prickly-apple	<i>Cereus eriophorus</i> var. <i>fragrans</i>	E	Vero Beach, FL
Deltoid spurge	<i>Chamaesyce</i> (= <i>Euphorbia</i> ) <i>deltoidea</i> spp. <i>deltoidea</i>	E	Vero Beach, FL
Garber's spurge	<i>Chamaesyce</i> (= <i>Euphorbia</i> ) <i>garberi</i>	T	Vero Beach, FL
Pygmy fringe-tree	<i>Chionanthus pygmaeus</i>	E	Vero Beach, FL
Florida golden aster	<i>Chrysopsis</i> (= <i>Heterotheca</i> ) <i>floridana</i>	E	Jacksonville, FL
Florida perforate cladonia	<i>Cladonia perforata</i>	E	Vero Beach, FL
Pigeon wings	<i>Clitoria fragrans</i>	T	Vero Beach, FL
Short-leaved rosemary	<i>Conradina brevifolia</i>	E	Vero Beach, FL
Avon Park harebells	<i>Crotalaria avonensis</i>	E	Vero Beach, FL

Okeechobee gourd	<i>Cucurbita okeechobeensis</i> spp. <i>okeechobeensis</i>	E	Vero Beach, FL
Beautiful pawpaw	<i>Deeringothamnus pulchellus</i>	E	Vero Beach, FL
Garrett's mint	<i>Dicerandra christmanii</i>	E	Vero Beach, FL
Scrub mint	<i>Dicerandra frutescens</i>	E	Vero Beach, FL
Lakela's mint	<i>Dicerandra immaculata</i>	E	Vero Beach, FL
Scrub buckwheat	<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	T	Jacksonville, FL
Snakeroot	<i>Eryngium cuneifolium</i>	E	Vero Beach, FL
Small's milkpea	<i>Galactia smallii</i>	E	Vero Beach, FL
Highlands scrub hypericum	<i>Hypericum cumulicola</i>	E	Vero Beach, FL
Beach jacquemontia	<i>Jacquemontia reclinata</i>	E	Vero Beach, FL
Scrub blazing star	<i>Liatis ohlingerae</i>	E	Vero Beach, FL
Scrub lupine	<i>Lupinus aridorum</i>	E	Jacksonville, FL
Britton's beargrass	<i>Nolina brittoniana</i>	E	Jacksonville, FL
Papery whitlow-wort	<i>Paronychia chartacea</i> (= <i>Nyachia pulvinata</i> )	T	Vero Beach, FL
Key tree-cactus	<i>Pilosocereus</i> (= <i>Cereus</i> ) <i>robinii</i>	E	Vero Beach, FL
Lewton's polygala	<i>Polygala lewtonii</i>	E	Vero Beach, FL
Tiny polygala	<i>Polygala smallii</i>	E	Vero Beach, FL
Wireweed	<i>Polygonella basiramia</i> (= <i>ciliata</i> var. <i>b.</i> )	E	Vero Beach, FL
Sandlace	<i>Polygonella myriophylla</i>	E	Vero Beach, FL
Scrub plum	<i>Prunus geniculata</i>	E	Jacksonville, FL
Wide-leaf warea	<i>Warea amplexifolia</i>	E	Jacksonville, FL
Carter's mustard	<i>Warea carteri</i>	E	Vero Beach, FL
Florida ziziphus	<i>Ziziphus celata</i>	E	Vero Beach, FL

\* Prior to finalization of the implementation schedule, recovery lead for the Florida panther was transferred to the Vero Beach, Florida office. However, this species is not included in the implementation schedule as it has its own separate recovery plan.

**Table 2. Species by Ecological Community Included in the MSRP Implementation Schedule.**

**Florida Scrub/Scrubby Flatwoods/Scrubby High Pine (sc)**

aste	Four-petal pawpaw
btms	Bluetail mole skink
cefr	Fragrant prickly-apple
chpy	Pygmy fringe-tree
clfr	Pigeon wings
clpe	Florida perforate cladonia
cobr	Short-leaved rosemary
crav	Avon Park harebells
dich	Garrett's mint
difr	Scrub mint
diim	Lakela's mint
ercu	Snakeroot
hycu	Highlands scrub hypericum
lioh	Scrub blazing star
pach	Papery whitlow-wort
poba	Wireweed
pole	Lewton's polygala
pomy	Sandlace
sask	Sand skink
waca	Carter's mustard
zice	Florida ziziphus

**Beach Dune/Coastal Strand (bdcs)**

jare	Beach jacquemontia
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**Tropical Hardwood Hammock (thh)**

klcm	Key Largo cotton mouse
klwr	Key Largo woodrat
piro	Key tree-cactus
ssbu	Schaus swallowtail butterfly
sits	Stock Island tree snail

**Pine Rocklands (pr)**

acre	Crenulate lead-plant
kede	Key deer
chde	Deltoid spurge
chga	Garber's spurge
gasm	Small's milkpea
posm	Tiny polygala

**Mesic and Hydric Pine Flatwoods (mpf)**

depu	Beautiful pawpaw
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**Dry Prairie** (dp)

acca Audubon’s crested caracara  
fgsp Florida grasshopper sparrow

**Freshwater Marsh/Wet Prairie** (fm)

csss Cape Sable seaside sparrow  
cuok Okeechobee gourd  
eski Everglade snail kite

**Mangrove** (mn)

amcr American crocodile

**Coastal Salt Marsh** (sm)

lkra Lower Keys rabbit  
rira Rice rat

**An example to help in using the Implementation Schedule**

Priority	Task Number	Task Description
2	aste-h1.1 [sc-1.1, 2.2, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements.

Use the key provided at the top of each implementation schedule page to determine the abbreviations used in each recovery task.

The first four letters of each task represent an animal’s common name or a plant’s scientific name (for example, “aste” stands for four petal pawpaw).

The subsequent letter and number sequence shows whether the task is a habitat-specific task or a species-specific task (for example, “h1.1” is a habitat-specific task).

The letter and number sequence in brackets shows community level restoration tasks (for example, “sc” is the Florida scrub community) that could be partially or wholly fulfilled by completion of the habitat-specific or species-specific task.

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	aste-h1.1 [sc-1.1, 2.2, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements.	continuous	FWS*, FDEP*, DOF*, NGO, counties*, private, FWC, TNC*				Cost dependent upon specific site and amount of land acquired.
2	aste-h1.2.1 [sc-2.1-2.2, 3.1]	Conduct prescribed burns for four-petal pawpaw ( <i>Asimina tetramera</i> )	continuous	FWS*, FDEP*, NGO, DOF*, counties*, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
2	aste-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP*, NGO, counties*, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	aste-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS*, FDEP*, counties*				Task currently conducted and cost is included in responsible agency's budget.
2	aste-h2.1 [sc-2.1-2.2, 3.1]	Restore natural fire regime.	continuous	FWS*, FDEP*, NGO, DOF*, counties*, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
2	aste-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, FDEP*, NGO, counties*, private	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	aste-h3.0 [sc-8.1-8.3]	Continue habitat-level research projects.	2-3 years	FWS*, FDEP, universities*, NGO	25	25	25	
3	aste-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS*, FDEP*, counties*, universities, NGO	15	15	15	
3	aste-h5.0 [sc-9.0]	Provide public information about xeric vegetative communities and their unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private, counties	10	5	5	
2	aste-s1.1.1	Continue surveys in Palm Beach and Martin Counties.	continuous	FWS, FDEP, counties, NGO*	5	5	5	
2	aste-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, FDEP*, counties*, NGO	5	5	5	

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	aste-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI, FDEP, NGO	3	3	3	
2	aste-s2.1 [sc-1.1, 6.0]	Acquire or otherwise protect privately-owned habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, counties*, private, FWC, FDEP*, DOF*, NGO, TNC*				Cost dependent upon specific site and amount of land acquired.
1	aste-s2.2 [sc-1.0, 1.2-1.3, 2.0, 3.0, 6.0]	Protect populations of four-petal pawpaw on public lands.	continuous	FWS*, FDEP*, counties*, USCG*, BLM*, local government*				Cost dependent upon type of protection provided.
2	aste-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS*, counties*, local government*				Cost included in responsible agency's budget.
1	aste-s2.4	Continue ex situ conservation.	continuous	FWS, private, NGO*	3	3	3	
2	aste-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	aste-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI				Cost included in standard operating budgets of participating agencies.
1	aste-s2.6.1 [sc-2.4]	Establish a protocol for reintroduction.	1-2 years	FWS*, FDEP, counties, NGO*	10	10		
1	aste-s2.6.2	Locate potential (re)introduction sites.	1 year	FWS*, FDEP*, counties, NGO*	8			
1	aste-s2.6.3	(Re)introduce plants to protected sites.	3 years	FWS*, FDEP*, counties, NGO*	10	4	4	
2	aste-s3.1 [sc-7.0]	Continue research to determine demographic information.	3 years	FWS, FDEP, universities*, NGO*	15	15	15	Initial demographic information obtained from

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								Cox (1998).
2	aste-s3.2 [sc-7.0]	Once demographic data are known, conduct a population viability and risk assessment analysis.	3-5 years	FWS*, private, universities, NGO	30	30	30	
2	aste-s3.3 [sc-7.0]	Conduct research to assess management requirements of four-petal pawpaw.	3-5 years	FDEP, universities*, private, NGO	20	20	20	
3	aste-s3.4 [sc-2.4]	Assess feasibility of relocating four-petal pawpaw.	2-3 years	FWS*, FDEP, universities*, private, NGO	15	15	15	
2	aste-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS, FDEP*, counties*, universities, NGO*	12	12	12	
2	aste-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on four-petal pawpaw.	continuous	FWS*, FDEP*, counties*, universities, NGO*	12	12	12	
2	aste-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of four-petal pawpaw.	1-2 years	FWS, FDEP, counties, universities*, NGO*	8	8		Complete for Jonathan Dickinson State Park.
2	aste-s4.3 [sc-2.4]	Monitor introduced plants.	continuous	FWS, FDEP*, counties*, universities, NGO*	10	10	10	
3	aste-s5.0 [sc-9.0]	Provide public information about four-petal pawpaw.	continuous	FWS*, FDEP, NGO, counties, private	10	5	5	
3	aste-s6.0	Establish delisting criteria.	1-2 years	FWS*, FDEP, counties, universities	10	10		
3	btms-h1.1.1 [sc-1.1, 2.2, 6.0]	Continue Federal acquisition efforts for bluetail mole skink	continuous	FWS*, NFS				Cost dependent upon specific site and amount of land acquired.
3	btms-h1.1.2	Support State acquisition efforts.	continuous	FWS*, FDEP, FWC, TNC,				Cost dependent upon

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-1.1, 2.2, 6.0]			counties, NGO, NFS, DOF				specific site and amount of land acquired
3	btms-h1.1.3 [sc-1.1, 2.2, 6.0]	Encourage acquisition by non-governmental organizations.	continuous	FWS*, FWC, FDEP, NFS, TNC, NGO, counties, DOF				Cost dependent upon specific site and amount of land acquired.
3	btms-h1.2.1 [sc-2.2]	Develop scrub habitat management guidelines.	1-2 years	FWS*, private	15	15		
3	btms-h1.2.2 [sc-2.2]	Develop cooperative scrub management programs.	1-2 years	FWS*, private	15	15		
3	btms-h1.2.3 [sc-1.2, 2.6, 3.2]	Control off-road access.	continuous	FWS*, FWC*, DOF*, WMD*, FDACS, NGO*, private, TNC*				Task currently conducted and cost is included in responsible agency's budget.
2	btms-h2.1 [sc-2.3, 3.2]	Control exotic species.	continuous	FWS*, FWC*, DOF*, NGO*, WMD*, FDACS private, TNC*	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	btms-h2.2 [sc-2.1, 3.1]	Control overgrowth.	continuous	FWS*, DOF*, FDEP*, FWC*, NGO*, private, TNC*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres overgrown with vegetation.
3	btms-h3.0 [sc-8.1-8.3]	Conduct research to determine habitat needs for this species.	3 years	FWS, FWC, universities*, private	35	35	35	
3	btms-h4.0 [sc-8.1-8.3]	Monitor status of bluetail mole skink habitat.	continuous	FWS*, DOF, FDEP, FWC*, NGO, private, TNC	10	10	10	
3	btms-h5.0 [sc-9.0]	Increase public awareness of the scrub ecosystem.	continuous	FWS*, FDEP, DOF, FWC, NGO, private, TNC	10	5	5	
2	btms-s1.1	Compile distribution data for bluetail mole skins from all available sources.	1 year	FWS*, FNAI, private, FWC, TNC	5			
2	btms-s1.2	Conduct distribution surveys to determine additional sites in need of	1 year	FWS, FNAI*, FWC, TNC	15			

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		protection.						
2	btms-s2.1 [sc-1.3]	Conduct section 7 consultations on Federal activities that may affect bluetail mole skinks.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	btms-s2.2 [sc-1.1, 6.0]	Protect bluetail mole skinks on public and private lands.	continuous	FWS*, DOF*, FDEP, FWC*, private, counties, WMD, NGO, TNC*				Cost dependent upon type of protection provided.
3	btms-s2.3	Control domestic animal predation.	continuous	FWS*, FWC*, DOF*, WMD, NGO*, private, USDA, TNC*	2	2	2	
3	btms-s2.4 [sc-2.5, 3.5, 8.3]	Control pesticide use in or adjacent to bluetail mole skink habitat.	continuous	FWS*, FWC*, DOF*, WMD, NGO*, FDACS, EPA, TNC*				Task currently implemented on public lands and cost is included in responsible agency's budget.
2	btms-s3.1 [sc-7.0]	Develop standardized survey techniques.	3-5 years	FWS*, private, universities	5	5	5	
2	btms-s3.2 [sc-7.0]	Support studies of reproduction, fecundity, and longevity.	5 years	FWS*, private, universities	35	35	35	
3	btms-s3.3 [sc-7.0]	Develop methods to determine home range size, age of dispersal, and dispersal distance of this species.	1-2 years	FWS*, private, universities	8	8		
3	btms-s4.0 [sc-3.4, 8.1-8.3]	Monitor bluetail mole skink populations.	continuous	FWS*, FWC*, private, DOF*, TNC*	10	10	10	
3	btms-s5.0 [sc-9.0]	Increase public awareness of bluetail mole skinks.	continuous	FWS*, FWC, NGO, private, TNC	10	5	5	
1	cefr-h1.1 [sc-1.1, 2.1,	Acquire habitat for fragrant prickly-apple cactus ( <i>Cereus eriophorus</i> var.	continuous	FWS*, FDEP, counties, NGO, TNC				Cost dependent upon specific site and amount of

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	6.0]	<i>fragrans</i> )						land acquired.
3	cefr-h1.2.1 [sc-1.2, 2.6, 3.2]	Control off-road vehicle use.	continuous	FWS, FDEP*				Task currently conducted and cost is included in responsible agency's budget.
1	cefr-h1.2.2 [sc-2.3, 3.2]	Control invasive and exotic plants.	continuous	FWS, FDEP*, counties, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
1	cefr-h1.2.3 [sc-2.5, 3.5, 8.3]	Reduce impacts associated with herbicide application.	continuous	FWS, FDEP*, counties, private				Task currently implemented and cost is included in responsible agency's budget.
1	cefr-h1.2.4 [sc-2.0, 4.0]	Define and implement habitat management techniques.	continuous	FWS, FDEP*				Cost dependent upon type of management implemented.
2	cefr-h1.2.5 [sc-2.0, 4.0]	Restore habitat.	continuous	FWS, FDEP*, counties	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	cefr-h2.1 [sc-7.0]	Determine effects of fire.	2-3 years	FWS*, FDEP*, universities*	20	20	20	
2	cefr-h2.2 [sc-7.0]	Determine effects of vegetative thinning.	2-3 years	FWS*, FDEP*, universities*	20	20	20	
3	cefr-h3.0 [sc-9.0]	Continue public information efforts about xeric vegetative communities and their unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private	10	5	5	
2	cefr-s1.1	Inventory known populations.	1-2 years	FWS, FDEP*, counties, FNAI*, NGO*	5	5		
2	cefr-s1.2	Search for additional populations.	1 year	FWS, FNAI*, FDEP*, NGO*, counties	4			
2	cefr-s1.3	Map distribution of known populations and suitable habitat.	1 year	FWS*, FDEP, counties, FNAI	4			Inventory and tagging of known individuals on public land is complete.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	cefr-s2.1 [sc-1.1, 6.0]	Acquire or otherwise protect habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP, counties, private				Cost dependent upon specific site and amount of land acquired.
1	cefr-s2.2 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS*, counties				Cost included in standard operating procedures of participating agency's budget.
2	cefr-s2.3.1 [sc-2.4]	Characterize the habitat and identify suitable sites for experimental outplantings.	1 year	FWS, FDEP*, NGO*	12			
1	cefr-s2.3.2 [sc-2.4]	Conduct experimental outplantings.	3 years	FWS, FDEP, NGO*	10	2	2	
1	cefr-s2.3.3 [sc-2.4]	(Re)introduce plants to protected sites.	3 years	FWS, FDEP, NGO*	15	4	4	
2	cefr-s2.3.4 [sc-2.4]	Monitor experimental outplantings.	continuous	FWS, FDEP*, NGO*, universities	2	2	2	
2	cefr-s2.4.1	Conserve germ plasm.	continuous	FWS, private, NGO*	1	1	1	Currently in collection; need to expand genetic diversity in collection.
2	cefr-s2.4.2 [sc-2.4]	Continue propagation and development of successful horticultural methods.	continuous	FWS, NGO*, private	3	3	3	
2	cefr-s2.4.3	Maintain <i>ex situ</i> collections.	continuous	FWS, NGO*, private	2	2	2	
2	cefr-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	cefr-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI				Cost included in standard operating budgets of

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								participating agencies.
1	cefr-s3.1 [sc-7.0]	Study the reproductive biology of fragrant prickly-apple.	2 years	FWS*, FDEP, universities	15	15		
1	cefr-s3.2 [sc-7.0, 8.1-8.3]	Study the response of fragrant prickly-apple to habitat management treatments.	3-5 years	FWS, FDEP*, universities*	15	15	15	
2	cefr-s3.3 [sc-7.0]	Conduct genetic studies to document genetic variation within and between populations.	1 year	FWS, universities*	6			
1	cefr-s4.1 [sc-3.4, 8.1-8.3]	Initiate quarterly monitoring program.	continuous	FWS*, FDEP	8	8	8	
3	cefr-s4.2	Collect and archive existing and historical data.	1 year	FWS*, FDEP, DOF, universities, NGO	5			
3	cefr-s5.0 [sc-9.0]	Provide public information about the fragrant prickly-apple cactus.	continuous	FWS*, FDEP, counties	10	5	5	
3	cefr-s6.0	Establish delisting criteria.	1-2 years	FWS*, FDEP, counties, universities	10	10		
3	chpy-h1.1 [sc-1.1, 2.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for pygmy fringe-tree ( <i>Chionanthus pygmaeus</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	chpy-h1.2.1 [sc-2.1-2.2, 3.1]	Conduct prescribed burns.	continuous	FWS, DOF*, FDEP*, FWC*, NGO*, private*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	chpy-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS, FDEP*, DOF*, FWC*, WMD, DOT, NGO*, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	chpy-h2.1 [sc-2.1-2.2, 3.1]	Restore natural fire regime.	continuous	FWS, DOF*, FDEP, FWC, NGO, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	chpy-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, DOF*, FDEP*, FWC*, NGO*, private*	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	chpy-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS, DOF, NGO*, universities*	30	30	30	
3	chpy-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, DOF, FDEP, FWC, NGO*, private*	10	10	10	
3	chpy-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO*, private*	10	5	5	
2	chpy-s1.1.1	Survey scrub habitat in Hardee County.	1 year	FWS*, FNAI, DOF	4			
3	chpy-s1.1.2	Continue surveys in Polk and Highlands Counties.	1 year	FWS*, FNAI, DOF	4			
2	chpy-s1.1.3	Continue surveys on protected lands.	continuous	FWS*, FNAI, DOF	2	2	2	Properties should be surveyed when acquired.
3	chpy-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI*, DOF, private, NGO, FDEP, FWC, USAF	3	3	3	
3	chpy-s2.1 [sc-1.1, 6.0]	Protect populations on private land.	continuous	FWS*, NGO				Cost dependent upon type of protection provided.
2	chpy-s2.2 [sc-1.2-1.3]	Protect populations on public lands.	continuous	FWS*, DOF, FDEP, FWC, private				Cost dependent upon type of protection provided.
3	chpy-s2.3.1	Conserve germ plasm.	continuous	FWS, private*	1	1	1	
3	chpy-s2.3.2	Maintain ex situ collection.	continuous	FWS, private*	2	2	2	
2	chpy-s2.4.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								Federal agency's budget.
3	chpy-s2.4.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	chpy-s3.1 [sc-7.0]	Continue research to determine demographic information.	3-5 years	FWS, private*, universities*	30	30	30	
3	chpy-s3.2 [sc-7.0]	Identify the relationship pygmy fringe-tree has with the weevils that infest its fruits.	2-3 years	FWS, private, universities*	10	10	10	
3	chpy-s3.3 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	3 years	FWS, private*, universities*	30	30	30	
3	chpy-s3.4 [sc-7.0]	Conduct research to assess management requirements of pygmy fringe-tree.	2 years	FWS, FDEP*, FWC*	20	20		
3	chpy-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS*, DOF*, FWC*, FDEP, NGO	10	10	10	
3	chpy-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on pygmy fringe-tree.	continuous	FWS*, DOF*, FWC*, FDEP, NGO	10	10	10	
3	chpy-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of pygmy fringe-tree.	1 year	FWS, FWC, FDEP, DOF, private*	8			
3	chpy-s5.0 [sc-9.0]	Provide public information about pygmy fringe-tree.	continuous	FWS*, FWC, NGO, private*	10	5	5	
2	clfr-h1.1 [sc-1.1, 2.1,	Secure habitat through acquisition, landowner agreements, and	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	6.0]	conservation easements for pigeon wings ( <i>Clitoria fragrans</i> ).						land acquired.
2	clfr-h1.2.1 [sc-2.1-2.2, 3.1]	Conduct prescribed burns.	continuous	FWS, DOF*, FDEP*, FWC*, NGO*, private*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	clfr-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	clfr-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS*, DOF*, FDEP, FWC*, USAF*, NGO, private				Task currently conducted and cost is included in responsible agency's budget.
3	clfr-h2.1 [sc-2.1-2.2, 3.1]	Restore natural fire regime.	continuous	FWS, DOF*, FDEP, FWC, NGO*, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	clfr-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, DOF, FDEP, FWC, NGO, private*	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	clfr-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	3-5 years	FWS, DOF, NGO, private*, universities	30	30	30	
2	clfr-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, DOF, FDEP, FWC, NGO*, private*	12	12	12	
3	clfr-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private*	10	5	5	
2	clfr-s1.1.1	Continue surveys in Polk and Highlands Counties.	1 year	FWS*, FNAI	3			
2	clfr-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, FNAI, DOF, private, NGO, FDEP, FWC, USAF	4	4	4	
3	clfr-s1.2	Maintain distribution of known	continuous	FWS*, FNAI*, FWC	3	3	3	

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		populations and suitable habitat in GIS database.						
3	clfr-s2.1 [sc-1.1, 6.0]	Acquire or otherwise protect privately owned habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP, NGO, counties				Cost dependent upon specific site and amount of land acquired.
2	clfr-s2.2 [sc-1.2-1.3]	Protect populations on public lands.	continuous	FWS*, DOF*, FDEP*, FWC*, USAF*, NGO, private				Cost dependent upon type of protection provided.
3	clfr-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS, counties*				Cost included in standard operating procedures of participating agency's budget.
3	clfr-s2.4.1	Conserve germ plasm.	continuous	FWS, private*	1	1	1	
3	clfr-s2.4.2	Maintain <i>ex situ</i> collection.	continuous	FWS, private*	2	2	2	
2	clfr-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	clfr-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
3	clfr-s3.1 [sc-7.0]	Continue research to determine demographic information.	4 years	FWS*, private*	35	35	35	
3	clfr-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	3 years	FWS, private, universities*	30	30	30	
3	clfr-s3.3 [sc-7.0]	Conduct research to assess management requirements of pigeon	4 years	FWS, private*	25	25	25	

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
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 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		wings.						
	3 clfr-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS*, DOF*, FWC*, NGO*, private*	10	10	10	
	3 clfr-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on pigeon wings.	continuous	FWS*, FWC, DOF, FDEP, USAF, NGO, private	10	10	10	
	3 clfr-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of pigeon wings.	1 year	FWS*, FWC, FDEP, DOF, private	5			
	3 clfr-s5.0 [sc-9.0]	Provide public information about pigeon wings.	continuous	FWS*, FWC, NGO, private	10	5	5	
	2 clpe-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for Florida perforate cladonia ( <i>Cladonia perforata</i> ), a lichen.	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
	2 clpe-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, DOF, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
	3 clpe-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
	3 clpe-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, DOF*, FDEP, FWC, NGO, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
	3 clpe-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, DOF, FDEP, FWC, NGO, private	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
	3 clpe-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS, DOF, NGO, private*, universities*	35	35	35	
	3 clpe-h4.0	Monitor habitat/ecological processes.	continuous	FWS*, DOF, FDEP, FWC,	15	15	15	

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aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-8.1-8.3]			NGO, private*				
3	clpe-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private*	10	5	5	
2	clpe-s1.1.1	Survey scrub and high pine habitat for Florida perforate cladonia in Osceola, Hardee, and Hendry Counties.	1 year	FWS*, FNAI, DOF	8			
2	clpe-s1.1.2	Continue surveys in Polk and Highlands Counties.	1 year	FWS*, FNAI, DOF	8			
2	clpe-s1.1.3	Continue surveys on protected lands.	continuous	FWS*, FNAI, DOF	4	4	4	Properties should be surveyed when acquired.
3	clpe-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI, FWC	3	3	3	
3	clpe-s2.1 [sc-1.1, 6.0]	Protect populations on private land through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, BLM, DOF, FWC				Cost dependent upon type of protection provided.
1	clpe-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, BLM, DOF, FWC				Cost dependent upon type of protection provided.
2	clpe-s2.3	Prepare post-hurricane restoration plans for the southeast Florida counties.	1 year	FWS*, FDEP	5			
2	clpe-s2.4.1 [sc-1.3]	Initiate section 7 consultations when Federal activities may affect Florida perforate cladonia.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	clpe-s2.4.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

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 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	clpe-s2.5	Initiate ex situ conservation of Florida perforate cladonia.	continuous	FWS, private*	3	3	3	Simpler method may be to remove lichens before prescribed burns and replace them afterward.
1	clpe-s3.1 [sc-7.0]	Continue research to determine demographic information.	3-5 years	FWS, private*, universities*	35	35	35	
1	clpe-s3.2 [sc-7.0, 8.1-8.3]	Continue research to better understand the mechanisms of establishment of Florida perforate cladonia, the effects of translocations of fragments, and the effects of fire on survival.	3-5 years	FWS, private*, universities*	30	30	30	
2	clpe-s3.3 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	2-3 years	FWS, private*, universities*	30	30	30	
2	clpe-s3.4 [sc-7.0]	Conduct research to assess management requirements of Florida perforate cladonia.	5 years	FWS, private*, universities*	25	25	25	
2	clpe-s4.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS*, DOF, FWC, NGO, private*	15	15	15	
2	clpe-s4.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on Florida perforate cladonia.	continuous	FWS*, FWC, private	15	15	15	
2	clpe-s4.3 [sc-7.0]	Develop a quantitative description of the population structure of Florida perforate cladonia.	1 year	FWS, private*	6			
3	clpe-s5.0 [sc-9.0]	Provide public information about Florida perforate cladonia.	continuous	FWS*, FWC, NGO, private*	10	5	5	
3	clpe-s6.0	Establish delisting criteria.	1-2 years	FWS*, FDEP, counties,	10	10		

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
				universities				
1	cobr-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for short-leaved rosemary ( <i>Conradina brevifolia</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
1	cobr-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, DOF, FWC, FDEP*, private*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned; high priority due to species' limited distribution.
2	cobr-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	cobr-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS*, DOF, FWC				Task currently conducted and cost is included in responsible agency's budget.
3	cobr-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, DOF, FWC, NGO, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	cobr-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, DOF, FDEP*, FWC, NGO, private*	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
2	cobr-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS, DOF, NGO, private*, universities*	30	30	30	
2	cobr-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, DOF, FDEP, FWC*, NGO, private*	10	10	10	
3	cobr-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private	10	5	5	
2	cobr-s1.1.1	Continue surveys in Polk and Highlands Counties.	1 year	FWS*, FNAI, DOF	2			

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	cobr-s1.1.2	Continue surveys on protected lands.	continuous	FWS, FWC, DOF, private*	4	4	4	
3	cobr-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI*, FWC	3	3	3	
1	cobr-s2.1 [sc-1.1, 6.0]	Acquire or protect privately owned habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP				Cost dependent upon specific site and amount of land acquired.
1	cobr-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, DOF, FWC, private				Cost dependent upon type of protection provided.
3	cobr-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS, counties*				Cost included in standard operating procedures of participating agency's budget.
1	cobr-s2.4.1	Conserve germ plasm.	continuous	FWS, private*	1	1	1	Currently in Bok's collection.
2	cobr-s2.4.2	Maintain <i>ex situ</i> collection.	continuous	FWS, private*	2	2	2	Currently in Bok's collection.
2	cobr-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	cobr-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
1	cobr-s3.1 [sc-7.0]	Continue research to determine demographic information.	3-5 years	FWS, private*	25	25	25	
2	cobr-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk	2-3 years	FWS, private*, universities*	30	30	30	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		assessment analysis.						
2	cobr-s3.3 [sc-7.0]	Conduct research to assess management requirements of short-leaved rosemary.	5 years	FWS, private*	30	30	30	
2	cobr-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS, DOF, FWC, NGO, private*	10	10	10	
1	cobr-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on short-leaved rosemary.	continuous	FWS*, FWC, FDEP	10	10	10	
2	cobr-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of short-leaved rosemary.	1 year	FWS*, DOF, FDEP, private*	8			
3	cobr-s5.0 [sc-9.0]	Provide public information about short-leaved rosemary.	continuous	FWS*, FWC, NGO, private	10	5	5	
2	crav-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements.	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	crav-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS, FWC*, FDEP, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	crav-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS, FDEP, DOF, FWC*, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	crav-h1.2.3 [sc-1.2, 2.6, 3.2]	Evaluate the effects of off-road vehicles on sensitive lands and limit access where damage to the habitat is documented.	1-2 years	FWS, FWC*, FDEP, DOF, private*	15	15		
3	crav-h1.2.4	Restore areas to suitable habitat.	continuous	FWS*, FWC, FDEP	1/acre	1/acre	1/acre	Total cost dependent upon

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-2.0, 4.0]							number of acres restored.
3	crav-h1.2.5 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, FWC*, FDEP, DOF, private*	10	10	10	
3	crav-h2.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO*, private*	10	5	5	
1 <sup>†</sup>	crav-s1.0	Determine current distribution of Avon Park harebells in Polk and Highlands Counties.	completed	FNAI*				
2	crav-s2.1 [sc- 1.0]	Protect populations on public lands.	continuous	FWS, DOF, FWC*, private				Cost dependent upon type of protection provided.
2	crav-s2.2	Continue <i>ex situ</i> conservation.	continuous	FWS, private*	2	2	2	Currently in Bok's collection.
1	crav-s2.3	Conserve germ plasm.	continuous	FWS, private*	1	1	1	Currently in Bok's collection.
2	crav-s2.4.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	crav-s2.4.2	Encourage implementation of management plans.	continuous	FWS*, FDEP, FWC, DOF				Task currently implemented and cost is included in responsible agency's budget.
3	crav-s2.4.3 [sc-1.3]	Continue to enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	crav-s3.1 [sc-7.0]	Continue research to determine species demographics.	3-5 years	FWS, private*	35	35	35	
2	crav-s3.2 [sc-7.0]	Develop population viability and risk assessment.	3 years	FWS, private*, universities*	30	30	30	
2	crav-s3.3	Conduct research to assess	2-3 years	FWS, NGO, private*	30	30	30	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-7.0]	management requirements of Avon Park harebells.						
2	crav-s4.1	Collect existing and historical data and place in a central location.	continuous	FWS*, FNAI*, NGO, private*	5	5	5	
3	crav-s5.0 [sc-9.0]	Provide public information about Avon Park harebells.	continuous	FWS*, FWC, NGO, private*	10	5	5	
3	crav-s6.0	Establish reclassification criteria.	1-2 years	FWS*, FDEP, NGO, counties, universities	10	10		
1	dich-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for Garrett's mint ( <i>Dicerandra christmanii</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	dich-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, DOF*, FDEP, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	dich-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
1	dich-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS*, FDEP, FWC				Task currently conducted and cost is included in responsible agency's budget.
3	dich-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, FWC, FDEP, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned; a fire at Flamingo Villas in 2001 probably means no more burning is needed for 15 or more years.
3	dich-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, FDEP, FWC, NGO, private	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	dich-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	2-3 years	FWS*, DOF, NGO, private, universities	20	20	20	
2	dich-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS*, FWC, FDEP, DOF	8	8	8	
3	dich-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private*	10	5	5	
2 <sup>†</sup>	dich-s1.1.1	Continue surveys in Highlands County.	completed	FWS, private*, FNAI, universities				
1	dich-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, FWC, NGO, private	2	2	2	
3	dich-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI, FWC	2	2	2	
1	dich-s2.1 [sc-1.1, 6.0]	Acquire or otherwise protect privately owned habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP				Cost dependent upon specific site and amount of land acquired.
1	dich-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, private				Cost dependent upon type of protection provided.
3	dich-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS*, counties				Cost included in standard operating procedures of participating agency's budget.
1	dich-s2.4.1	Conserve germ plasm.	continuous	FWS, private*	1	1	1	Currently in Bok's collection.
2	dich-s2.4.2	Maintain <i>ex situ</i> collection.	continuous	FWS, private*	2	2	2	Currently in Bok's collection.
2	dich-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of

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aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								Federal agency's budget.
3	dich-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
1	dich-s2.6.1 [sc-2.4]	Establish a protocol for reintroduction.	1-2 years	FWS*, private	7	7		
1	dich-s2.6.2 [sc-2.4]	Locate potential (re)introduction sites.	1 year	FWS*, NGO, private, DOF, FWC	5			
1	dich-s2.6.3 [sc-2.4]	(Re)introduce plants to protected sites.	3 years	FWS*, private	8	4	4	
1	dich-s3.1 [sc-7.0]	Continue research to determine demographic information.	3 years	FWS*, private, universities	20	20	20	
3 <sup>†</sup>	dich-s3.2 [sc-7.0]	Assess genetic variability in Garrett's mint.	completed	Archbold*, NGO, universities				See Menges et al. (2001).
1	dich-s3.3 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	3 years	FWS*, private*, universities	25	25	25	
2	dich-s3.4 [sc-7.0]	Conduct research to assess management requirements of Garrett's mint.	3 years	FWS, private*, universities	25	25	25	
1	dich-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS, NGO, private*	7	7	7	
1	dich-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on Garrett's mint.	continuous	FWS*, private	7	7	7	
2	dich-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of Garrett's mint.	1 year	FWS, DOF, FDEP, private*	4			

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	dich-s4.3 [sc-2.4]	Monitor re-introduced plants.	continuous	FWS, FWC, private*	4	4	4	
3	dich-s5.0 [sc-9.0]	Provide public information about Garrett's mint.	continuous	FWS*, FWC, NGO, private*	10	5	5	
1	difr-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for scrub mint ( <i>Dicerandra frutescens</i> ).	continuous	FWS, FDEP, NGO*				Cost dependent upon specific site and amount of land acquired.
2	difr-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS, DOF, private*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	difr-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS, FDEP, DOF, FWC*, WMD, DOT, NGO, private*	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
2	difr-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS, FWC*, private*				Task currently conducted and cost is included in responsible agency's budget.
3	difr-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS, DOF, private*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	difr-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS, private*	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
2	difr-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	3-5 years	FWS, universities, private*	15	15	15	
2	difr-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, private*	5	5	5	
3	difr-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS, FDEP, DOF, FWC, NGO, private*	10	5	5	
1	difr-s1.1.1	Continue surveys in Highlands County.	1 year	FWS*, FNAI	2			
3 <sup>†</sup>	difr-s1.1.2	Continue surveys on protected lands.	completed	Archbold*				Surveys completed on

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cepr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								Archbold and the few nearby sites which are the only protected lands.
3	difr-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI, FWC, private*	2	2	2	
2 <sup>†</sup>	difr-s1.3	Determine identity of difr population outside accepted scrub mint range.	completed	FWS, universities, private, FDEP*	3	3		Huck (2001) updated the systematics.
1	difr-s2.1 [sc-1.1, 6.0]	Acquire or otherwise protect privately owned habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP				Cost dependent upon specific site, amount of land acquired, or type of protection provided.
2	difr-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, DOT, private				Cost dependent upon type of protection provided.
3	difr-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS*, counties*				Cost included in standard operating procedures of participating agency's budget.
1	difr-s2.4.1	Conserve germ plasm.	continuous	FWS, private*	1	1	1	Currently in Bok's collection.
2	difr-s2.4.2	Maintain <i>ex situ</i> collection.	continuous	FWS, private*	2	2	2	
2	difr-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	difr-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	difr-s2.6.1	Establish a protocol for reintroduction.	1-2 years	FWS*, private	3	3		

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 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-2.4]							
2	difr-s2.6.2 [sc-2.4]	Locate potential (re)introduction sites.	1 year	FWS*, NGO, private*, DOF, FWC	2			
2	difr-s2.6.3 [sc-2.4]	Reintroduce plants to protected sites.	3 years	FWS, private*	5	5	5	
1	difr-s3.1 [sc-7.0]	Continue research to determine demographic information.	3 years	FWS, private*	20	20	20	
3 <sup>†</sup>	difr-s3.2 [sc-7.0]	Assess genetic variability for scrub mint.	completed	Archbold*, NGO, universities				See Menges et al. (2001).
1	difr-s3.3 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	2-3 years	FWS, private*, universities	25	25	25	Researchers at Archbold are preparing to publish a population viability analysis.
2	difr-s3.4 [sc-7.0]	Conduct research to assess management requirements of scrub mint.	3 years	FWS, private*	20	20	20	
2	difr-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS, private*	5	5	5	
1	difr-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on scrub mint.	continuous	FWS, private*	5	5	5	
2	difr-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of scrub mint.	1 year	FWS, private*	4			Researchers at Archbold are preparing to publish a population viability analysis.
2	difr-s4.3 [sc-2.4]	Monitor reintroduced plants.	continuous	FWS, private*	3	3	3	
3	difr-s5.0 [sc-9.0]	Provide public information about scrub mint.	continuous	FWS, FWC, NGO, private*	10	5	5	
1	diim-h1.1	Secure habitat through acquisition,	continuous	FWS*, FDEP, NGO,				Cost dependent upon

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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-1.1, 6.0]	landowner agreements, and conservation easements for Lakela's mint ( <i>Dicerandra immaculata</i> ).		counties				specific site and amount of land acquired.
2	diim-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, DOF, private*, counties*	1.5/acre	1.5/acre	1.5/acre	Total cost dependent upon number of acres burned.
3	diim-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP*, DOF*, FWC*, WMD, DOT, NGO, private*, counties*	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
2	diim-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where Lakela's mint is growing.	continuous	FWS*, private*, counties*				Task currently conducted and cost is included in responsible agency's budget.
3	diim-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, private*, counties*, DOF	1.5/acre	1.5/acre	1.5/acre	Total cost dependent upon number of acres burned.
3	diim-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, counties*, private*	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
2	diim-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS, universities*, NGO*	15	15	15	
2	diim-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS*, counties*, private*	3	3	3	
3	diim-h5.0 [sc-9.0]	Provide public information about xeric vegetative communities and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private, counties	10	5	5	
2	diim-s1.1	Conduct surveys for Lakela's mint.	as needed	FWS*, FDEP, counties*, NGO*	2			
3	diim-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, private, counties, FNAI	2	2	2	
1	diim-s2.1	Protect habitat through acquisition,	continuous	FWS*, counties, FDEP,				Cost dependent upon type of

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 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		conservation easements or agreements with landowners.		private				protection provided.
1	diim-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, counties*				Cost dependent upon type of protection provided.
2	diim-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS*, counties, local government				Cost included in standard operating procedures of participating agency's budget.
1	diim-s2.4.1	Conserve germ plasm.	continuous	FWS, private, NGO*	1	1	1	Currently in Bok's collection.
2	diim-s2.4.2	Maintain <i>ex situ</i> collection.	continuous	FWS, private, NGO*	2	2	2	Introduced population at Hobe Sound National Wildlife Refuge is backup for Harbor Branch population; currently in Bok's collection.
2	diim-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	diim-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI				Cost included in standard operating budgets of participating agencies.
1	diim-s2.6.1 [sc-2.4]	Establish a protocol for reintroduction.	1 year	FWS*, private, counties, NGO*	3			
1	diim-s2.6.2 [sc-2.4]	Locate potential (re)introduction sites.	1 year	FWS*, counties, private, NGO*	1			
1	diim-s2.6.3 [sc-2.4]	(Re)introduce plants to protected sites.	3 years	FWS*, private, counties, NGO*	5	5	5	

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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	diim-s3.1 [sc-7.0]	Conduct research to determine demographic information.	3 years	FWS*, private, universities, NGO*	15	15	15	
1	diim-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analyses.	1-2 years	FWS*, private, universities, NGO	30	30		
1	diim-s3.3 [sc-7.0]	Conduct research to assess management requirements of Lakela's mint.	3 years	FWS*, universities, private	15	15	15	
2	diim-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS*, counties, private, universities, NGO	3	3	3	
1	diim-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on Lakela's mint.	continuous	FWS*, counties*, private, universities, NGO*	3	3	3	
2	diim-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of Lakela's mint.	1 year	FWS*, private, counties, NGO*	3			
2	diim-s4.3 [sc-2.4]	Monitor re-introduced Lakela's mint plants.	continuous	FWS*, counties, private, NGO*	1	1	1	
3	diim-s5.0 [sc-9.0]	Provide public information about Lakela's mint.	continuous	FWS*, FWC, NGO, private, counties	10	5	5	
2	ercu-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for snakeroot ( <i>Eryngium cuneifolium</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	ercu-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS, FWC, FDEP, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	ercu-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS, FDEP, DOF, FWC*, WMD, DOT, NGO,	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested

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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
				private*				with exotics.
3	ercu-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where snakeroot is growing.	continuous	FWS, FWC*, FDEP, DOF, private				Task currently conducted and cost is included in responsible agency's budget.
3	ercu-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS, FWC*, FDEP, DOF*, private*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	ercu-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS, FWC*, FDEP, DOF	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	ercu-h3.0 [sc-8.1-8.3]	Continue habitat-level research projects.	3-5 years	FWS, private*	15	15	15	
2	ercu-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, FWC, FDEP, DOF, private*	4	4	4	
3	ercu-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private*	10	5	5	
3 <sup>†</sup>	ercu-s1.1.1	Continue surveys in Highlands County.	completed	FNAI*				
2	ercu-s1.1.2	Continue surveys on protected lands.	continuous	FWS, DOF, FWC*, FDEP	1	1	1	Properties should be surveyed when acquired.
2	ercu-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI*, private	2	2	2	
1	ercu-s2.1 [sc-1.1, 6.0]	Protect habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS, FDEP				Cost dependent upon type of protection provided.
1	ercu-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, DOF, FWC*, private				Cost dependent upon type of protection provided.
2	ercu-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS, counties*				Cost included in standard operating procedures of participating agency's

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								budget.
2	ercu-s2.4	Conserve germ plasm.	continuous	FWS, private*	1	1	1	Currently in Bok's collection.
2	ercu-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	ercu-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI				Cost included in standard operating budgets of participating agencies.
2 <sup>†</sup>	ercu-s3.1 [sc-7.0]	Continue research to determine demographic information.	completed	FWS, private*, universities	15	15		Archbold has determined demographic information.
2 <sup>†</sup>	ercu-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	completed	FWS, private*, universities	30	30		Archbold has developed a population viability analysis.
2	ercu-s3.3 [sc-7.0]	Conduct research to assess management requirements of snakeroot.	1-2 years	FWS, private*	15	15		
2	ercu-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS, FWC, FDEP, DOF, NGO, private*	4	4	4	
2	ercu-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on snakeroot.	continuous	FWS, FWC, FDEP, private*	4	4	4	
2	ercu-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of snakeroot.	1 year	FWS, FWC, FDEP, private*	3			Mostly completed by Archbold research.
3	ercu-s5.0 [sc-9.0]	Provide public information about snakeroot.	continuous	FWS*, FWC, NGO, private*	10	5	5	
3	ercu-s6.0	Develop delisting criteria.	1-2 years	FWS*, FDEP, counties, universities	10	10		Delisting criteria are to be developed after the species

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								is reclassified to threatened status.
2	hycu-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for Highlands scrub hypericum ( <i>Hypericum highlandensis</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	hycu-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS, FWC, FDEP, DOF*, NGO	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	hycu-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS, FDEP, DOF, FWC*, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	hycu-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS, FWC*, FDEP, DOF, private				Task currently conducted and cost is included in responsible agency's budget.
3	hycu-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS, FWC*, FDEP, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	hycu-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS, FWC*, FDEP, DOF	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	hycu-h3.0 [sc-8.1-8.3]	Continue habitat-level research projects.	2-3 years	FWS, NGO, private*, university*	20	20	20	Ongoing monitoring of fire effects implemented.
2	hycu-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, FWC, FDEP, DOF, private*	7	7	7	
3	hycu-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private	10	5	5	
3	hycu-s1.1.1	Continue surveys in Polk and Highlands Counties.	1 year	FWS, private*	4			FNAI survey largely fulfilled this task.
2	hycu-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, NGO, DOF, FWC,	1	1	1	

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aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
				FDEP				
3	hycu-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS, private*, FNAI*	3	3	3	
2	hycu-s2.1 [sc-1.1, 6.0]	Protect habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP				Cost dependent upon type of protection provided.
2	hycu-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS, DOF, FWC*, private				Cost dependent upon type of protection provided.
2	hycu-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS, counties*				Cost included in standard operating procedures of participating agency's budget.
3	hycu-s2.4	Conserve germ plasm.	continuous	FWS, private*	1	1	1	Currently in Bok's collection.
2	hycu-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	hycu-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2 <sup>†</sup>	hycu-s3.1 [sc-7.0]	Continue research to determine demographic information.	completed	FWS, private*, universities				Archbold has determined demographic data.
2 <sup>†</sup>	hycu-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	completed	FWS, private*, universities				Archbold has developed a population viability analysis.
2	hycu-s3.3 [sc-7.0]	Conduct research to assess management requirements of	1-2 years	FWS, private*	20	20		

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		Highlands scrub hypericum.						
2	hycu-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS, FWC, FDEP, DOF, NGO*, private*	5	5	5	
2	hycu-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on Highlands scrub hypericum.	continuous	FWS, FWC*, FDEP, private*	5	5	5	
2	hycu-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of Highlands scrub hypericum.	1 year	FWS, FWC, FDEP, private*	4			
3	hycu-s5.0 [sc-9.0]	Provide public information about Highlands scrub hypericum.	continuous	FWS*, FWC, NGO, private*	10	5	5	
3	hycu-s6.0	Develop delisting criteria.	1-2 years	FWS*, FDEP, counties, universities	10	10		Delisting criteria are to be developed after the species is reclassified to threatened status.
2	lioh-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for scrub blazing star ( <i>Liatris ohlingerae</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	lioh-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, FWC, FDEP, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	lioh-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS, FDEP*, DOF*, FWC*, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	lioh-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS, FWC*, FDEP, DOF*				Task currently conducted and cost is included in responsible agency's budget.

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	lioh-h2.1 [sc-2.1, 3.1]	Restore a natural fire regime.	continuous	FWS, FWC*, FDEP*, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	lioh-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS, FWC*, FDEP*, DOF*	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	lioh-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS, private*, universities*	25	25	25	
2	lioh-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, FWC*, FDEP*, DOF*	10	10	10	
3	lioh-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private	10	5	5	
3	lioh-s1.1.1	Continue surveys in Polk and Highlands Counties.	1 year	FWS*, FNAI	4			
2	lioh-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, NGO, DOF, FWC, FDEP	1	1	1	Properties should be surveyed when acquired.
3	lioh-s1.2	Maintain distribution of known populations and suitable habitat in a GIS database.	continuous	FWS*, FNAI, private*	3	3	3	
3	lioh-s2.1 [sc-1.1, 6.0]	Protect populations on private land through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP				Cost dependent upon type of protection provided.
2	lioh-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS, DOF*, FWC*, private				Cost dependent upon type of protection provided.
3	lioh-s2.3.1	Conserve germ plasm.	continuous	FWS, private*	1	1	1	Currently in Bok's collection.
3	lioh-s2.3.2	Maintain <i>ex situ</i> collection.	continuous	FWS, private*	2	2	2	Currently in Bok's collection.
2	lioh-s2.4.1	Initiate section 7 consultation when	continuous	All Federal agencies				Cost included in standard

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-1.3]	applicable.						operating procedures of Federal agency's budget.
3	lioh-s2.4.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	lioh-s3.1 [sc-7.0]	Continue research to determine demographic information.	5 years	FWS, private*	20	20	20	
3	lioh-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	2-3 years	FWS, private*, universities	30	30	30	
2	lioh-s3.3 [sc-7.0]	Conduct research to assess management requirements of scrub blazing star.	5 years	FWS, DOF, private*	25	25	25	
2	lioh-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS, FWC, FDEP, DOF, NGO, private*	10	10	10	
3	lioh-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on scrub blazing star.	continuous	FWS, FWC, FDEP, private*	10	10	10	
3	lioh-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of scrub blazing star.	1 year	FWS, FWC, FDEP, DOF, private*	5			
3	lioh-s5.0 [sc-9.0]	Provide public information about scrub blazing star.	continuous	FWS*, FWC, NGO, private*	10	5	5	
3	lioh-s6.0	Develop delisting criteria.	1-2 years	FWS*, FDEP, counties, universities	10	10		
3	pach-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of

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 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		conservation easements for papery whitlow-wort ( <i>Paronychia chartacea</i> ssp. <i>chartacea</i> ).						land acquired.
2	pach-h1.2.1 [sc-2.1, 3.1]	Perform prescribed fires.	continuous	FWS*, FWC, FDEP, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	pach-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	pach-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS*, FWC, FDEP, DOF, NGO, counties				Task currently conducted and cost is included in responsible agency's budget.
3	pach-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, FWC, FDEP, DOF	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	pach-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, FWC, FDEP, DOF	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	pach-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	3-5 years	FWS*	25	25	25	
2	pach-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS*, FWC, FDEP, DOF	12	12	12	
3	pach-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private*	10	5	5	
3 <sup>†</sup>	pach-s1.1.1	Continue surveys in Polk, Osceola, and Highlands Counties.	completed	FNAI*				
3	pach-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, NGO, DOF, FWC, FDEP	1	1	1	
3	pach-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI* private*	3	3	3	

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	pach-s2.1 [sc-1.1, 6.0]	Protect privately-owned habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP				Cost dependent upon type of protection provided.
3	pach-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, DOF, FWC, private				Cost dependent upon type of protection provided.
3	pach-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS, counties*				Cost included in standard operating procedures of participating agency's budget.
3	pach-s2.4.1	Conserve germ plasm.	continuous	FWS, private*	1	1	1	Currently in Bok's collection.
3	pach-s2.4.2	Maintain <i>ex situ</i> collection.	continuous	FWS, private*	2	2	2	
2	pach-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	pach-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
3	pach-s3.1 [sc-7.0]	Continue research to determine demographic information.	3 years	FWS, private, universities*	25	25	25	
3	pach-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	3 years	FWS, private, universities*	30	30	30	
3	pach-s3.3 [sc-7.0]	Conduct research to assess management requirements of papery whitlow-wort.	5 years	FWS, DOF, private*	25	25	25	
3	pach-s4.1.1	Monitor to detect changes in	continuous	FWS*, FWC, FDEP, DOF,	10	10	10	

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 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-3.4, 8.1-8.3]	demographic characteristics.		NGO, private				
3	pach-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on papery whitlow-wort.	continuous	FWS*, FWC, FDEP, private	10	10	10	
2	pach-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of papery whitlow-wort.	1 year	FWS, FWC, FDEP, DOF, private*	5			
3	pach-s5.0 [sc-9.0]	Provide public information about papery whitlow-wort.	continuous	FWS*, FWC, NGO, private*	10	5	5	
3	poba-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for wireweed ( <i>Polygonella basiramia</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	poba-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, FWC, FDEP, USAF, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	poba-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	poba-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, FWC, FDEP, USAF, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	poba-h2.2	Ensure natural populations.	continuous	FWS*, FWC, FDEP, DOF	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced for natural populations.
3	poba-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS*, private	20	20	20	
2	poba-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS*, FWC, FDEP, DOF, USAF	8	8	8	

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aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	poba-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private*	10	5	5	
3	poba-s1.1.1	Continue surveys in Polk and Highlands Counties.	1 year	FWS*, NGO, DOF, FWC, FDEP	4			FNAI survey largely fulfilled this task.
3	poba-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, NGO, DOF, FWC, FDEP	1	1	1	
3	poba-s1.2	Wireweed identification.	1 year	FWS*, universities	2			A matter of comparing herbarium specimens; may need to make some new collections for voucher purposes.
3	poba-s1.3	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, private	3	3	3	
3	poba-s2.1 [sc-1.1, 6.0]	Protect populations on private land through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP				Cost dependent upon type of protection provided.
3	poba-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, FDEP, FWC, USAF, private				Cost dependent upon type of protection provided.
3	poba-s2.3.1	Conserve germ plasm.	continuous	FWS*, private*	1	1	1	Currently in Bok's collection.
3	poba-s2.3.2	Maintain ex situ collection.	continuous	FWS*, private*	2	2	2	Currently in Bok's collection.
3	poba-s2.4.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	poba-s2.4.2	Enforce take prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-1.3]							operating budgets of participating agencies.
2	poba-s3.1 [sc-7.0]	Conduct research to determine demographic information.	1-2 years	FWS*, private*	20	20		
3	poba-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	2-3 years	FWS*, private*, universities	30	30	30	
3	poba-s3.3 [sc-7.0]	Conduct research to assess management requirements of wireweed.	2-3 years	FWS*, FWC, DOF, USAF, private*	20	20	20	
2	poba-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS*, FWC, FDEP, DOF, USAF, NGO, private	10	10	10	
3	poba-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on wireweed.	continuous	FWS*, FWC, FDEP, private	10	10	10	
2	poba-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of wireweed.	1 year	FWS*, FWC, FDEP, DOF, private	4			
3	poba-s5.0 [sc-9.0]	Provide public information about wireweed.	continuous	FWS*, FWC, NGO, private	10	5	5	
2	pole-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for Lewton's polygala ( <i>Polygala lewtonii</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	pole-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, FWC, FDEP, DOF	1.5/ acre	1.5/ acre	1.5/ acre	Total cost dependent upon number of acres burned.
3	pole-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.

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 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	pole-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS*, FWC, DOF, FDEP				Task currently conducted and cost is included in responsible agency's budget.
3	pole-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, FWC, FDEP, DOF	1.5/acre	1.5/acre	1.5/acre	Total cost dependent upon number of acres burned.
3	pole-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, FWC, FDEP, DOF	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	pole-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS*, DOF, private	30	30	30	Results from studies at Ocala National Forest and Carter Creek on Lake Wales Ridge NWR partially fulfill this task.
2	pole-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS*, FWC, FDEP, DOF	12	12	12	
3	pole-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private	10	5	5	
3	pole-s1.1.1	Survey scrub, high pine, and turkey oak habitats in Osceola and Hardee Counties.	1 year	FWS*, FNAI	8			Potential habitat at Lake Wales Ridge adequately surveyed by FNAI. See Schultz et al. (1999).
2	pole-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, DOF, FDEP, NGO	1	1	1	
3	pole-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, private	4	4	4	
2	pole-s2.1 [sc-1.1, 6.0]	Protect populations on private land through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP, NGO				Cost dependent upon type of protection provided.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	pole-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, FDEP, private				Cost dependent upon type of protection provided.
2	pole-s2.3	Develop ex situ collection.	continuous	FWS*, private	2	2	2	Currently in Bok's collection.
3	pole-s2.4.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	pole-s2.4.2 [sc-1.3]	Enforce take prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	pole-s3.1 [sc-7.0]	Continue research to determine demographic information.	5 years	FWS*, private	25	25	25	
3	pole-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	3-5 years	FWS*, private, universities	30	30	30	
2	pole-s3.3 [sc-7.0]	Conduct research to assess management requirements of Lewton's polygala.	5 years	FWS*, NGO, private	25	25	25	
2	pole-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS*, FWC, FDEP, DOF, NGO, private	10	10	10	
3	pole-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on Lewton's polygala.	continuous	FWS*, FWC, FDEP, private	10	10	10	
2	pole-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of Lewton's polygala	1 year	FWS*, FWC, FDEP, DOF, private	5			
3	pole-s5.0	Provide public information about	continuous	FWS*, FWC, NGO, private	10	5	5	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-9.0]	Lewton's polygala.						
3	pomy-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for sandlace ( <i>Polygala myriophylla</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	pomy-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, FWC, FDEP, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	pomy-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, FDEP, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	pomy-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, FWC, FDEP, DOF*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	pomy-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, FWC, FDEP, DOF	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	pomy-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS*, private	30	30	30	
2	pomy-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS*, FWC, FDEP, DOF	10	10	10	
3	pomy-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private	10	5	5	
3	pomy-s1.1.1	Continue surveys in Polk, Osceola, and Highlands Counties.	1 year	FWS*, FNAI, FWC, DOF, FDEP, NGO	5			
3	pomy-s1.1.2	Continue surveys on protected lands.	continuous	FWS*, FNAI, FWC, DOF, FDEP, NGO	1	1	1	
3	pomy-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, FNAI, private	4	4	4	
3	pomy-s2.1	Protect populations on private land	continuous	FWS*, FDEP				Cost dependent upon type of

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					FY 1	FY 2	FY 3	
	[sc-1.1, 6.0]	through acquisition, conservation easements, or agreements with landowners.						protection provided.
2	pomy-s2.2 [sc-1.2, 1.3]	Protect sandlace populations on public lands.	continuous	FWS*, FDEP, FWC, private				Cost dependent upon type of protection provided.
3	pomy-s2.3	Develop <i>ex situ</i> and germ plasm collections of sandlace.	continuous	FWS*, private*	3	3	3	Currently in Bok's collection.
3	pomy-s2.4.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	pomy-s2.4.2 [sc-1.3]	Enforce take prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	pomy-s3.1 [sc-7.0]	Continue research to determine demographic information.	5 years	FWS*, universities*, private	25	25	25	
3	pomy-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	2 years	FWS*, private, universities*	39	39		
2	pomy-s3.3 [sc-7.0]	Conduct research to assess management requirements of sandlace.	4 years	FWS*, private	25	25	25	
2	pomy-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS*, FWC, DOF, FDEP	10	10	10	
3	pomy-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on sandlace.	continuous	FWS*, FWC, FDEP, private	10	10	10	
2	pomy-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of sandlace.	1 year	FWS*, FWC, FDEP, DOF, private	5			
3	pomy-s5.0	Provide public information about	continuous	FWS*, FWC, NGO, private	10	5	5	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[sc-9.0]	sandlace.						
3	sask-h1.1.1 [sc-1.1, 6.0]	Continue Federal acquisition efforts for sand skink.	continuous	FWS*, NFS				Cost dependent upon specific site and amount of land acquired.
3	sask-h1.1.2 [sc-1.1, 6.0]	Support State acquisition efforts.	continuous	FWS*, FDEP, FWC, TNC, counties, NGO, NFS, DOF				Cost dependent upon specific site and amount of land acquired.
3	sask-h1.1.3 [sc-1.1, 6.0]	Encourage acquisition by non-government organizations.	continuous	FWS*, FWC, FDEP, NFS, TNC, NGO, counties, DOF				Cost dependent upon specific site and amount of land acquired.
3	sask-h1.2.1	Develop scrub habitat management guidelines.	1-2 years	FWS*, private	15	15		
3	sask-h1.2.2	Develop cooperative scrub management programs.	1-2 years	FWS*, private	15	15		
3	sask-h1.2.3 [sc-1.2, 2.6, 3.2]	Control off-road access.	continuous	FWS*, FWC*, DOF*, WMD*, FDACS, NGO*, private, TNC*				Task currently conducted and cost is included in responsible agency's budget.
2	sask-h2.1 [sc-2.3, 3.2]	Control exotic species.	continuous	FWS*, FWC*, DOF*, WMD*, FDACS, NGO*, private, TNC*	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	sask-h2.2 [sc-2.1, 3.1]	Control overgrowth.	continuous	FWS*, DOF*, FDEP*, FWC*, NGO*, private, TNC*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres overgrown with vegetation.
3	sask-h3.0 [sc-8.1-8.3]	Conduct research to determine habitat needs for this species.	3 years	FWS, FWC, universities*, private	35	35	35	
3	sask-h4.0 [sc-8.1-8.3]	Monitor status of sand skink habitat.	continuous	FWS*, DOF, FDEP, FWC*, NGO, private, TNC	12	12	12	
3	sask-h5.0	Increase public awareness of the scrub	continuous	FWS*, FDEP, DOF, FWC,	10	5	5	

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					FY 1	FY 2	FY 3	
	[sc-9.0]	ecosystem.		NGO, private, TNC				
2	sask-s1.1	Compile distribution data for sand skinks from all available sources.	1 year	FWS*, FNAI, private, FWC, TNC	5			
3	sask-s1.2 [sc- 7.0]	Conduct distribution surveys to determine additional sites in need of protection.	1 year	FWS, FNAI*, FWC, TNC	15			
3	sask-s2.1 [sc-1.3]	Conduct section 7 consultations on Federal activities that may affect sand skinks.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	sask-s2.2	Protect sand skinks on public lands.	continuous	FWS*, DOF*, FWC*, FDEP counties, WMD, private, NGO, TNC*				Cost dependent upon type of protection provided.
2	sask-s2.3 [sc-1.1, 1.3]	Protect sand skinks on private lands.	continuous	FWS*, DOF, FDEP, FWC*, private, counties*, TNC				Cost dependent upon type of protection provided.
3	sask-s2.4 [sc-2.5, 3.5, 8.3]	Control pesticide use in or adjacent to sand skink habitat.	continuous	FWS*, FWC*, DOF*, WMD, NGO*, FDACS, EPA, TNC*				Task currently implemented on public lands and cost is included in responsible agency's budget.
2	sask-s3.1 [sc-7.0]	Develop standardized survey techniques.	3-5 years	FWS*, private, universities	10	10	10	
3	sask-s3.2 [sc-7.0]	Support studies of reproduction, fecundity, and longevity.	5 years	FWS*, private, universities	35	35	35	
3	sask-s4.0 [sc-3.4, 8.1-8.3]	Monitor sand skink populations.	continuous	FWS*, FWC*, private, DOF*, TNC*	10	10	10	
3	sask-s5.0 [sc-9.0]	Increase public awareness of sand skinks.	continuous	FWS*, FWC, NGO, private, TNC	10	5	5	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	waca-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for Carter's mustard ( <i>Warea carteri</i> ).	continuous	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
2	waca-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS*, FWC, FDEP, DOF	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	waca-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS*, DOF, FWC, WMD, DOT, NGO, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	waca-h1.2.3 [sc-1.2, 2.6, 3.2]	Control access to areas where listed plants are growing.	continuous	FWS*, FWC, FDEP, DOF				Task currently conducted and cost is included in responsible agency's budget.
3	waca-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS*, FWC, FDEP, DOF	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	waca-h2.2 [sc-2.4]	Enhance sites with native plant species.	continuous	FWS*, FWC, FDEP, DOF	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	waca-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS*, private, universities	25	25	25	
2	waca-h4.0 [sc-8.1-8.3]	Monitor habitat and ecological processes.	continuous	FWS*, FWC, FDEP, DOF, NGO	10	10	10	
3	waca-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO, private	10	5	5	
2	waca-s1.1.1	Survey scrub habitat in the coastal counties.	1 year	FWS*, FNAI, counties, volunteers	4			
2	waca-s1.1.2	Continue surveys in Polk and Highlands Counties.	1 year	FWS*, FNAI	4			
2	waca-s1.1.3	Continue surveys on protected lands.	continuous	FWS*, DOF, FDEP, FWC, NGO	1	1	1	

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	waca-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, private	3	3	3	
2	waca-s2.1 [sc-1.1, 6.0]	Protect privately-owned habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP, NGO, private				Cost dependent upon type of protection provided.
2	waca-s2.2 [sc-1.2, 1.3]	Protect populations on public lands.	continuous	FWS*, FWC, DOF, BLM, private				Cost dependent upon type of protection provided.
2	waca-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS*, counties				Cost included in standard operating procedures of participating agency's budget.
2	waca-s2.4	Conserve germ plasm.	continuous	FWS*, private*	1	1	1	
3	waca-s2.5.1 [sc-1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	waca-s2.5.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	waca-s3.1 [sc-7.0]	Continue research to determine demographic information.	5 years	FWS*, private, universities	25	25	25	
2	waca-s3.2 [sc-7.0]	Once demographic data are known, conduct population viability and risk assessment analysis.	2-3 years	FWS*, private, universities	30	30	30	
2	waca-s3.3 [sc-7.0]	Conduct research to assess management requirements of Carter's mustard.	3 years	FWS*, private, universities	25	25	25	Archbold has been conducting seed bank research for several years.

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cefr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	waca-s4.1.1 [sc-3.4, 8.1-8.3]	Monitor to detect changes in demographic characteristics.	continuous	FWS*, FWC, DOF, FDEP, private	10	10	10	
2	waca-s4.1.2 [sc-3.4, 8.1]	Monitor the effects of various land management actions on Carter's mustard.	continuous	FWS*, FWC, FDEP, DOF, NGO, private	10	10	10	
2	waca-s4.2 [sc-7.0]	Develop a quantitative description of the population structure of Carter's mustard.	1 year	FWS*, FWC, FDEP, DOF, private	4			
3	waca-s5.1 [sc-9.0]	Public outreach efforts must also continue to address the increasing concern that horticultural demand for this and other rare species may not benefit conservation of threatened and endangered species.	continuous	FWS*, FWC, NGO, private	10	5	5	
3	waca-s5.2	Private landowners should be made aware of the rarity of <i>W. carteri</i> and its specialized habitat needs.	continuous	FWS*, FWC, FDEP, private	3	3	3	
1	zice-h1.1 [sc-1.1, 6.0]	Secure habitat through acquisition, landowner agreements, and conservation easements for Florida ziziphus ( <i>Ziziphus celata</i> ).	continuous	FWS*, FDEP, NGO, private				Cost dependent upon specific site and amount of land acquired.
2	zice-h1.2.1 [sc-2.1, 3.1]	Conduct prescribed burns.	continuous	FWS, DOF*, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	zice-h1.2.2 [sc-2.3, 3.2]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS, FDEP, DOF*, FWC, WMD, DOT, NGO, private*	2/acre	2/acre	2/acre	Total cost dependent upon number of acres infested with exotics.
3	zice-h1.2.3 [sc-1.2, 2.6]	Control access to areas where listed plants are growing.	continuous	FWS, DOF*				Task currently conducted and cost is included in

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 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	3.2]							responsible agency's budget.
2	zice-h2.1 [sc-2.1, 3.1]	Restore natural fire regime.	continuous	FWS, DOF*, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	zice-h3.0 [sc-8.1-8.3]	Conduct habitat-level research projects.	5 years	FWS, DOF, private*	20	20	20	
2	zice-h4.0 [sc-8.1-8.3]	Monitor habitat/ecological processes.	continuous	FWS, DOF*, NGO, private	7	7	7	
3	zice-h5.0 [sc-9.0]	Provide public information about scrub and its unique biota.	continuous	FWS*, FDEP, DOF, FWC, NGO*, private*	10	5	5	
2	zice-s1.1.1	Conduct surveys in Polk and Highlands Counties.	1 year	FWS*, private	3			
2	zice-s1.1.2	Continue surveys for Florida ziziphus on protected lands.	continuous	FWS, FNAI, FDEP, DOF*, private	1	1	1	
2	zice-s1.2	Maintain distribution of known populations and suitable habitat in GIS database.	continuous	FWS*, private	2	2	2	
1	zice-s2.1 [sc-1.1, 6.0]	Protect privately-owned habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, NGO*, private				Cost dependent upon type of protection provided.
1	zice-s2.2 [sc-1.2, 1.3]	Protect populations of Florida ziziphus on public lands.	continuous	FWS, DOF*, private				Cost dependent upon type of protection provided.
3	zice-s2.3 [sc-1.0]	Use local or regional planning to protect habitat.	continuous	FWS*, counties				Cost included in standard operating procedures of participating agency's budget.
1	zice-s2.4.1	Conserve germ plasm.	continuous	FWS*, private*	1	1	1	
1	zice-s2.4.2	Maintain <i>ex situ</i> collection.	continuous	FWS*, private*	2	2	2	

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cepr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
 diim = Lakela's mint      ercu = snakeroot      hycu = Highlands scrub hypericum      lioh = scrub blazing star      pach = papery whitlow-wort  
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 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1 <sup>†</sup>	zice-s2.5.1 [sc-2.4]	Establish a protocol for reintroduction.	completed	FWS, private*				
1	zice-s2.5.2 [sc-2.4]	Locate potential (re)introduction sites.	1 year	FWS, DOF, private*	3			
1	zice-s2.5.3 [sc-2.4]	(Re)introduce plants to protected sites.	5 years	FWS, private*	15	15	15	
2	zice-s2.6.1 [sc- 1.3]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	zice-s2.6.2 [sc-1.3]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	zice-s3.1 [sc-7.0]	Continue research to determine biology and demographic information.	5 years	FWS, private*, universities*	15	15	15	
1	zice-s3.2 [sc-7.0]	Continue research to assess the reproductive potential of Florida ziziphus in the wild.	5 years	FWS, private*, universities*	25	25	25	
1	zice-s3.3 [sc-7.0]	Continue research to assess management requirements of Florida ziziphus.	5 years	FWS, private*	20	20	20	
1	zice-s4.1 [sc-3.4, 8.1-8.3]	Evaluate the effectiveness of the monitoring protocol used to assess population trends for Florida ziziphus.	1 year	FWS, DOF, NGO*, private*	3			
2	zice-s4.2 [sc-3.4]	Monitor and detect changes in demographic characteristics.	continuous	FWS, DOF*, NGO*, private*	8	8	8	
1	zice-s4.3 [sc-3.4, 8.1]	Monitor the effects of various land management actions on Florida ziziphus.	continuous	FWS, DOF*, private	8	8	8	

### Florida Scrub/Scrubby Flatwoods/Scrubby High Pine Implementation

aste = four-petal pawpaw      btms = bluetail mole skink      cepr = fragrant prickly-apple      chpy = pygmy fringe-tree      clfr = pigeon wings  
 clpe = Florida perforate cladonia      cobr = short-leaved rosemary      crav = Avon Park harebells      dich = Garrett's mint      difr = scrub mint  
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 poba = wireweed      pole = Lewton's polygala      pomy = sandlace      sask = sand skink      waca = Carter's mustard      zice = Florida ziziphus  
 sc = scrub      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	zice-s4.4 [sc- 1.1, 2.0, 3.0]	Continue to work with private landowners.	continuous	FWS*, DOF, private	2	2	2	
2	zice-s4.5 [sc-2.4]	Monitor introduced plants.	continuous	FWS*, DOF, private*	5	5	5	
3	zice-s5.0 [sc-9.0]	Provide public information about Florida ziziphus.	continuous	FWS, FWC, NGO, private*	10	5	5	

### Beach Dune/Coastal Strand Implementation

jare = Beach jacquemontia      bdcs = beach dune/coastal strand      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	jare-h1.1.1	Prevent direct destruction of beach jacquemontia ( <i>Jacquemontia reclinata</i> ) habitat by establishing setbacks from the primary dune.	as needed	FWS*, FDEP, counties, local government				Cost included in planning agency's budget.
2	jare-h1.1.2	Prevent or eliminate human disturbance to dunes.	as needed	FWS, FDEP*, counties*, local government*	20	20	20	
2	jare-h1.1.3	Enforce regulations prohibiting use of motor or man-powered vehicles on beaches and dune habitat.	as needed	FWS*, FDACS/DPI, FDEP*, counties*, local government*	10	10	10	
1	jare-h1.2 [bdcs-2.2, 4.1, 5.1, 6.2]	Extirpate or control exotic plants.	continuous	FWS, FDEP*, counties*, local government*	3/ acre	3/ acre	3/ acre	Total cost dependent upon number of acres infested with exotics.
1	jare-h2.0	Restore beach dune habitat.	continuous	FWS, FDEP*, counties*,	20/ acre	20/ acre	20/ acre	Total cost dependent upon

### Beach Dune/Coastal Strand Implementation

jare = Beach jacquemontia

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h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[bdcS-2.5, 3.1, 3.2, 4.2]			local government*	acre	acre	acre	number of acres restored.
2	jare-h3.0	Conduct habitat-level research projects.	3-5 years	FWS, NGO*, universities	60	60	60	
2	jare-h4.0 [bdcS-3.3, 5.1, 5.2]	Monitor habitat and ecological processes.	continuous	FWS, NGO*, FDEP, counties, local government	25	25	25	
3	jare-h5.0 [bdcS-4.3, 6.1]	Provide public information about coastal ecosystems.	continuous	FWS*, NGO, FDEP, counties, local government	10	5	5	
2	jare-s1.1	Conduct surveys to determine the status of known populations.	as needed	FWS, NGO*				
2	jare-s1.2	Survey for additional populations in Palm Beach, Broward, and Dade Counties.	as needed	FWS, NGO*				
2	jare-s1.3 [bdcS-3.3]	Maintain distribution data in a GIS database.	continuous	FWS*, NGO, FDEP, counties, FNAI	1	1	1	
1	jare-s2.1	Protect any existing populations on private land through acquisition, conservation easements, or agreements with landowners.	as needed	FWS*, FDEP, NGO				Cost dependent upon specific site and amount of land acquired.
1	jare-s2.2	Inform State, county, and city agencies of jare presence on public lands and provide information on conservation methods and management practices for these populations.	continuous	FWS, FDACS, FDEP, counties, local government, FNAI, NGO*	2	2	2	
3 <sup>†</sup>	jare-s2.3.1	Establish protocols for restoration of jare.	completed	FWS, NGO*				
3 <sup>†</sup>	jare-s2.3.2	Locate potential (re)introduction sites for jare within historic range.	completed	FWS, NGO*				
1	jare-s2.3.3	(Re)introduce jare to protected sites.	5-10 years	FWS, NGO*, FDEP, counties, local government,	15	15	15	

### Beach Dune/Coastal Strand Implementation

jare = Beach *jacquemontia*

bdcS = beach dune/coastal strand

s = species task

h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[bdcS-2.3]			universities				
1	jare-s2.3.4 [bdcS-2.3, 2.5, 3.1]	Reestablish plants as part of dune restoration efforts.	continuous	FWS, NGO*, FDEP, counties, local government, universities	15	15	15	
1	jare-s2.4.1	Send jare seeds to seed bank for long term storage.	2 years	FWS, NGO*, USDA	5	5		
2	jare-s2.4.2	Continue jare propagation and development of successful horticultural methods.	as needed	FWS, NGO*	10	10	10	
1	jare-s2.4.3	Establish and maintain <i>ex situ</i> collection.	continuous	FWS, NGO*	10	10	10	
2	jare-s2.5.1	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	jare-s2.5.2	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI				Cost dependent upon specific situation.
2	jare-s3.1	Continue research to determine demographic information.	3-5 years	FWS, NGO*, universities	20	20	20	
2	jare-s3.2	Conduct population viability and risk assessment analysis.	3 years	FWS, NGO*, universities	20	20	20	At least 2 years of data needed for population viability analysis.
1	jare-s3.3	Conduct research to assess management requirements of jare.	as needed	FWS, NGO*	75	75	75	
1	jare-s3.4	Determine response to habitat changes and management manipulations.	3-5 years	FWS, NGO*, universities, counties, FDEP, local governments	30	30	20	
2 <sup>†</sup>	jare-s3.5	Develop a quantitative description of the population structure of jare.	completed	FWS, NGO*				
2	jare-s3.6	Conduct population viability and risk assessment analysis.	3 years	FWS*, NGO, universities	20	20	20	
2	jare-	Develop a monitoring protocol to	2 years	FWS*, NGO, universities	15	15		

### Beach Dune/Coastal Strand Implementation

jare = Beach jacquemontia

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	s4.1.1	assess population trends.						
2	jare-s4.1.2 [bdcS-5.1, 5.2]	Monitor to detect changes in demographic characteristics.	continuous	FWS, NGO*, universities	20	20	20	
1	jare-s4.1.3 [bdcS-5.1, 5.2]	Monitor the effects of land management activities.	continuous	FWS, NGO*, FDEP, counties, local government	25	25	25	
3	jare-s4.1.4 [bdcS-5.1, 5.2]	Monitor introduced plants.	continuous	FWS, NGO*, FDEP, counties, local government	20	20	20	
1	jare-s4.2 [bdcS-5.1, 5.2]	Assess management requirements.	continuous	FWS*, FDACS/DPI, FDEP, counties, local government, FNAI, NGO, universities	50	50	50	
3	jare-s5.0 [bdcS-4.3, 6.1]	Provide public awareness about additional threats to jare.	continuous	FWS*, FDEP, universities, counties, local government	10	5	5	
3	jare-s6.0	Refine delisting criteria once reclassification is achieved and adequate research and monitoring data are available to develop these criteria.	as needed	FWS*, FDACS/DPI, NGO, universities				

### Tropical Hardwood Hammock Implementation

klcm = Key Largo cotton mouse

klwr = Key Largo woodrat

piro = Key tree-cactus

ssbu = Schaus swallowtail butterfly

sits = Stock Island tree snail

thh = tropical hardwood hammock

s = species task

h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3 <sup>†</sup>	klcm-h1.1.1	Continue Federal acquisition efforts.	completed	FWS*				

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[thh-1.1]							
3	klcm-h1.1.2 [thh-1.1]	Support State, local and non-governmental organizations' acquisition efforts.	continuous	FWS*, FWC, NGO, private				Cost dependent upon specific site and amount of land acquired.
2	klcm-h1.2.1 [thh-1.2-1.3]	Protect cotton mice on private lands through acquisition, conservation easements, or agreements, and informing landowners.	continuous	FWS*, FDEP, DOT, counties, private				Cost dependent upon type of protection provided.
2	klcm-h1.2.2 [thh-1.3]	Protect cotton mice on public lands.	continuous	FWS*, FDEP*, DOT, counties				Cost dependent upon type of protection provided.
2	klcm-h1.2.3 [thh-1.4]	Coordinate with Federal, State and Monroe County agencies and private entities to develop management actions to protect cotton mouse habitat.	continuous	FWS*, FDEP, NGO, counties	15	15	15	
1	klcm-h1.2.4	Avoid clearing or disturbing hammocks.	continuous	FWS*, FDEP*, DOT, counties				Task currently implemented on public lands and cost is included in responsible agency's budget.
3	klcm-h1.2.5	Restrict access to cotton mouse habitat.	continuous	FWS*, FDEP*, FWC, counties				Cost is included in responsible agency's budget. Access to Key Largo Hammocks State Botanical Site limited through issuance of backcountry permits. No backcountry permits issued for CLNWR.
3 <sup>†</sup>	klcm-h1.2.6	Establish and protect 500-m buffers around Priority 1 habitat.	completed	FWS*, FWC, counties				This habitat delineation is no longer effectual or in use.
3	klcm-h1.2.7 [thh-2.2]	Prevent fires.	continuous	FWS*, FDEP, DOT, counties				Task currently conducted and cost is included in responsible agency's budget.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	klcm-h1.2.8 [thh-2.4]	Eliminate exotic vegetation.	continuous	FWS*, FDEP, DOT, counties	3/acre	3/acre	3/acre	Total cost dependent upon number of acres infested with exotics.
3	klcm-h2.1	Prepare a hardwood hammock restoration plan for north Key Largo.	1-2 years	FWS*, FWC, counties	12	12		
3	klcm-h2.2	Restore cotton mouse habitat on refuge property.	continuous	FWS*, FDEP, counties	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	klcm-h2.3	Restore old CR 905 Road to promote cotton mouse habitat.	continuous	FWS, FDEP*, counties	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	klcm-h2.4	Remove trash and debris.	continuous	FWS*, FDEP, DOT, counties				Task currently implemented on right-of-way on CR 905 and Card Sound Road and cost is included in responsible agency's budget.
3 <sup>†</sup>	klcm-h2.5 [thh-2.3]	Improve hydrology and water quality in cotton mouse habitat.	completed	FWS, FDEP*, WMD, COE				Dispatch Slough has been restored; no other projects identified.
3	klcm-h2.6 [thh-2.7]	Improve habitat by planting or encouraging native plant species.	continuous	FWS*, FDEP, DOT, counties	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres improved.
3	klcm-h2.7 [thh-4.1]	Create habitat by refilling and recreating areas that have been dredged or altered.	continuous	FWS*, FDEP, DOT, counties	1.5/acre	1.5/acre	1.5/acre	Total cost dependent upon number of acres created for habitat.
3	klcm-h3.1.1 [thh-7.0]	Investigate stable home range and minimum area requirements.	2 years	FWS*, universities	30	30		See Sasso (1999) and Sasso and Gaines (2002).
3	klcm-h3.1.2	Investigate the effect of habitat change.	continuous	FWS*, universities	25	25	25	
3	klcm-h3.2.1	Investigate movement patterns and the spatial use of habitat to identify important core areas and corridors.	2-3 years	FWS*, universities	20	20	20	See Sasso (1999) and Sasso and Gaines (2002).
2	klcm-h3.2.2	Determine if the amount and configuration of habitat is sufficient to support a stable or increasing	2 years	FWS*, universities	25	25		

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		population of cotton mice.						
3	klcm-h4.0 [thh-8.0]	Monitor the status of cotton mouse habitat and examine ecological processes.	continuous	FWS*, universities	10	10	10	
3	klcm-h5.0 [thh-9.0]	Increase public awareness of cotton mouse habitat and instill stewardship.	continuous	FWS*, FDEP, NGO, counties	10	5	5	
2	klcm-s1.1	Conduct presence/absence surveys on north Key Largo.	continuous	FWS*, FDEP*, FWC, universities	5	5	5	
3	klcm-s1.2	Survey suitable areas in other parts of Key Largo for the presence of cotton mice.	1-2 years	FWS*, FDEP, counties, universities	5	5		
2	klcm-s1.3	Determine the status of cotton mouse north of Key Largo.	1-2 years	FWS*, FDEP*, universities	10	10		
3	klcm-s1.4	Survey cotton mouse habitat.	3 years	FWS*, universities	20	20	20	
3	klcm-s1.5	Survey for the presence/absence of black rats simultaneously with the cotton mice surveys.	continuous	FWS*, universities	10	10	10	Ongoing activity at CLNWR. All captured black rats are removed from klcm habitat.
3	klcm-s1.6	Maintain and improve the GIS database for cotton mouse information.	continuous	FWS*, FWC	3	3	3	
3 <sup>†</sup>	klcm-s2.1	Assign a biologist responsibility for implementing recovery actions for the threatened or endangered species of the upper Florida Keys.	completed	FWS*				FWS biologist assigned to South Florida Ecological Services Office and stationed at Key Largo.
2	klcm-s2.2	Utilize Federal regulatory mechanisms for protection.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	klcm-s2.3	Provide cotton mouse information to State, county, and city agencies, including GIS information regarding the presence of cotton mice, their	continuous	FWS*	2	2	2	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		protection under ESA, and ways to minimize impacts on the mice and their habitat.						
3	klcm-s2.4.1	Develop a standard protocol for conducting, monitoring, and evaluating all reintroduction, translocation, and supplementation efforts of cotton mice using the IUCN/SSC Guidelines for Reintroductions.	1-2 years	FWS*, FDEP, counties, FWC, universities	10	10		
3	klcm-s2.4.2	Identify potential release sites.	1 year	FWS*, FDEP, counties, universities	4			
3	klcm-s2.4.3 [thh-2.1-2.7]	Restore or improve habitat where possible to ensure sites are suitable for augmentation/reintroduction.	continuous	FWS*, FDEP, counties	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	klcm-s2.4.4	Identify suitable release stock.	1 year	FWS*, FDEP, counties, universities	3			
3	klcm-s2.4.5	Obtain stock for translocation.	1 year	FWS*, private	4			
3	klcm-s2.4.6	Release cotton mice into new sites.	2 years	FWS*, FDEP, counties, universities	5	5		
3	klcm-s2.4.7	Monitor introduced populations to determine survival, growth, and reproductive success.	continuous	FWS*, FDEP, counties, universities	10	10	10	
2	klcm-s2.5.1 [thh-2.4]	Remove nuisance predators.	continuous	FWS*, FDEP*, counties	2	2	2	Feral and free-ranging domestic cats are removed from cotton mouse habitat.
3	klcm-s2.5.2 [thh-2.6]	Minimize the effects of pesticides and other biocides.	continuous	FWS*, FDEP, counties				Unauthorized spraying is prohibited in the range of the klcm on public lands. Herbicides are used to treat exotic plants, following authorized procedures.

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					FY 1	FY 2	FY 3	
3	klcm-s2.5.4	Reduce the effects of road mortality.	continuous	FWS*, FDEP, DOT				
3	klcm-s2.5.5 [thh-2.6]	Minimize the effects of contaminants.	continuous	FWS*, FDEP, counties				Unauthorized spraying is prohibited in the range of the klcm on public lands. Shooting range within CLNWR is closed.
3	klcm-s3.1	Determine if the total population size is large enough to prevent functional extinction and genetic extinction.	2-3 years	FWS*, universities	25	25	25	
3 <sup>†</sup>	klcm-s3.2.1	Identify subpopulations vulnerable to extinction.	completed	FWS*, FDEP, FWC, universities				
3	klcm-s3.2.2	Determine the necessary number of subpopulations and level of exchange that will enable the cotton mouse to persist for 100 years.	2-3 years	FWS*, universities	25	25	25	
3	klcm-s3.3	Determine a stable age structure, sex ratio, and group size for the cotton mouse.	2-3 years	FWS*, universities	25	25	25	
3	klcm-s3.4	Examine factors that affect the abundance and distribution of the cotton mouse.	1-2 years	FWS*, counties, universities	20	20		
3	klcm-s4.1	Develop methods to monitor demographic parameters.	1-2 years	FWS*, counties, universities	12	12		
2	klcm-s4.2	Conduct long-term monitoring of the cotton mouse.	continuous	FWS*, universities	10	10	10	
3	klcm-s4.3	Monitor sex ratios, age class structure, and survivorship.	continuous	FWS*, universities	10	10	10	Some data on sex and age structure are obtained in monitoring studies.
3	klcm-s5.1	Prepare informational material for the general public.	continuous	FWS*, FDEP, NGO, counties	10	5	5	
1	klcm-s5.2	Develop and implement a cat, black	continuous	FWS*, FDEP*, counties	2	2	2	A feral and free roaming cat

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					FY 1	FY 2	FY 3	
		rat, fire ant, and raccoon control program.						removal program was implemented in 2004 in occupied klcm habitat. All captured black rats are removed from klcm habitat. A fire ant specific pesticide is used regularly along the CR 905 right-of-way.
3 <sup>†</sup>	klwr-h1.1.1 [thh-1.1]	Continue Federal acquisition efforts.	completed	FWS*				
3	klwr-h1.1.2 [thh-1.1]	Support State, local and non-governmental organizations' acquisition efforts.	continuous	FWS*, FWC, NGO, private				Cost dependent upon specific site and amount of land acquired.
1	klwr-h1.2.1 [thh-1.3]	Protect woodrats on public lands.	continuous	FWS*, FDEP, DOT, counties				Cost dependent upon type of protection provided.
2	klwr-h1.2.2 [thh-1.2-1.3]	Protect woodrats on private lands.	continuous	FWS*, FDEP, DOT, counties, private				Cost dependent upon type of protection provided.
3	klwr-h1.2.3 [thh-1.4]	Coordinate with Federal, State and Monroe County agencies and private entities to develop management actions to protect woodrat habitat.	continuous	FWS*, FDEP, NGO, counties	15	15	15	
1	klwr-h1.2.4	Avoid clearing or disturbing hammocks.	continuous	FWS*, FDEP, DOT, counties				No cost associated with this task as clearing or disturbing hammocks is not permitted on public lands.
3	klwr-h1.2.5	Restrict access to woodrat habitat.	continuous	FWS*, FWC, counties				No cost assigned to this task because access limitations are already conducted. Access to Key Largo Hammocks State Botanical Site is limited through issuance of backcountry

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					FY 1	FY 2	FY 3	
								permits. Only research permits are issued for CLNWR.
3 <sup>†</sup>	klwr-h1.2.6	Establish and protect 500-m buffers around Priority 1 habitat.	completed	FWS*, FWC, counties				This habitat delineation is no longer effectual or in use.
3	klwr-h1.2.7 [thh-2.2]	Prevent fires in woodrat habitat.	continuous	FWS*, FDEP, DOT, counties				Task currently conducted and cost is included in responsible agency's budget.
3	klwr-h1.2.8 [thh-2.4]	Eliminate exotic vegetation.	continuous	FWS*, FDEP, DOT, counties	3/acre	3/acre	3/acre	Total cost dependent upon number of acres infested with exotics.
3	klwr-h2.1	Prepare a hardwood hammock restoration plan for north Key Largo.	1-2 years	FWS*, FWC, counties	12	12		
2	klwr-h2.2	Restore woodrat habitat on refuge property.	continuous	FWS*, FDEP, counties	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	klwr-h2.3	Restore old 905 road to promote woodrat habitat.	continuous	FWS*, FDEP, counties	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	klwr-h2.4	Remove trash and debris.	continuous	FWS*, FDEP, DOT, counties				Task currently implemented on right-of-way on CR 905 and Card Sound Road and cost is included in responsible agency's budget. Debris piles within the hammock are considered potential klwr habitat and are retained.
3	klwr-h2.5 [thh-2.3]	Improve hydrology and water quality in woodrat habitat.	5 years	FWS*, WMD, COE, FDEP*	35	35	35	
3	klwr-h2.6 [thh-2.7]	Improve habitat by planting or encouraging native plant species.	continuous	FWS*, FDEP, DOT, counties	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres improved.

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					FY 1	FY 2	FY 3	
3	klwr-h2.7 [thh-4.1]	Create habitat by refilling and recreating areas that have been dredged or altered.	continuous	FWS*, FDEP, DOT, counties	1.5/ acre	1.5/ acre	1.5/ acre	Total cost dependent upon number of acres created for habitat. Rock piles created as a result of dredging are considered potential klwr habitat and should not be removed.
3 <sup>†</sup>	klwr-h3.1.1 [thh-7.0]	Investigate stable home range and minimum area requirements.	completed	FWS*, universities				See Sasso (1999) and Sasso and Gaines (2002).
2	klwr-h3.1.2	Investigate the effect of habitat change.	continuous	FWS*, universities	25	25	25	
1	klwr-h3.2.1	Investigate movement patterns and the spatial use of habitat to identify important core areas and corridors.	continuous	FWS*, universities	20	20	20	
2	klwr-h3.2.2	Determine if the amount and configuration of habitat is sufficient to support a stable or increasing population of woodrats.	continuous	FWS*, universities	25	25	25	
2	klwr-h4.0 [thh-8.0]	Monitor the status of woodrat habitat and examine ecological processes.	continuous	FWS*, universities	10	10	10	
3	klwr-h5.0 [thh-9.0]	Increase public awareness of woodrat habitat and instill stewardship.	continuous	FWS*, FDEP, NGO, counties	10	5	5	
1	klwr-s1.1	Conduct presence/absence surveys on North Key Largo to determine the status of woodrats.	continuous	FWS*, FWC, universities	5	5	5	
3	klwr-s1.2	Survey suitable areas in other parts of Key Largo.	continuous	FWS*, FDEP, counties, universities	5	5	5	
2	klwr-s1.3	Determine the status of woodrats north of Key Largo.	continuous	FWS*, FDEP*, FWC, universities	10	10	10	Totten Key was surveyed by FWS in 2004; klwr not documented.
3	klwr-s1.4	Survey woodrat habitat.	continuous	FWS*, universities	20	20	20	
3	klwr-s1.5	Survey for the presence/absence of	continuous	FWS*, universities				No surveys are conducted

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					FY 1	FY 2	FY 3	
		black rats simultaneously with wood rat surveys.						specifically for black rats. Captured black rats are removed from klwr habitat. Cost of black rat removal is included in standard operating procedures of Federal agency's budget.
3	klwr-s1.6	Maintain and improve the GIS database for woodrat information.	continuous	FWS*, FWC	3	3	3	
2	klwr-s2.1	Utilize Federal regulatory mechanisms for protection.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	klwr-s2.2	Provide woodrat information to Federal, State, county, and city agencies, including GIS information regarding the presence of woodrats, their protection under the ESA, and ways to minimize impacts.	continuous	FWS*	2	2	2	
1	klwr-s2.3.1 [thh-2.4]	Remove nuisance predators.	continuous	FWS*, FDEP, counties	15	15	15	Feral and free roaming cats are removed from occupied klwr habitat.
3	klwr-s2.3.2 [thh-2.6]	Minimize the effects of pesticides and other biocides.	continuous	FWS*, FDEP, counties				
3	klwr-s2.3.3	Control blatant killing and poisoning.	continuous	FWS*, FWC				Possible problem in areas of wildland-human community interface.
3	klwr-s2.3.4	Reduce the effects of road mortality.	continuous	FWS*, DOT, counties				One road kill found in 1995.
3	klwr-s2.3.5 [thh-2.6]	Minimize the effects of contaminants.	continuous	FWS*, FDEP, counties				Unauthorized spraying is prohibited in range of klwr on public lands.
1	klwr-s2.4.1	Develop a standard protocol for	1-2 years	FWS*, FDEP, counties,	10	10		

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					FY 1	FY 2	FY 3	
		conducting, monitoring, and evaluating all reintroduction, translocation, and supplementation efforts of woodrats using the IUCN/SSC Guidelines for Reintroductions.		universities				
1	klwr-s2.4.2	Identify potential release sites.	2 years	FWS*, FDEP, counties, FWC, universities	4	4		
3	klwr-s2.4.3 [thh-2.1-2.7]	Restore or improve habitat where possible to ensure sites are suitable for augmentation/reintroduction.	continuous	FWS*, FDEP, counties	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	klwr-s2.4.4	Identify suitable release stock.	as needed	FWS*, FDEP, counties, universities, USGS	3			
3	klwr-s2.4.5	Obtain stock for translocation.	as needed	FWS*	4			
3	klwr-s2.4.6	Release woodrats into new sites.	as needed	FWS*, FDEP, counties, universities	5	5		
2	klwr-s2.4.7	Monitor introduced populations to determine survival, growth, and reproductive success.	continuous	FWS*, FDEP, counties, universities	10	10	10	
1 <sup>†</sup>	klwr-s2.5	Investigate captive propagation options.	completed	FWS*, private	3	3	3	FWS completed the "Captive Propagation and Reintroduction Plan for the Key Largo Woodrat ( <i>Neotoma floridana smalli</i> )" on May 16, 2003.
1	klwr-s3.1	Determine if the total population size is large enough to prevent functional extinction and genetic extinction.	2-3 years	FWS*, USGS, FWC, universities	25	25	25	See McCleery (2003). FWS and USGS are conducting a population genetics study.
3	klwr-s3.2.1	Identify subpopulations vulnerable to extinction.	continuous	FWS*, FWC, FDEP, universities				
1	klwr-s3.2.2	Determine the necessary number of subpopulations and level of exchange	2-3 years	FWS*, universities	25	25	25	

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					FY 1	FY 2	FY 3	
		that will enable woodrat to persist for 100 years.						
3	klwr-s3.3	Determine a stable age structure, sex ratio, and group size for the woodrat.	2-3 years	FWS*, universities	25	25	25	
1	klwr-s3.4	Examine factors that affect the abundance and distribution of the woodrat.	continuous	FWS*, counties, universities	20	20	20	
1	klwr-s3.5	Conduct an experimental woodrat augmentation/reintroduction and evaluate its effectiveness in increasing the woodrat's persistence.	2-3 years	FWS*, FDEP, universities	10	10	10	
3	klwr-s4.1	Develop methods to monitor demographic parameters.	1-2 years	FWS*, counties, universities	12	12		Sex and age structure are part of routine monitoring.
2	klwr-s4.2	Conduct long-term monitoring of the woodrat.	continuous	FWS*, universities	10	10	10	
3	klwr-s5.1	Prepare informational material for the general public.	continuous	FWS*, FDEP, NGO, counties	10	5	5	
1	klwr-s5.2	Develop and implement a cat, black rat, fire ant, and raccoon control program.	continuous	FWS*, FDEP, counties	2	2	2	A feral and free roaming cat removal program was implemented in 2004 on occupied klwr habitat. Captured black rats are removed from klwr habitat. A fire ant specific pesticide is used regularly along the CR 905 right-of-way. Nuisance raccoons are removed where found to be interfering with trapping.
3	piro-h1.1.1 [thh-1.1]	Continue Federal acquisition efforts.	continuous	FWS*				Cost dependent upon specific site and amount of land acquired.

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					FY 1	FY 2	FY 3	
3	piro-h1.1.2 [thh-1.1]	Support State acquisition efforts.	continuous	FWS, FWC*				Cost dependent upon specific site and amount of land acquired.
3	piro-h1.1.3 [thh-1.1]	Support and encourage land acquisition by non-governmental agencies.	continuous	FWS, NGO*, private				Cost dependent upon specific site and amount of land acquired.
2	piro-h1.2.1 [thh-1.4]	Prevent detrimental land-use changes within hardwood hammocks.	continuous	FWS*, FDEP, counties, private				Task currently implemented on public lands and cost is included in responsible agency's budget.
2	piro-h1.2.2 [thh-1.4]	Prevent land clearing.	continuous	FWS*, FDEP, counties, private				Task currently implemented on public lands and cost is included in responsible agency's budget.
3	piro-h1.2.3 [thh-1.4]	Prevent disturbance of surface mining.	continuous	FWS*, COE, FDEP, private				Not a documented problem. Task is currently conducted and cost is included in responsible agency's budget.
3	piro-h1.2.4 [thh-1.4]	Prevent subsurface saltwater intrusion.	continuous	FWS*, FDEP, COE, NGO, counties, WMD				Not a documented problem. Task is currently conducted by prohibiting blasting of channels and cost is included in responsible agency's budget.
3 <sup>†</sup>	piro-h1.2.5	Fence or barricade areas.	completed	FWS*, FDEP				Completed on public lands, recommend acquisition of remaining parcels for access control.
3	piro-h1.2.6 [thh-2.4]	Remove invasive exotic vegetation.	continuous	FWS*, FDEP, counties, private	3/acre	3/acre	3/acre	Total cost dependent upon number of acres infested with exotics.
2	piro-h2.1	Eliminate physical degradation of	continuous	FWS*, counties, COE,	1/acre	1/acre	1/acre	Total cost dependent upon

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					FY 1	FY 2	FY 3	
	[thh-2.5]	habitat and restore to optimal conditions.		FDEP, WMD, private				number of acres restored.
2	piro-h2.2 [thh-3.7, 8.0]	Implement management plans for sites including <i>P. robinii</i> and modify as necessary for the species.	continuous	FWS*, FDEP, counties				Cost dependent upon type of plan implemented.
1	piro-h2.3 [thh-3.7, 8.0]	Continue to refine management practices for <i>P. robinii</i> and its habitat.	continuous	FWS*, NGO, FDEP, counties	5	5	5	
2	piro-h3.1 [thh-7.0]	Assess important characteristics of <i>P. robinii</i> habitat.	1-2 years	FWS, FDEP, counties, universities*	8	8		
2 <sup>+</sup>	piro-h3.2.1	Assess the available GIS data.	completed	FWS*, FDEP, Fairchild, IRC				
3	piro-h3.2.2	Create and distribute coverages of population locations.	1-2 years	FWS*, NGO, FDEP, universities	2	2		Initiated by FWS in 2004.
2	piro-h3.2.3	Acquire recent imageries of the sites.	continuous	FWS*, FDEP	1	1	1	
3	piro-h3.3.1 [thh-7.0]	Evaluate patterns of habitat response to hurricanes and the implications on <i>P. robinii</i> populations.	1-2 years	FWS, universities*, FDEP	15	15		The Big Pine Key population was affected by hurricane Georges in 1998.
3	piro-h3.3.2 [thh-7.0]	Investigate the relationships of exotic vegetation.	1-2 years	FWS, universities*, FDEP	10	10		
3	piro-h3.4.1	Investigate the historic distribution.	1 year	FWS*, FDEP, counties, universities	4			
2	piro-h3.4.2	Determine minimum habitat area required for a stable or increasing population.	1-2 years	FWS, FDEP, counties, universities*	15	15		
2	piro-h3.4.3	Determine the amount and configuration of habitat necessary to support a stable or increasing population of <i>P. robinii</i> .	1-2 years	FWS, FDEP, counties, universities*	15	15		
2	piro-h4.0 [thh-8.0]	Monitor the status of <i>P. robinii</i> habitat.	continuous	FWS*, NGO, FDEP, counties, private	10	10	10	

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					FY 1	FY 2	FY 3	
3	piro-h5.0 [thh-9.0]	Increase public awareness of <i>P. robinii</i> habitat and instill stewardship.	continuous	FWS*, FDEP, counties, NGO, FWC	10	5	5	
1	piro-s1.1	Inventory known populations.	continuous	FWS*, FDEP, FDACS, FNAI, NGO	4	4	4	
2	piro-s1.2	Search for populations of <i>P. robinii</i> . Resurvey historic locations.	1-2 years	FWS*, FDEP, NGO, counties	10	10		Initiated by FWS in 2004.
2	piro-s1.3	Map distribution of known populations and suitable habitat.	continuous	FWS*, FNAI, NGO	2	2	2	Initiated by FWS in 2004.
1	piro-s2.1	Minimize and eliminate disturbance or mortality to <i>P. robinii</i> .	continuous	FWS*, FDEP, counties				Task currently implemented on public lands and cost is included in responsible agency's budget.
2	piro-s2.2	Continue to enforce take prohibitions.	continuous	FWS*, FDEP, FDACS				Cost included in standard operating budgets of participating agencies.
1	piro-s2.3.1	Maintain <i>ex situ</i> conservation collections of <i>P. robinii</i> .	continuous	FWS, NGO*, Fairchild	2	2	2	
3	piro-s2.3.2	Study feasibility of translocating propagules into historically appropriate and protected natural habitats.	1-2 years	FWS, NGO, universities*	15	15		
3	piro-s2.3.3	Identify potential reintroduction sites.	2 year	FWS, FNAI, FDEP, universities*, private	6	6		
3	piro-s2.3.4	Use reintroduction protocols established by the conservation community.	continuous	FWS*, FNAI, FDEP, universities, private				Task dependent upon use of protocols by participating agency's.
3	piro-s2.3.5	Monitor the experimental outplantings.	continuous	FWS, NGO*, FDEP	5	5	5	
2	piro-s3.1	Study the reproductive biology of <i>P. robinii</i> .	2-3 years	FWS, NGO, universities*, counties	30	30	30	
2	piro-s3.2	Conduct genetic studies to document genetic variation within and between populations.	2 years	FWS, universities*, private	4	4		

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					FY 1	FY 2	FY 3	
2	piro-s3.3	Determine population size and viability of all populations.	2-3 years	FWS, NGO, universities*, counties	20	20	20	
1	piro-s3.4	Study the response of <i>P. robinii</i> to habitat management treatments.	2-3 years	FWS*, FDEP, counties	20	20	20	
3	piro-s3.5	Characterize the habitat and identify suitable sites for experimental outplantings.	1-2 years	FWS, FDEP, counties, NGO*	10	10		
1	piro-s4.1	Conduct long-term monitoring of the status of <i>P. robinii</i> .	continuous	FWS*, FDEP, NGO, counties	12	12	12	
2	piro-s4.2	Monitor the status of known pollinators.	continuous	FWS*, FDEP, counties	6	6	6	
3	piro-s4.3	Collect and archive existing and historical data.	1-2 years	FWS*, counties, universities	5	5		
3	piro-s5.1	Prepare informational material for the general public.	continuous	FWS*, NGO, FDACS, FDEP, counties	10	5	5	
3	piro-s5.2	Inform Federal and State personnel regarding the presence of <i>P. robinii</i> .	continuous	FWS*, FDEP, counties, NGO	2	2	2	
3	sits-h1.1.1 [thh-1.1]	Continue Federal acquisition efforts.	continuous	FWS*				Cost dependent upon specific site and amount of land acquired; suitable habitat acquired in CLNWR and NKDR.
3	sits-h1.1.2 [thh-1.1]	Support State acquisition efforts.	continuous	FWS, FDEP*, FWC				Cost dependent upon specific site and amount of land acquired.
3	sits-h1.1.3 [thh-1.1]	Support and encourage land acquisition by non-governmental agencies.	continuous	FWS, NGO*, private				Cost dependent upon specific site and amount of land acquired.
2	sits-h1.2.1 [thh-1.3]	Protect tree snails on public lands.	continuous	FWS*, FDEP, FWC, KWTFBG				Cost dependent upon type of protection provided.
2	sits-h1.2.2	Protect tree snails on private lands	continuous	FWS*, private				Cost dependent upon type

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[thh-1.2-1.3]	where feasible through acquisition, conservation easements, and landowner outreach.						of protection provided.
2	sits-h1.2.3 [thh-1.3]	Protect important core areas.	continuous	FWS*, FDEP, FWC, counties				Cost dependent upon type of protection provided.
3	sits-h1.2.4 [thh-2.4]	Remove invasive exotic vegetation.	continuous	FWS*, FDACS, KWTFBG, FDEP, FWC, NPS, counties, private	3/acre	3/acre	3/acre	Total cost dependent upon number of acres infested with exotics.
2	sits-h1.2.5	Prevent habitat areas from being modified.	continuous	FWS*, FDEP, FWC, NPS, counties, private				Task currently implemented on public lands and cost is included in responsible agency's budget.
3	sits-h1.2.6 [thh-3.5]	Restrict access to snail habitat on public lands.	continuous	FWS*, FDEP, FWC, NPS				Task currently implemented on public lands and cost is included in responsible agency's budget.
3	sits-h2.1 [thh-2.5]	Restore both occupied and unoccupied tree snail habitat that has been degraded to optimal conditions.	continuous	FWS*, FDEP, FWC, NPS, counties, KWTFBG, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	sits-h2.2 [thh-2.7]	Improve habitat by planting or encouraging native plant species.	continuous	FWS*, FDEP, FWC, NPS, counties, KWTFBG, private	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres improved.
3	sits-h2.3 [thh-5.1]	Create habitat by refilling and revegetating areas that have been destroyed or altered.	continuous	FWS, FDEP, FWC, NPS, counties, KWTFBG*, private	1.5/acre	1.5/acre	1.5/acre	Total cost dependent upon number of acres created for habitat.
2	sits-h2.4	Restore snail habitat at Key West Botanical Garden.	5 years	FWS, KWTFBG*, TNC, counties, local governments				Costs dependent upon type of restoration and number of acres created for habitat.
3	sits-h3.1.1	Determine minimum area required for snails to persist.	1-2 years	FWS, FDEP, private, universities*	15	15		
3	sits-h3.1.2	Compare and characterize occupied tree snail habitat.	1-2 years	FWS, FDEP, private, universities*	10	10		

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	sits-h3.1.3 [thh-7.0]	Investigate the effect of habitat change on the snail's persistence.	2-3 years	FWS, FDEP, private, universities*	20	20	20	
3	sits-h3.1.4	Investigate the use of ornamental and exotic vegetation as food and habitat.	2-3 years	FWS, FDEP, private, universities*, KWTFBG	15	15	15	
3	sits-h3.2.1	Investigate movement patterns and the spatial utilization of habitat to determine important core areas.	2-3 years	FWS, FDEP, private, universities*	25	25	25	
3	sits-h3.2.2	Determine if the amount and configuration of remaining occupied and unoccupied habitat is sufficient to support a stable population of Stock Island tree snails.	2-3 years	FWS, FDEP, private, universities*	25	25	25	
3	sits-h4.0 [thh-8.0]	Monitor the status of Stock Island tree snail habitat.	continuous	FWS*, FWC, FDEP	8	8	8	
3	sits-h5.0 [thh-9.0]	Increase public awareness of Stock Island tree snail habitat and instill stewardship.	continuous	FWS*, FDEP, FWC, NGO, counties, KWTFBG	10	5	5	
2	sits-s1.1.1	Determine status of snails on Stock Island.	1-2 years	FWS*, FDEP, KWTFBG	5	5		
2	sits-s1.1.2	Determine status of populations in Key West.	1-2 years	FWS*, FDEP	5	5		
3 <sup>†</sup>	sits-s1.2.1	Determine the status of snails in Key Largo subdivisions and other areas in Key Largo.	completed	FWS*				Completed by CLNWR in 1999/2000.
2 <sup>†</sup>	sits-s1.2.2	Determine status of snails present in Calusa Cove.	completed	FWS*				Completed by CLNWR in 1999/2000.
2 <sup>†</sup>	sits-s1.2.3	Determine status of snails in John Pennekamp Coral Reef State Park.	completed	FWS*				Completed by CLNWR in 1999/2000.
2 <sup>†</sup>	sits-s1.2.4	Determine status of snails in Crocodile Lake National Wildlife Refuge/Key Largo Hammocks State Botanical Site,	completed	FWS*				Completed by CLNWR in 1999/2000.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		Key Largo.						
2	sits-s1.3.1	Determine the status of snails at Monkey Jungle.	1-2 years	FWS*, private	5	5		See Forys et al. (1996).
2	sits-s1.3.2	Determine status of snails in the Everglades National Park and Big Cypress National Preserve.	1-2 years	FWS*, NPS	5	5		See Forys et al. (1996).
3	sits-s1.4	Maintain and improve the GIS database for snail information.	continuous	FWS*, FWC, FDEP, NPS	2	2	2	
3 <sup>†</sup>	sits-s2.1	Assign a biologist responsible for implementing recovery actions for threatened or endangered species of the Lower Keys.	completed	FWS*				FWS biologist assigned to South Florida Ecological Services Office and stationed at Big Pine Key.
3	sits-s2.2.1	Develop a standard protocol for conduction, monitoring, and evaluating all reintroduction, translocation, and supplementation efforts of Stock Island tree snails using the IUCN/SSC Guidelines for Reintroduction.	2-3 years	FWS*, FDEP, FWC, counties	12	12	12	
3 <sup>†</sup>	sits-s2.2.2	Relocate snails to secure areas in the Lower Keys (Key West Botanical Gardens, Weapons Hammock, National Key Deer Refuge).	completed	FWS*, FWC, KWTFBG				Populations relocated during 1996-2000, excluding Weapons Hammock.
2	sits-s2.2.3	Monitor all reintroduced/relocated populations.	continuous	FWS*, FDEP, counties	8	8	8	
2	sits-s2.3	Utilize Federal regulatory mechanisms for protection.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	sits-s2.4	Provide information concerning Stock Island tree snails to Federal, State, county, and city agencies.	continuous	FWS*, FDEP, FWC, NPS, counties	3	3	3	
2	sits-s2.5.1	Minimize the impacts of mosquito	continuous	FWS*, FDEP, counties				Spraying prohibited in range

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[thh-2.6, 3.6]	spraying and other herbicide use.						of tree snail on public lands.
3	sits-s2.5.2 [thh-3.5]	Reduce illegal collecting.	continuous	FWS*, FDEP, FWC, counties				Task currently conducted and cost is included in responsible agency's budget.
3	sits-s2.5.3 [thh-2.4, 3.4]	Minimize the impacts of native and non-native predators to snails.	continuous	FWS*, FDEP, FWC, counties	2	2	2	
3	sits-s2.5.4 [thh-1.2]	Develop a Memorandum of Agreement with Monroe County to ensure their actions do not harm the Stock Island tree snail.	1-2 years	FWS*, FDEP, counties*	3	3		
3	sits-s3.1	Investigate the genetics of snails from different sites.	2-3 years	FWS, universities*	30	30	30	
2	sits-s3.2	Identify factors that affect the persistence of the Stock Island tree snail.	2-3 years	FWS, FDEP, universities*	15	15	15	
2	sits-s3.3.1	Determine subpopulations most vulnerable to extinction.	2-3 years	FWS*, FDEP, universities	25	25	25	
3	sits-s3.3.2	Determine the necessary number of subpopulations and level of exchange that will enable the snail to persist for 100 years.	2-3 years	FWS, universities*	30	30	30	
3	sits-s3.4	Determine what constitutes a stable age structure and group size for the snail.	2-3 years	FWS, universities*	25	25	25	
3	sits-s4.1	Develop methods to monitor presence of snails, population dynamics, and habitat use.	1-2 years	FWS, universities*	10	10		
3	sits-s4.2	Develop methods to monitor demographic parameters.	1-2 years	FWS, FDEP, universities*	10	10		

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					FY 1	FY 2	FY 3	
2	sits-s4.3	Monitor the success of tree snail reintroduction efforts.	continuous	FWS*, FDEP, universities, counties	5	5	5	
3	sits-s4.4	Determine the effects of relocated snails on flora and fauna already present.	2-3 years	FWS, FDEP, universities*	8	8	8	
3	sits-s5.1	Increase public awareness and stewardship for the Stock Island tree snail.	continuous	FWS*, FDEP, FWC, NPS, counties, NGO, KWTFBG	10	5	5	
3 <sup>†</sup>	ssbu-h1.1.1 [thh-1.1]	Continue Federal acquisition efforts.	completed	FWS*				Cost dependent upon specific site and amount of land acquired.
3	ssbu-h1.1.2 [thh-1.1]	Support State, local and non-governmental organizations acquisition efforts.	continuous	FWS*, FDEP, NPS, counties, private				Cost dependent upon specific site and amount of land acquired.
2	ssbu-h1.2.1 [thh-1.2-1.3]	Protect butterflies on private lands.	continuous	FWS, private*				Cost dependent upon type of protection provided.
2	ssbu-h1.2.2 [thh-1.3]	Protect butterflies on public lands.	continuous	FWS*, FDEP, NPS, counties				Cost dependent upon type of protection provided.
2	ssbu-h1.2.3 [thh-1.4]	Utilize Federal mechanisms to protect and prevent degradation of Schaus swallowtail butterfly habitat.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	ssbu-h1.2.4 [thh-1.3-1.4]	Coordinate with State and Monroe County agencies and private entities to develop management actions to protect Schaus swallowtail butterfly habitat.	1-2 years	FWS*, FWC, FDEP, counties	5	5		
2	ssbu-h1.2.5	Avoid clearing or disturbing hammocks.	continuous	FWS*, FDEP, counties				Task currently implemented on public lands and cost is included in responsible agency's budget.
3	ssbu-h1.2.6 [thh-3.5]	Restrict access to Schaus swallowtail butterfly habitat.	continuous	FWS*, FDEP, NPS				Task currently conducted and cost is included in

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					FY 1	FY 2	FY 3	
								responsible agency's budget.
3	ssbu-h1.2.7	Establish and protect 500 m buffers around priority habitat.	continuous	FWS*, FDEP, NPS				Cost dependent upon type of protection provided.
3	ssbu-h1.2.8 [thh-2.2, 3.2]	Prevent fires.	continuous	FWS*, FDEP, NPS, DOF				Task currently implemented on public lands and cost is included in responsible agency's budget.
3	ssbu-h1.2.9 [thh-2.4]	Eliminate exotic vegetation.	continuous	FWS*, FDEP, NPS	3/acre	3/acre	3/acre	Total cost dependent upon number of acres infested with exotics.
3	ssbu-h2.1 [thh-2.1-2.7]	Restore Schaus swallowtail butterfly habitat.	continuous	FWS*, FDEP, NPS	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	ssbu-h2.2 [thh-2.7]	Improve habitat by planting or encouraging native plant species.	continuous	FWS*, FDEP, NPS, private, universities	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres improved.
3	ssbu-h2.3	Improve habitat by conducting selective trimming.	continuous	FWS*, FDEP, NPS	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres improved.
3	ssbu-h2.4 [thh-2.4]	Remove exotic vegetation.	continuous	FWS*, FDEP, NPS, counties	3/acre	3/acre	3/acre	Total cost dependent upon number of acres infested with exotics.
3	ssbu-h2.5 [thh-2.5, 3.5]	Remove trash debris.	continuous	FWS*, FDEP, NPS, private, counties				Task currently implemented on public lands and cost is included in responsible agency's budget.
3	ssbu-h3.1.1	Determine minimum area requirements.	2-3 years	FWS, FDEP, universities*	30	30	30	
3 <sup>†</sup>	ssbu-h3.1.2	Identify host plants, their status and role in the hammock community, effects from natural factors, and how the Schaus swallowtail butterfly is dependent on them.	completed	FWS*, FDEP, universities				
3	ssbu-h3.1.3	Determine the effects of forest canopy	2-3 years	FWS, FDEP, universities*	25	25	25	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		structure and light conditions on the Schaus swallowtail butterfly.						
3	ssbu-h3.1.4	Investigate the effect of habitat change.	2-3 years	FWS*, FDEP, universities	20	20	20	
3	ssbu-h3.2.1	Investigate flight patterns and the spatial utilization of habitat to identify important core areas and corridors.	2-3 years	FWS, FDEP, universities*	30	30	30	
3	ssbu-h3.2.2	Determine if the amount and configuration of habitat is sufficient to support a stable or increasing population of Schaus swallowtail butterflies..	2-3 years	FWS, FDEP, universities*	25	25	25	
3	ssbu-h4.1	Conduct long-term monitoring of habitat patches.	continuous	FWS*, FDEP, counties, universities	10	10	10	
3	ssbu-h4.2	Monitor primary and edge forest habitat.	continuous	FWS*, FDEP, counties, universities	8	8	8	
3	ssbu-h4.3 [thh-8.0]	Monitor ongoing and proposed habitat restoration efforts.	continuous	FWS*, FDEP, counties, universities	8	8	8	
3	ssbu-h5.0 [thh-9.0]	Increase public awareness of Schaus swallowtail butterfly habitat and instill stewardship.	continuous	FWS*, FDEP, NPS, NGO, counties	10	5	5	
2	ssbu-s1.1	Determine the status of wild butterflies within current range.	2 years	FWS*, universities	10	10		
3	ssbu-s1.2	Determine the status of captive-reared Schaus swallowtail butterflies.	2 years	FWS*, universities, private	5	5		
3	ssbu-s1.3.1	Survey butterflies along ecotonal regions.	1-2 years	FWS, universities*	15	15		
3	ssbu-s1.3.2	Survey the amount of light or closed canopy and its effects on species numbers, etc.	1-2 years	FWS, universities*	20	20		
3	ssbu-s1.3.3	Determine species composition and abundance between different stands of	1-2 years	FWS, universities*	15	15		

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					FY 1	FY 2	FY 3	
		forest.						
3	ssbu-s1.3.4	Survey hammock microclimate during breeding and flight time.	1-2 years	FWS, universities*	10	10		
3	ssbu-s1.3.5	Survey the distribution of adult butterflies and the distribution of host plants.	1-2 years	FWS, NPS, universities*	15	15		
3	ssbu-s1.4	Determine the status of habitat at release sites.	continuous	FWS*, NPS, universities	1	1	1	
3	ssbu-s1.5	Survey other butterfly populations in occupied Schaus swallowtail butterfly habitat.	1-2 years	FWS*, FWC, NPS, NGO, universities	10	10		
3	ssbu-s1.6	Maintain and improve the GIS database for butterflies information.	continuous	FWS*, NPS, FDEP, universities	3	3	3	
3	ssbu-s1.7	Conduct presence/absence surveys for Schaus swallowtail butterflies in suitable habitat throughout the Florida Keys.	continuous	FWS*, FWC, NPS, NGO, universities	10	10	10	
3 <sup>†</sup>	ssbu-s2.1	Assign a biologist responsibility for implementing recovery actions for the threatened or endangered species of the upper Florida Keys and Miami-Dade County (Deering Estate and Biscayne National Park).	completed	FWS*				FWS biologist assigned to South Florida Ecological Services Office and stationed at Big Pine Key.
2	ssbu-s2.2	Utilize Federal regulatory mechanisms for protection.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	ssbu-s2.3	Provide Schaus swallowtail butterfly information to the Federal, State, county, and city agencies.	continuous	FWS*, FDEP, NPS, NGO, counties	10	5	5	
3	ssbu-s2.4.1 [thh-2.6,	Eliminate the negative effects of pesticides and other biocides.	continuous	FWS*, counties				Pesticide use prohibited through significant portions

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	3.6]							of this species range.
2	ssbu-s2.4.2 [thh-1.2]	Reduce the effects of habitat loss, destruction, and modifications on Schaus swallowtail butterflies in the Florida Keys.	continuous	FWS*, FDEP, counties				Cost dependent upon type of protection provided.
2	ssbu-s2.4.3 [thh-3.5]	Eliminate illegal collecting of the Schaus swallowtail butterfly.	continuous	FWS*, FWC, FDEP				Task currently conducted and cost is included in responsible agency's budget.
3	ssbu-s2.4.4 [thh-2.6, 3.6]	Minimize the effects of contaminants on the Schaus swallowtail butterfly.	continuous	FWS*, counties				Spraying prohibited in range of ssbu on public lands.
3	ssbu-s2.5.1	Develop criteria for captive propagation protocol.	1-2 years	FWS*, universities	15	15		
3	ssbu-s2.5.2	Develop threshold criteria to act as a trigger for future captive propagations.	1-2 years	FWS*, universities	15	15		
3	ssbu-s2.5.3	All future efforts to captively breed Schaus swallowtail butterflies should be conducted in situ in as natural conditions as possible.	continuous	FWS*, universities	25	25	25	Cost applicable only to those years captive propagation is conducted.
3	ssbu-s2.5.4	Conduct appropriate health screenings of all release stock prior to reintroduction.	continuous	FWS*, universities	5	5	5	Cost applicable only to those years health screenings are needed.
3	ssbu-s2.5.5	Monitor introduced populations to determine survival, growth, and reproductive success.	continuous	FWS, FDEP, universities*	10	10	10	
3	ssbu-s3.1	Determine if the total population size is large enough to prevent functional extinction and genetic extinction.	3-5 years	FWS, universities*	30	30	30	
2 <sup>†</sup>	ssbu-s3.2.1	Determine subpopulations vulnerable to extinction.	completed	FWS*, universities				
3	ssbu-s3.2.2	Determine the necessary number of	3-5 years	FWS, universities*	30	30	30	

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sits = Stock Island tree snail      thh = tropical hardwood hammock      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		subpopulations and level of exchange that will enable Schaus swallowtail butterfly to persist for 100 years.						
3	ssbu-s3.3	Examine factors that affect the abundance and distribution of the Schaus swallowtail butterfly.	2-3 years	FWS, FDEP, universities*	15	15	15	
3	ssbu-s3.4	Evaluate the effect of releasing captive-bred butterflies into the wild for the persistence of the Schaus swallowtail butterfly.	2-3 years	FWS*, universities	25	25	25	
3 <sup>†</sup>	ssbu-s3.5	Investigate the effects of insecticides used for mosquito control on surrogate species closely related to the Schaus swallowtail butterfly.	completed	FWS*, counties, universities*	10	10		Sufficient information is available to show that pesticides should not be used in areas occupied by ssbu.
3	ssbu-s4.1	Monitor demographic parameters.	continuous	FWS, FDEP, NPS, counties, universities*	20	20	20	
2	ssbu-s4.2	Continue long-term monitoring of the Schaus swallowtail butterfly.	continuous	FWS*, FDEP, universities	10	10	10	
3	ssbu-s5.1	Increase public awareness and stewardship.	continuous	FWS*, FDEP, NPS, NGO, counties	10	5	5	

### Pine Rocklands Implementation

acre =Crenulate lead-plant      kede = Key deer      chde = Deltoid spurge      chga = Garber's spurge  
gasm = Small's milkpea      posm = Tiny polygala      pr = pine rocklands      s = species task      h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1 <sup>†</sup>	acre-h1.1	Assess the available GIS data for crenulate lead-plant ( <i>Amorpha</i> )	completed	NGO*				Completed by Fairchild.

**Pine Rocklands Implementation**

acre = Crenulate lead-plant      kede = Key deer      chde = Deltoid spurge      chga = Garber's spurge  
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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		<i>crenulata</i> ).						
1	acre-h1.2	Create coverage of population locations.	2 years	FWS*, DERM, NGO, counties*, private	10	10		Fairchild has data.
1	acre-h1.3	Acquire recent imageries of the sites.	as needed	FWS*, counties*, NGO, private	5			
1	acre-h1.4	Distribute the coverage.	as needed	FWS*, NPS, counties, NGO, private	5	5	5	
1	acre-h2.1 [pr-2.6]	Protect pine rockland habitat.	continuous	FWS*, NPS*, counties*, NGO, private				Cost will vary depending on specific needs.
1	acre-h2.2 [pr-1.1, 1.2, 6.0]	Protect or acquire privately owned sites.	continuous	FWS*, FWC, FDEP, counties, NGO				Cost dependent upon specific site and amount of land acquired.
1	acre-h2.3.1 [pr-1.0]	Eliminate human-caused degradation.	as needed	FWS*, NPS, counties, private	5	5	5	
1	acre-h2.3.2 [pr-2.4, 3.4]	Control invasive plants, particularly exotics.	continuous	FWS*, NPS, counties*, NGO, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres infested with exotics.
1	acre-h3.1 [pr-1.4]	Eliminate physical degradation of habitat and restore to optimal conditions.	as needed	FWS*, NPS, counties	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres restored.
1	acre-h3.2 [pr-2.0, 3.0]	Develop best management practices for pine rocklands.	3-5 years	FWS*, NPS, counties, private, NGO	15	15	15	
1	acre-h3.3	Implement necessary management.	continuous	FWS*, NPS, counties*, private				Cost dependent upon type of management implemented.
1	acre-h3.4 [pr-2.2, 3.2]	Continue to expand prescribed burning.	5-10 years	FWS*, NPS, counties, private, DOF*	1/acre	1/acre	1/acre	After task is complete and a normal fire rotation is achieved, growing season burns will be employed to maintain appropriate burn regime.
1	acre-h4.1	Monitor sites with crenulate lead-plant	continuous	FWS*, DERM, counties,	15	15	15	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		populations to determine success.		private, NGO*				
1	acre-h4.2 [pr-2.2, 3.2]	Investigate fire history and incorporate into management strategies.	2 years	FWS*, DERM, DOF	10	10		
1	acre-h4.3 [pr-2.3]	Rehydrate soils where feasible.	2 years	FWS*, DERM, counties	300	300		
1	acre-h5.0 [pr-9.0]	Continue implementation of the fire education program and modify as necessary, any fire management education program that has been developed.	continuous	FWS*, DERM, counties, private, NGO	15	15	15	
2	acre-s1.0	Conduct surveys to determine distribution of crenulate lead-plants.	2 years	FWS*, DERM, NPS, NGO*, private	50	50		
2	acre-s2.1	Augment natural populations of crenulate lead-plants, where appropriate.	3 years	FWS*, NGO, private	5	5	5	
1	acre-s2.2	Continue work with ex situ propagation and seed storage banks.	3 years	FWS, NGO*, private	3	3	3	
1	acre-s2.3	Continue to identify potential reintroduction sites and reintroduce pine rockland plants, where appropriate.	2 years	FWS, NPS, DERM, NGO*, private	10	10		
3	acre-s2.4.1	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	acre-s2.4.2	Encourage implementation of management plans.	continuous	FWS*, DERM, counties, NGO, private				Cost dependent upon the management plan implemented.
3	acre-s2.4.3	Continue to enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
2	acre-s3.1	Continue to investigate and refine the	3 years	FWS*, DERM, counties,	20	20	20	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		habitat needs of crenulate lead-plant.		private, NGO				
2 <sup>+</sup>	acre-s3.2	Determine population size and viability of all populations.	completed	FWS, DERM, counties, private, NGO*				Fairchild has monitored acre populations since 2000.
1	acre-s3.3	Study the reproductive biology of crenulate lead-plant.	2 years	FWS, DERM, counties, private, NGO*	10	10		
2	acre-s3.4	Conduct genetic studies to document the genetic variation within and between populations.	2 years	FWS*, DERM, counties, private, NGO*	35	35		
1	acre-s3.5	Study the fire ecology of <i>A. crenulata</i> .	3 years	FWS*, NPS, DERM, counties, private, NGO	25	25	25	
2	acre-s3.6	Study the response of crenulate lead-plant to habitat management treatments.	4 years	FWS*, NPS, DERM, counties, private, NGO*	60	60	60	
1	acre-s4.1	Collect existing and historical data.	3 years	FWS, DERM, counties, NGO*, private	15	15	15	
1	acre-s4.2	Monitor status and success of all populations; change management practices if so indicated.	continuous	FWS*, NPS, DERM, counties, NGO*, private	30	30	30	
2	acre-s4.3	Convene a meeting of researchers and land managers.	1 year	FWS*, DERM, counties, NGO*, private	2			
2	acre-s4.4	Monitor reintroduction success and modify procedures as necessary.	continuous	FWS*, NPS, DERM, counties, private, NGO*	7	7	7	
1	acre-s5.0	Continue to provide public information about pine rocklands and their unique flora.	continuous	FWS*, DERM, counties, private, NGO*	15	15	15	
1	chde-h1.1 [pr-2.6]	Protect pine rockland habitat for deltoid spurge ( <i>Chamaesyce deltoidea</i> ssp. <i>deltoidea</i> ).	continuous	FWS*, NPS, counties, NGO, private				Cost will vary depending on specific needs.
2	chde-h1.2 [pr-1.1, 1.2, 6.0]	Protect or acquire privately owned sites.	continuous	FWS*, FWC, FDEP, counties, NGO				Cost dependent upon specific site and amount of land acquired.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	chde-h1.3 [pr-3.0]	Develop and implement best management practices for pine rocklands.	3-5 years	FWS*, NPS, counties, private, NGO	15	15	15	See Miami-Dade County Natural Areas Management Working Group (2004).
1	chde-h1.4 [pr-2.2, 3.2]	Continue to expand prescribed burns.	5-10 years	FWS*, DOF*, NPS, counties, private	1/acre	1/acre	1/acre	After task is complete and a normal fire rotation is achieved, growing season burns will be employed to maintain appropriate burn regime.
1	chde-h1.5.1 [pr-1.0]	Eliminate human-caused degradation.	as needed	FWS*, NPS, counties	2	2	2	
1	chde-h1.5.2 [pr-2.4, 3.4]	Control invasive plant species, particularly exotics.	continuous	FWS*, NPS, counties, NGO, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres infested with exotics.
1	chde-h2.1 [pr-1.4]	Eliminate physical degradation of habitat and restore to optimal conditions.	as needed	FWS*, NPS, counties	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres restored.
2	chde-h2.2 [pr-3.0]	Continue to refine management practices for pine rocklands.	3 years	FWS*, DERM, counties, NGO, private	20	20	20	
1	chde-h2.3 [pr-2.2, 3.2]	Continue to conduct prescribed burns.	continuous	FWS*, DOF*, DERM, counties, NPS	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
1	chde-h3.1	Continue to investigate and refine the habitat needs of each species.	3 years	FWS*, NGO, counties, private	30	30	30	
1	chde-h3.2 [pr-2.2, 3.2]	Investigate fire history and incorporate into management strategies.	2 years	FWS*, DERM, DOF	10	10		
2	chde-h3.3	Monitor sites with <i>C. deltoidea</i> ssp. <i>deltoidea</i> to determine success.	continuous	FWS*, NPS, NGO	5	5	5	
1	chde-h3.4.1	Assess the availability of GIS data.	2 years	FWS*, NPS, DERM, counties, NGO, private	50	50		
2	chde-s1.1	Inventory known populations.	1 year	FWS*, DERM, counties, NGO, private	15			

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	chde-s1.2	Resurvey historic locations.	1 year	FWS*, DERM, counties, NGO, private	15			
1	chde-s1.3	Map distribution of known populations and suitable habitat.	2 years	FWS*, NPS, DERM, counties, NGO, private*	50	50		
2	chde-s2.1.1	Continue work with ex situ propagation and seed banks.	3 years	FWS, NGO*, private	3	3	3	
3	chde-s2.1.2	Identify potential reintroduction sites and reintroduce <i>C. deltoidea</i> , where appropriate.	2-3 years	FWS, NPS, DERM, counties, NGO*, private	10	10	10	
3	chde-s2.1.3	Monitor the experimental outplantings.	continuous	FWS, NPS, DERM, counties, NGO*, private	5	5	5	
3	chde-s2.2.1	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	chde-s2.2.2	Encourage implementation of management plans.	continuous	FWS*, DERM, counties, NGO, private				Cost dependent upon the management plan implemented.
3	chde-s2.2.3	Continue to enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI*				Cost included in standard operating budgets of participating agencies.
1	chde-s3.1	Investigate the reproductive biology of <i>C. deltoidea</i> .	2 years	FWS*, DERM, NGO, private, counties	15	15		
1	chde-s3.2	Identify demographics and gene flow in <i>C. deltoidea</i> .	3 years	FWS*, DERM, NGO, private, counties	40	40	40	
2	chde-s3.3	Study the response of <i>C. deltoidea</i> to habitat management treatments.	3-4 years	FWS*, NPS, DERM, NGO, private, counties	60	60	60	
2	chde-s3.4	Characterize the habitat and identify suitable sites for experimental outplantings.	1 year	FWS, NPS, DERM, NGO*, private, counties	5			
1	chde-s4.1	Collect existing and historical data and place in a central location.	1 year	FWS, DERM, counties, NGO*, private	15			

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	chde-s4.2	Convene a meeting of all researchers.	1 year	FWS*, DERM, counties, NGO*, private	2			
2	chde-s4.3	Monitor status and success of all populations and change management practices if so indicated.	continuous	FWS*, DERM, counties, NGO, private	30	30	30	
3	chde-s4.4	Monitor reintroduction success and modify procedures as necessary.	continuous	FWS, NPS, DERM, NGO*, private, counties	7	7	7	
1	chde-s5.0	Continue implementation of the fire education program and modify as necessary any fire management education program that has been developed.	continuous	FWS*, DERM, counties, private, NGO	15	15	15	
1	chga-h1.1 [pr-2.6]	Protect pine rockland habitat of Garber's spurge ( <i>Chamaesyce garberi</i> ).	continuous	FWS*, NPS, counties, NGO, private				Cost will vary depending on specific needs.
2	chga-h1.2 [pr-1.1, 1.2, 6.0]	Protect or acquire privately owned sites.	continuous	FWS*, FWC, FDEP, counties, NGO				Cost dependent upon specific site and amount of land acquired.
1	chga-h1.3 [pr-3.0]	Develop and implement best management practices for pine rocklands.	3-5 years	FWS*, NPS, NGO, counties, private	15	15	15	Best management practices have been developed for Miami-Dade County (Miami-Dade County Natural Areas Management Working Group 2004).
1	chga-h1.4 [pr-2.2, 3.2]	Continue to conduct prescribed burns.	continuous	FWS*, DOF, DERM, counties, NPS	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
1	chga-h1.5.1 [pr-1.0]	Eliminate human caused degradation.	as needed	FWS*, NPS, counties	2	2	2	
1	chga-h1.5.2 [pr-2.4, 3.4]	Control invasive plant species, particularly exotics.	continuous	FWS*, NPS, counties, NGO, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres infested with exotics.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	chga-h2.1 [pr-1.4]	Eliminate physical degradation of habitat and restore to optimal conditions.	as needed	FWS*, NPS, counties	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres restored.
1	chga-h2.2 [pr-3.0]	Continue to refine management practices for pine rocklands.	3 years	FWS*, NGO, DERM, counties, private	20	20	20	
1	chga-h2.3 [pr2.2, 3.2]	Continue to conduct prescribed burns.	continuous	FWS*, DOF, DERM, counties, NPS	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
1	chga-h3.1	Continue to investigate and refine the habitat needs of each species.	3 years	FWS*, NGO, counties, private	30	30	30	
1	chga-h3.2 [pr-2.0, 3.0]	Investigate fire history and incorporate into management strategies.	2 years	FWS*, DERM, DOF	10	10		
2	chga-h3.3	Monitor sites with <i>C. garberi</i> to determine success.	continuous	FWS, NPS, NGO*	5	5	5	
1	chga-h3.4.1	Assess the availability of GIS data.	2 years	FWS*, NPS, DERM, counties, NGO, private	50	50		
2	chga-s1.1	Inventory known populations.	1 year	FWS*, DERM, counties, NGO, private	15			
1	chga-s1.2	Resurvey historic locations.	1 year	FWS*, DERM, counties, NGO, private	15			
1	chga-s1.3	Map distribution of known populations and suitable habitat.	2 years	FWS*, NPS, DERM*, counties, NGO, private	50	50		
2	chga-s2.1.1	Continue work with ex situ propagation and seed banks.	3 years	FWS*, NGO, private	3	3	3	
2	chga-s2.1.2	Identify potential reintroduction sites and reintroduce <i>C. garberi</i> , where appropriate.	2-3 years	FWS*, NPS, DERM, NGO, private	10	10	10	
2	chga-s2.1.3	Monitor the experimental outplantings.	continuous	FWS*, NPS, DERM, NGO, private, counties	5	5	5	
3	chga-s2.2.1	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								Federal agency's budget.
3	chga-s2.2.2	Encourage implementation of management plans.	continuous	FWS*, DERM, counties, NGO, private				Cost dependent upon the management plan implemented.
3	chga-s2.2.3	Continue to enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI				Cost included in standard operating budgets of participating agencies.
1	chga-s3.1	Investigate the reproductive biology of <i>C. garberi</i> .	2 years	FWS, DERM, NGO*, private, counties	15	15		
1	chga-s3.2	Identify demographics and gene flow in <i>C. garberi</i> .	3 years	FWS, DERM, NGO*, private, counties	40	40	40	
2	chga-s3.3	Study the response of <i>C. garberi</i> to habitat management treatments.	3-4 years	FWS, NPS, DERM, NGO*, private, counties	60	60	60	
3	chga-s3.4	Characterize the habitat and identify suitable sites for experimental outplantings.	1 year	FWS, NPS, DERM, NGO*, private, counties	5			
1	chga-s4.1	Collect existing and historical data and place in a central location.	1 year	FWS, DERM, counties, NGO*, private, Fairchild*	15			
2	chga-s4.2	Convene a meeting of all researchers.	1 year	FWS, DERM, counties, NGO*, private	2			
2	chga-s4.3	Monitor status and success of all populations and change management practices if so indicated.	continuous	FWS*, DERM, counties, NGO, private	30	30	30	
2	chga-s4.4	Monitor reintroduction success and modify procedures as necessary.	continuous	FWS, NPS, DERM, NGO*, private, counties	7	7	7	
1	chga-s5.0	Continue implementation of the fire education program and modify as necessary any fire management education program that has been developed.	continuous	FWS*, DERM, counties, private, NGO	15	15	15	
1	gasm-h1.1	Protect pine rockland habitat of Small's	continuous	FWS*, NPS, counties,				Cost will vary depending on

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[pr-2.6]	milkpea ( <i>Galactia smallii</i> ).		NGO, private				specific needs.
2	gasm-h1.2 [pr-1.1, 1.2, 6.0]	Protect or acquire private owned sites.	continuous	FWS*, FWC, FDEP, counties, NGO				Cost dependent upon specific site and amount of land acquired.
1	gasm-h1.3.1 [pr-1.0]	Eliminate human-caused degradation.	as needed	FWS*, NPS, counties	2	2	2	
1	gasm-h1.3.2 [pr-2.4]	Control invasive plant species, particularly exotics.	continuous	FWS*, NPS, counties, NGO, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres infested with exotics.
1	gasm-h2.1 [pr-1.4]	Eliminate physical degradation of habitat and restore to optimal conditions.	as needed	FWS*, NPS, counties	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres restored.
2	gasm-h2.2 [pr-3.0]	Continue to refine best management practices for pine rocklands.	3 years	FWS*, NGO, DERM, counties, private	20	20	20	Best management practices have been developed (Miami-Dade County Natural Areas Management Working Group 2004).
2	gasm-h2.3	Management plans for sites including <i>G. smallii</i> should be implemented and modified as necessary for the benefit of this species.	continuous	FWS*, DERM, counties, NGO, private				Cost dependent upon the management plan implemented.
1	gasm-h2.4 [pr-2.2, 3.2]	Continue to conduct prescribed burns.	continuous	FWS*, DOF, DERM, counties, NPS	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
1	gasm-h3.0	Continue to investigate and refine the habitat needs of each species.	3years	FWS*, NGO, counties, private	30	30	30	
1	gasm-h4.1	Monitor sites with <i>G. smallii</i> restoration programs to determine success.	continuous	FWS, NPS, NGO*	5	5	5	
1	gasm-h4.2 [pr-2.2, 3.2]	Investigate fire history and incorporate into management strategies.	2 years	FWS*, DERM, DOF	10	10		
1	gasm-h4.3.1	Assess the GIS data.	1 year	FWS, DERM, private*	10			

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	gasm-h4.3.2	Create coverage of population locations.	2 years	FWS, DERM*, NGO, counties*, private	10	10		
1	gasm-h4.3.3	Acquire recent imageries of the sites.	1 year	FWS, counties*, NGO, private	5			
1	gasm-h4.3.4	Distribute the coverages.	as needed	FWS, NPS, counties*, NGO, private	5	5	5	
1	gasm-h5.0 [pr-9.0]	Continue implementation of the fire education program and modify as necessary, any fire management education program that has been developed.	continuous	FWS, DERM, counties*, private, NGO	15	15	15	
2	gasm-s1.1	Inventory known populations.	1 year	FWS*, DERM, counties, NGO, private	15			
1	gasm-s1.2	Search for additional populations of <i>G. smallii</i> .	2 years	FWS*, NPS, DERM, counties, NGO, private	50	50		
1	gasm-s1.3	Map distribution of known populations and suitable habitat.	2 years	FWS, NPS, DERM*, counties, NGO*, private	50	50		
2	gasm-s2.1	Augment natural populations of <i>G. smallii</i> , where appropriate.	3 years	FWS*, NGO, private	5	5	5	
2	gasm-s2.2.1	Conserve germ plasm.	2-3 years	FWS, NGO*, private	1	1	1	
2	gasm-s2.2.2	Study the feasibility of translocating propagules into historically appropriate and protected natural habitats.	3 years	FWS, NGO*, NPS, counties, private	7	7	7	
2	gasm-s2.3.1	Use reintroduction protocols established by the conservation community.	continuous	FWS, NGO*, NPS, counties, private	5	5	5	
2	gasm-s2.3.2	Monitor the experimental outplantings.	continuous	FWS, NGO*, NPS, DERM, counties, private	5	5	5	
3	gasm-s2.4.1	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	gasm-s2.4.2	Encourage implementation of management plans.	continuous	FWS*, DERM, counties, NGO, private				Cost dependent upon the management plan implemented.
3	gasm-s2.4.3	Continue to enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI				Cost included in standard operating budgets of participating agencies.
1	gasm-s3.1	Study the reproductive biology of <i>G. smallii</i> .	2 years	FWS*, NGO*, DERM, counties, private	15	15		
2	gasm-s3.2	Study the response of <i>G. smallii</i> to habitat management treatments.	4 years	FWS*, NGO*, NPS, DERM, counties, private	60	60	60	
1	gasm-s3.3	Study the fire ecology of <i>G. smallii</i> .	3 years	FWS*, DERM, DOF, NGO	25	25	25	
2	gasm-s3.4	Determine population size and viability of all populations.	3 years	FWS, DERM, NGO*, private	10	10	10	
2	gasm-s3.5	Characterize the habitat and identify suitable sites for experimental outplantings.	1 year	FWS*, NPS, DERM, NGO*, private	5			
1	gasm-s3.6	Conduct genetic studies to document the genetic variation within and between populations.	2 years	FWS, DERM, NGO*, private	35	35		
2	gasm-s3.7	Apply and modify, if need be, reintroduction protocols established by the conservation community.	continuous	FWS*, NPS, DERM, NGO, private, counties	15	15	15	
1	gasm-s4.1	Collect existing and historical data and place in a central location.	1 year	FWS, DERM, counties, NGO*, private	15			
2	gasm-s4.2	Convene a meeting of researchers and land managers.	1 year	FWS*, DERM, counties, NGO*, private	2			
2	gasm-s4.3	Monitor status and success of all populations; change management practices if so indicated.	continuous	FWS, NPS, DERM, NGO*, private	20	20	20	
2	gasm-s4.4	Monitor reintroduction success and modify procedures as necessary.	continuous	FWS*, NPS, DERM, NGO, private, counties	7	7	7	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	gasm-s5.0	Continue to provide public information about pine rocklands and their unique flora.	continuous	FWS*, DERM, counties, private, NGO	15	15	15	
2	kede-h1.1.1 [pr-1.1, 6.0]	Continue Federal acquisition efforts for Key deer.	continuous	FWS*				Cost dependent upon specific site and amount of land acquired.
2	kede-h1.1.2 [pr-1.1, 6.0]	Support State acquisition efforts.	continuous	FWS, FWC*, FDEP				Cost dependent upon specific site and amount of land acquired.
3	kede-h1.1.3 [pr-1.1, 6.0]	Support and encourage land acquisition by non-governmental agencies.	continuous	FWS, NGO*, private				Cost dependent upon specific site and amount of land acquired.
3	kede-h1.1.4 [pr-1.1, 6.0]	Purchase and/or trade for lands adjacent to larger tracts of the refuge.	continuous	FWS*				Cost dependent upon specific site and amount of land acquired and/or traded.
3	kede-h1.1.5 [pr-1.1, 6.0]	Purchase easements when necessary on private property important to Key deer.	continuous	FWS*				Cost dependent upon specific site and amount of land acquired.
1	kede-h1.2.1 [pr-1.1, 1.2]	Protect Key deer on private lands through acquisition, conservation easements or agreements, and education of land owners.	continuous	FWS*, FWC, FDEP, TNC, Monroe County Land Authority,				A Habitat Conservation Plan for Big Pine Key and No Name Key has been finalized. Several land acquisition programs continue.
1	kede-h1.2.2	Protect Key deer on public lands.	continuous	FWS*, FWC				Cost dependent upon type of protection provided.
2	kede-h1.2.3 [pr-2.1, 3.1]	Protect important corridor areas.	continuous	FWS*, FDEP, FWC, counties				Cost dependent upon type of protection provided.
3	kede-h1.2.4 [pr-2.4]	Eliminate threats from invasive exotic flora and fauna.	continuous	FWS*, FWC, NGO, TNC	1.5/acre	1.5/acre	1.5/acre	Total cost dependent upon number of acres infested with exotics.

### Pine Rocklands Implementation

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	kede-h1.2.5.1 [pr-2.5]	Prohibit campfires in the National Key Deer Refuge.	continuous	FWS*				Task currently implemented on public lands and cost is included in managing agency's budget.
3	kede-h1.2.5.2 [pr-3.2]	Establish and maintain fire breaks and fire trails.	continuous	FWS*, FWC, FDEP				Task currently implemented on public lands and cost is included in managing agency's budget.
2	kede-h1.2.5.3 [pr-2.2, 3.2]	Conduct prescribed burns on the National Key Deer Refuge when necessary.	continuous	FWS*, NGO	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
3	kede-h1.2.6	Fence or barricade areas where off-road vehicle use and/or dumping is a threat.	continuous	FWS*, FDOT, counties				Task currently implemented on FWS land and cost is included in managing agency's budget.
3	kede-h1.2.7	Address the management and protection of non-refuge lands.	continuous	FWS*, FWC, counties, private	25	25	25	
3	kede-h1.2.8	Conduct experimental habitat management on selected Outer Keys.	2-3 years	FWS*, FWC	35	35	35	
3	kede-h1.2.9	Maintain and evaluate present deer exclosures on Big Pine Key.	2-3 years	FWS*, universities				
3	kede-h2.1 [pr-2.3, 3.3]	Restore natural tidal flow and hydrology by placing culverts or removing fill.	5-10 years	FWS*, NGO, COE, DOT, FDEP				Too many variables to accurately determine cost.
3	kede-h2.2 [pr-2.6]	Maintain and manage mosquito ditches so they do not impact deer habitat.	continuous	FWS*, NGO, FDEP				Task currently implemented on public lands and cost is included in responsible agency's budget.
2	kede-h2.3	Improve water quality in freshwater sources and restore freshwater sources.	3-5 years	FWS*, NGO, WMD	35	35	35	
3	kede-h2.4	Enhance Key deer habitat.	continuous	FWS*	.5/acre	.5/acre	.5/acre	Total cost dependent upon

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[pr-3.0]							number of acres enhanced.
3	kede-h2.5 [pr-4.1]	Improve habitat by planting or encouraging native plant species.	continuous	FWS*	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres restored.
3	kede-h2.6	Create habitat by refilling and recreating areas that have been dredged or altered.	continuous	FWS*, NGO	1/acre	1/acre	1/acre	Total cost dependent upon number of acres created for habitat.
3 <sup>†</sup>	kede-h3.1.1	Conduct radio telemetry on various subpopulations.	completed	FWS*, universities				See Lopez (2001).
3 <sup>†</sup>	kede-h3.1.2	Investigate the effect of habitat change.	completed	FWS*, universities				See Lopez (2001).
3 <sup>†</sup>	kede-h3.2.1	Investigate movement patterns and the spatial use of habitat to identify important core areas and corridors.	completed	FWS*, universities				See Lopez (2001).
3 <sup>†</sup>	kede-h3.2.2	Determine stable home range and minimum area required.	completed	FWS*, universities				See Lopez (2001).
3 <sup>†</sup>	kede-h3.2.3	Determine if the amount and configuration of habitat is sufficient to support a stable or increasing population of deer.	completed	FWS*, universities				See Lopez (2001).
3	kede-h4.0	Monitor the status of Key deer habitat and examine ecological processes.	continuous	FWS*, universities	15	15	15	
3	kede-h5.0 [pr-9.0]	Increase public awareness of Key deer habitat and instill stewardship.	continuous	FWS*, NGO	15	15	15	
3	kede-s1.1	Develop a Master Census Plan to determine the status of the Key deer and its habitat.	2-3 years	FWS*, FWC, NGO, counties, universities	4	4	4	
2 <sup>†</sup>	kede-s1.2	Survey for the presence/absence of Key deer in suitable habitat.	completed	FWS*, universities				See Lopez (2001).
3	kede-s1.3	Maintain and improve the GIS database for Key deer information.	continuous	FWS*	5	2	2	
3 <sup>†</sup>	kede-s2.1	Staff the National Key Deer Refuge	completed	FWS*				

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		with a biologist.						
2	kede-s2.2.1	Develop a standard protocol for conducting, monitoring, and evaluating all reintroduction, translocation, and supplementation efforts.	2-3 years	FWS*, universities	45	45	45	
2	kede-s2.2.2	Reintroduce Key deer to suitable public lands.	3-10 years	FWS*, NGO, universities	100	100	100	Initiated in 2004.
3	kede-s2.2.3	Educate the public on the need for and process of Key deer reintroductions.	3-10 years	FWS*, NGO, universities	10	10	10	Initiated in 2003.
2	kede-s2.2.4	Enforce protection of reintroduced or released Key deer.	as needed	FWS*, counties				Cost included in responsible agency's budget.
2	kede-s2.3	Conduct consultations on Federal activities. Determine jeopardy thresholds for the Key deer.	continuous	FWS*, FWC, NGO, universities	10	10	10	
3	kede-s2.4	Provide information about Key deer to Federal, State, county and city agencies.	continuous	FWS*, NGO, FWC, counties	3	3	3	
2	kede-s2.5.1	Control poaching.	continuous	FWS*, FWC				Task currently conducted and cost is included in responsible agency's budget.
3	kede-s2.5.2	Prohibit animal trespass.	continuous	FWS*, counties, private				Task currently conducted and cost is included in responsible agency's budget.
3	kede-s2.5.3.1	Reduce speed limit on primary and secondary roads.	continuous	FWS, DOT*, counties	4			After task is implemented, cost of enforcing speed zones will be included in responsible agency's budget.
2	kede-s2.5.3.2	Continue and increase enforcement of speed zones.	continuous	FWS, counties*				Task currently conducted and cost is included in responsible agency's budget.
3 <sup>†</sup>	kede-	Identify deer crossings.	completed	FWS*				See Lopez (2001).

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	s2.5.3.3							
3 <sup>†</sup>	kede-s2.5.3.4	Investigate the use of fencing to reduce collisions.	completed	FWS*				
3	kede-s2.5.3.5	Identify roads that could be constructed or upgraded, and coordinate to minimize impacts.	continuous	FWS*, DOT, counties	1	1	1	
3	kede-s2.5.4.1	Fill mosquito ditches in selected areas of the refuge.	as needed	FWS*				Total cost dependent upon number of acres restored.
3	kede-s2.5.4.2	Monitor effects of filling ditches.	3-5 years	FWS*, DOT, counties, WMD	15	15	15	
3	kede-s2.6.1.1	Eliminate incompatible uses on the refuge.	continuous	FWS*				Task currently implemented on public lands and cost is included in managing agency's budget.
3	kede-s2.6.1.2	Continue to limit access to daytime use.	continuous	FWS*				Task currently implemented on public lands and cost is included in managing agency's budget.
3	kede-s2.6.1.3	Continue to prohibit camping and military maneuvers.	continuous	FWS*				Task currently implemented on public lands and cost is included in managing agency's budget.
3	kede-s2.6.1.4	Continue to limit all vehicles to paved roads except for refuge and emergency operations.	continuous	FWS*				Task currently implemented on public lands and cost is included in managing agency's budget.
3 <sup>†</sup>	kede-s2.6.1.5	Erect fences around developments when deemed necessary.	completed	FWS*				
3	kede-s2.6.2.1	Prohibit feedings; post signs.	continuous	FWS*	1	1	1	
3	kede-	Prohibit feedings; distribute	continuous	FWS*	2	2	2	Brochures are available at

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	s2.6.2.2	educational brochures.						NKDR.
3	kede-s2.6.2.3	Prohibit feedings; increase enforcement of illegal feedings.	continuous	FWS*				Task currently implemented on public lands and cost is included in managing agency's budget.
3	kede-s2.7	Continue rehabilitation program of Key deer.	as needed	FWS, NGO*, private	3	3	3	Homosassa Springs Wildlife State Park and Lowry Park Zoo maintain injured deer.
3	kede-s2.8	Investigate captive propagation options.	3-5 years	FWS*, NGO, private	1	1	1	Captive propagation is deemed unnecessary at this time.
3 <sup>†</sup>	kede-s3.3.1	Determine the finite rate of increase for the Key deer population.	completed	FWS*, universities				See Lopez (2001).
1 <sup>†</sup>	kede-s3.3.2	Determine if the total population size is large enough to prevent functional extinction and genetic extinction.	completed	FWS*, universities				Lopez (2001) includes population viability analysis.
3 <sup>†</sup>	kede-s3.3.3	Determine the effective population size.	completed	FWS*, universities				Lopez (2001) estimates population size, age structure, and sex ratio.
1 <sup>†</sup>	kede-s3.3.4	Determine the number of subpopulations or breeding herds necessary to maintain a stable or increasing population.	completed	FWS*, universities				Lopez (2001) includes this analysis.
3 <sup>†</sup>	kede-s3.3.5	Determine a stable age structure, sex ratio, and group size for the Key deer.	completed	FWS*, universities				Lopez (2001) includes this analysis.
3 <sup>†</sup>	kede-s3.3.6	Characterize social behavior and compare past behaviors with current trends.	completed	universities*				Lopez (2001) includes analysis and comparison to Hardin et al. (1984) and Folk and Klimstra (1991).
3	kede-s3.3.7	Continue necropsy of all Key deer mortalities.	continuous	FWS*, universities	5	5	5	Necropsies are part of NKDR program.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	kede-s3.3.8	Update and compile all existing roadkill data.	continuous	FWS*, DOT, counties	1	1	1	
3 <sup>†</sup>	kede-s4.1	Develop methods to monitor demographic parameters.	completed	FWS, universities*				Lopez (2001) includes detailed methodology.
2	kede-s4.2	Conduct long-term monitoring of the status of the deer.	continuous	FWS*, universities				NKDR has been conducting regular monitoring since 1966; TAMU also conducted studies in 1970 and 2000.
3 <sup>†</sup>	kede-s5.1	Provide funding to build and operate a visitor center.	completed	FWS*				
3	kede-s5.2	Continue volunteer program.	continuous	FWS*, NGO	4	4	4	
3	kede-s5.3	Prepare informational material for the general public.	continuous	FWS*, NGO, counties	5	5	5	Several brochures completed.
3	kede-s5.4	Provide public officials, planning agencies, and private developers with information on all phases of Key deer management and about potential threats.	continuous	FWS*	2	2	2	
2	kede-s5.5	Inform the public through media as to the problems with feeding.	continuous	FWS*	15	15	15	
3	kede-s5.6	Inform the public through media as to the problem with animal trespass.	continuous	FWS*	15	15	15	
3	kede-s6.0	Establish reclassification criteria.	1-2 years	FWS*, universities	10	10		
2	kede-s7.0	Conduct multispecies recovery actions.	continuous	FWS*, FWC, WMD, universities, counties				Cost difficult to determine because task involves extensive cooperation and cost sharing among a number of agencies.
1	posm-h1.1 [pr-2.6]	Protect pine rockland habitat of tiny polygala ( <i>Polygala smallii</i> ).	continuous	FWS*, NPS, counties, NGO, private				Cost will vary depending on specific needs.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	posm-h1.2 [pr-1.1, 1.2]	Protect or acquire privately owned sites.	continuous	FWS*, FWC, FDEP, counties, NGO				Cost dependent upon specific site and amount of land acquired.
1	posm-h2.1 [pr-1.4]	Eliminate physical degradation of habitat and restore to optimal conditions.	as needed	FWS*, NPS, counties	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres restored.
1	posm-h2.2.1 [pr-8.0]	Implement necessary management.	continuous	FWS*, NPS, counties, private				Cost dependent upon type management implemented.
1	posm-h2.2.2 [pr-2.2, 3.2]	Continue to conduct prescribed burns.	continuous	FWS, DOF*, DERM, NPS, counties*	1/acre	1/acre	1/acre	Total cost dependent upon number of acres burned.
1	posm-h2.3.1 [pr-1.0]	Eliminate human-caused degradation.	as needed	FWS*, NPS, counties	2	2	2	
1	posm-h2.3.2 [pr-2.4, 3.4]	Control invasive plant species, particularly exotics.	continuous	FWS*, NPS, counties, NGO, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres infested with exotics.
1	posm-h3.1	Continue to investigate and refine the habitat needs of <i>P. smallii</i> .	3 years	FWS, DERM, NGO*, counties, private	30	30	30	
1	posm-h3.2 [pr-2.2, 3.2]	Investigate fire history and incorporate into management strategies.	2 years	FWS, DOF, counties*	10	10		
2	posm-h4.0	Monitor sites with pine restoration programs to determine success.	continuous	FWS, NPS, NGO*, counties	30	30	30	
1	posm-h5.0 [pr-9.0]	Continue implementation of the fire education program and modify as necessary, any fire management education program that has been developed.	continuous	FWS, DERM*, counties, private, NGO*	15	15	15	
2	posm-s1.0	Conduct surveys to determine distribution and status of <i>Polygala smallii</i> .	2 years	FWS*, NPS, DERM, counties, NGO, private	50	50		
2	posm-s2.1	Augment natural populations of <i>P. smallii</i> , where appropriate.	3 years	FWS, NGO*, private	5	5	5	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	posm-s2.1.1	Continue work with ex situ propagation and seed banks.	3 years	FWS, NGO*, private	3	3	3	
2	posm-s2.1.2	Continue to identify potential reintroduction sites and reintroduce plants, where appropriate.	2 years	FWS, NPS, DERM, counties, NGO*, private	10	10		
3	posm-s2.2.1	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	posm-s2.2.2	Encourage implementation of management plans.	continuous	FWS*, DERM, counties, NGO, private				Cost dependent upon the management plan implemented.
3	posm-s2.2.3	Continue to enforce take prohibitions.	continuous	FWS*, FDACS/DPI				Cost included in standard operating budgets of participating agencies.
2	posm-s3.1	Determine population size and viability of all populations.	3 years	FWS*, DERM, counties, NGO, private	10	10	10	
1	posm-s3.2	Investigate the genetic relationship of distinct Polygala populations.	1 year	FWS*, DERM, counties, NGO*, private	45			
1	posm-s4.1	Collect existing and historical data and place in a central location.	2 years	FWS, DERM, counties, NGO*, private	15	15		
2	posm-s4.2	Convene a meeting of all researchers.	1 year	FWS*, DERM, counties, NGO*, private	2			
2	posm-s4.3	Monitor status and success of all populations; change management practices if so indicated.	continuous	FWS, NPS, DERM, counties, NGO*, private	8	8	8	
2	posm-s4.4	Monitor reintroduction success and modify procedures as necessary.	continuous	FWS, NPS, DERM, counties, NGO*, private	7	7	7	
1	posm-s5.0	Continue to provide public information about scrub, sandhill, and open coastal spoil habitat and its unique flora.	continuous	FWS*, DERM, counties, private, NGO	15	15	15	

<b>Mesic and Hydric Pine Flatwoods Implementation</b>								
depu = Beautiful pawpaw		mpf = mesic and hydric pine flatwoods			s = species task		h = habitat task	
Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	depu-h1.1 [mpf-2.1-2.5, 5.1-5.4, 6.1]	Secure beautiful pawpaw ( <i>Deeringothamnus pulchellus</i> ) habitat through acquisition, landowner agreements, and conservation easements.	continuous	FWS*, FDEP, FWC, DOF, TNC				Cost dependent upon specific site and amount of land acquired.
2	depu-h1.2.1	Conduct prescribed burns.	continuous	FWS, FWC*, FDEP*, NGO*, NPS*, WMD*, DOF*, private*	.06/acre	.06/acre	.06/acre	Total cost dependent upon number of acres burned.
2	depu-h1.2.2 [mpf-3.9]	Control and eliminate exotic and invasive plants and animals.	continuous	FWS, FWC*, FDEP*, NPS*, WMD*, NGO*, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres infested with exotics.
3	depu-h1.2.3 [mpf-3.6, 3.10]	Control access to areas where listed plants are growing.	as needed	FWS, FWC*, FDEP*, NGO*, NPS, WMD	10	10	10	
2	depu-h2.1 [mpf-4.2]	Restore natural fire regime.	continuous	FWS, FWC*, FDEP*, NGO*, NPS*, WMD*, DOF*, private*	.06/acre	.06/acre	.06/acre	Total cost dependent upon number of acres burned.
3	depu-h2.2 [mpf-4.1-4.6]	Enhance sites with native plant species.	3-5 years	FWS, FWC*, FDEP*, NPS*, WMD*, NGO*	5/acre	5/acre	5/acre	Total cost dependent upon number of acres restored.
2	depu-h3.0 [mpf-7.1-7.8]	Continue habitat level research projects.	2 years	FWS, FWC, FDEP, NGO, universities*	30	30		
3	depu-h4.0 [mpf-3.7]	Monitor habitat/ecological processes.	continuous	FWS, FWC*, FDEP*, NGO*, universities*	20	20	20	
3	depu-h5.0 [mpf-8.0]	Provide public information about pine flatwoods and vegetative communities and their unique biota.	continuous	FWS*, FWC, DOF, NGO, private, FDEP	10	5	5	
1	depu-s1.1.1	Continue surveys in Lee and Charlotte Counties.	2 years	FWS*, counties, FDEP, WMD, FWC	15	15		

**Mesic and Hydric Pine Flatwoods Implementation**

depu = Beautiful pawpaw

mpf = mesic and hydric pine flatwoods

s = species task

h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	depu-s1.1.2	Continue surveys on protected lands.	2 years	FWS*, counties, FDEP, WMD, FWC	15	15		
3	depu-s1.2 [mpf-1.1-1.3]	Maintain information on depu and its habitat in GIS database.	continuous	FWS*, FDEP, USGS, counties	1	1	1	
1	depu-s2.1 [mpf-2.1-2.5, 5.1-5.4, 6.1]	Acquire or protect habitat through acquisition, conservation easements, or agreements with landowners.	continuous	FWS*, FDEP, FDACS, DOF, NPS, WMD, NGO, TNC				Cost dependent upon specific site and amount of land acquired.
1	depu-s2.2 [mpf-2.7-2.9, 3.1 - 3.10]	Protect populations on public lands.	continuous	FWS*, FWC, DOF, FDACS, FDEP	15	15	15	
2	depu-s2.3 [mpf-2.9, 3.3-3.4]	Use local or regional planning to protect habitat.	continuous	FWS*, counties, local government				Cost included in standard operating procedures of county's budget.
2	depu-s2.4.1 [mpf-2.8]	Initiate section 7 consultation when applicable.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	depu-s2.4.2 [mpf-2.8]	Enforce take and trade prohibitions.	continuous	FWS*, FDACS/DPI				Cost dependent upon specific situation.
2	depu-s2.5	Develop an ex situ collection.	continuous	FWS, private, NGO*	5	5	5	
3	depu-s2.6.1	Establish protocol for reintroduction.	2 years	FWS, private, NGO*	20	20		
3	depu-s2.6.2	Locate potential (re)introduction sites.	2-3 years	FWS, private, FWC, NPS, FDEP, WMD, COE, NGO*	10	10	10	
3	depu-s2.6.3	(Re)introduce plants to protected sites.	2-3 years	FWS, private, FWC, NPS, FDEP, WMD, COE, NGO*	30	30	30	
3	depu-s3.1	Conduct research to determine demographic information.	3-5 years	FWS*, FDEP, FWC, universities, NPS	40	40	40	
3	depu-s3.2	Conduct population viability and risk assessment analysis.	3 years	FWS*, FDEP, FWC, universities	30	30	30	

<b>Mesic and Hydric Pine Flatwoods Implementation</b>								
depu = Beautiful pawpaw		mpf = mesic and hydric pine flatwoods			s = species task			h = habitat task
Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	depu-s3.3 [mpf-7.1-7.5]	Conduct research to assess management requirements of depu.	2-3 years	FWS, FDEP, FWC, universities*	35	35	35	
2	depu-s3.4	Assess feasibility of relocation and obtain information on techniques and survival.	2-3 years	FWS, private, FWC, FDEP, universities, NGO*	35	35	35	
3	depu-s4.1.1	Monitor to detect changes in demographic characteristics.	continuous	FWS*, FWC, NPS, FDEP, universities	20	20	20	
3	depu-s4.1.2	Monitor the effects of land management actions on depu.	continuous	FWS, FWC*, NPS*, FDEP*, universities	20	20	20	
3	depu-s4.2	Develop a quantitative description of the population structure.	2 years	FWS, FDEP, FWC, universities*	30	30		
3	depu-s4.3 [mpf-7.7]	Monitor reintroduced plants.	continuous	FWS, FDEP, FWC, counties, private, NPS, WMD, COE, NGO*	20	20	20	
3	depu-s5.0 [mpf-8.0]	Provide information about depu to the public.	continuous	FWS*, FWC, DOF, NGO, private, counties, FDEP	10	5	5	
3	depu-s6.0	Establish de-listing criteria.	as needed	FWS*, FWC, NGO, universities				

<b>Dry Prairie Implementation</b>								
acca = Audubon's crested caracara		fgsp = Florida grasshopper sparrow			dp = dry prairie		s = species task	h = habitat task
Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	acca-h1.1.1	Encourage the purchase of unprotected lands that support Audubon's crested caracaras.	continuous	FWS*, FWC*, FDEP, WMD				Cost dependent upon specific site and amount of land acquired.
3	acca-h1.1.2	Use conservation easements and other non fee-title ownership options to	continuous	FWS*, FWC*, WMD, FDEP, NGO				Cost dependent upon terms of agreement entered into

### Dry Prairie Implementation

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		maintain habitat.						with landowner.
1	acca-h1.1.3 [dp-6.2]	Encourage landowners to maintain habitat for acca and other prairie species.	continuous	FWS*, FDEP, FWC*, WMD, NRCS	1	1	1	
2	acca-h1.1.4	Maintain and enhance habitat on acquired lands or lands under easement/agreement.	continuous	FWS, FDEP, FWC, WMD, NPS	5/acre	5/acre	5/acre	Total cost dependent upon number of acres maintained.
2	acca-h1.2.1 [dp-2.8, 3.1, 3.2]	Conduct prescribed burns at periodic intervals.	continuous	FWS, FDEP, FWC, NPS, USAF, DOF, private	.02/acre	.02/acre	.02/acre	Total cost dependent upon number of acres burned.
2	acca-h1.2.2 [dp-3.1, 3.2]	Maintain pastures in native vegetation to the extent possible.	continuous	FWS, FDEP, FWC, NPS, USAF, DOF				Task is currently implemented on public lands and cost is included in managing agency's budget.
3	acca-h1.2.3	Do not allow reforestation of prairies.	continuous	FWS, FDEP*, FWC*, NPS, USAF*, DOF				Task is currently implemented on public lands and cost is included in managing agency's budget.
3	acca-h1.2.4 [dp-3.2]	Establish appropriate burn seasonality.	1-2 years	FWS*, FDEP*, FWC*, NPS, USAF*, DOF, private	30	30		
3	acca-h2.1	Expand acca habitat in occupied areas.	continuous	FWS, FDEP, FWS, NPS, USAF, DOF, private	2/acre	2/acre	2/acre	Total cost dependent upon number of acres enhanced.
3	acca-h2.2 [dp-4.0]	Restore habitat in currently unoccupied areas.	continuous	FWS, FWC, FDEP, WMD, NPS	5/acre	5/acre	5/acre	Total cost dependent upon number of acres restored.
3	acca-h3.1	Determine why certain acca habitat areas are not used.	2 to 3 years	FWS*, FWC*, universities*, USAF, NPS	35	35	35	
3	acca-h3.2	Determine which elements to modify to make unused areas suitable for acca.	2 to 3 years	FWS*, FWC*, universities*, USAF, NPS	40	40	40	
2	acca-h4.0	Use satellite and aerial photos to monitor land use changes in the core of the acca population.	continuous	FWS*, FWC, NPS*, universities*, USAF, USGS	5	5	5	
3	acca-h5.0	Inform the public.	continuous	FWS*, FWC*, FDEP,	10	5	5	

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					FY 1	FY 2	FY 3	
	[dp-6.1, 6.3]			USAF, NGO				
2	acca-s1.1	Locate active acca territories in Glades, DeSoto, Highlands, Okeechobee, and Osceola Counties.	continuous	FWS*, FDEP, FWC*, NPS, WMD, USAF, universities*	20	20	20	
3	acca-s1.2 [dp-1.3]	Locate and map acca potential habitat that can be restored for reintroductions.	continuous	FWS*, FWC*, NPS, FDEP, WMD, USAF, USGS	20	20	20	
2 <sup>†</sup>	acca-s1.3	Develop standardized, systematic censusing procedures.	completed	FWC*, universities				See Morrison (2001).
2	acca-s2.1.1	Inform landowners of presence of acca on their property.	continuous	FWS*, COE, FDEP, FWC*, NPS, WMD, USAF	1	1	1	
1	acca-s2.1.2	Encourage landowners to protect acca and their nesting sites by providing incentives.	continuous	FWS*, FWC*, NRCS*				Cost dependent upon incentives awarded.
3	acca-s2.2	Develop and implement a plan to reintroduce acca into suitable historic habitat.	3-5 years	FWS*, FWC*, USAF, NPS, FDEP, WMD, universities*	60	60	60	
3	acca-s2.3	Encourage natural colonization of restored habitats by acca.	continuous	FWS, FWC, WMD, COE, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	acca-s2.4	Introduce rehabilitated caracaras into expanded/restored areas whenever possible.	continuous	FWS, FWC*, NPS	20	20	20	
3	acca-s2.5.1	Develop an emergency program for removing sick or injured acca from the wild.	3-5 years	FWS, FWC*, private*, universities, NGO	40	40	40	
3	acca-s2.5.2	Establish an acca rehabilitation team.	3 years	FWS, FWC*, private, universities, NGO	5	5	5	
3	acca-s2.5.3	Maintain accurate records on acca in rehabilitation.	continuous	FWS, FWC*, private, universities, NGO	1	1	1	
3	acca-s2.5.4	Determine where recovered acca should be released into the wild.	continuous	FWS, FWC*, private, universities, NGO, NPS, USAF	20	20	20	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	acca-s2.5.5	Monitor the health and status of rehabilitated acca.	continuous	FWS, FWC*, universities, NGO, NPS	30	30	30	
2	acca-s2.5.6	Conduct section 7 consultations on all Federal actions that may affect caracaras and their habitat.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
1	acca-s3.1.1 [dp-2.7, 5.1-5.3]	Determine essential habitat components for acca.	3-5 years	FWS*, NGO, FWC*, NPS, WMD, universities*, USAF, USGS/BRD	35	35	35	
1	acca-s3.1.2	Determine minimum amount of nesting/feeding habitat needed to support an acca population.	3-5 years	FWS*, FWC*, universities*, USAF, NPS	30	30	30	
3	acca-s3.1.3	Formulate estimate of habitat carrying capacity under optimum conditions.	5 years	FWS*, FWC, universities*, USAF, NPS	30	30	30	
1 <sup>†</sup>	acca-s3.1.4	Establish habitat management guidelines to protect nests and nesting pairs of acca.	completed	FWC*, universities				See Morrison (2001).
2	acca-s3.1.5	Use information and conduct research to develop a population viability analysis for acca.	2-3 years	FWS*, FWC*, universities*	35	35	35	
3	acca-s3.2	Compile acca data into a central database at one location.	continuous	FWS*, FWC, universities	5	5	5	
2	acca-s4.1	Develop monitoring protocols and techniques for acca.	3-5 years	FWS*, FWC*, NPS, universities*, USAF, USGS/BRD	15	15	15	
2	acca-s4.2	Monitor acca on public lands to evaluate management actions.	continuous	FWS, FWC, NPS, WMD, USAF, USGS/BRD, COE	25	25	25	
3	acca-s4.3	Monitor the success of reintroduced acca.	continuous	FWS, NGO, FWC, NPS, WMD, universities, USAF, USGS/BRD	20	20	20	
3	acca-s5.0 [dp-6.1, 6.3]	Increase public awareness of the biology, ecology, status, and trends of the acca.	continuous	FWS*, FWC*, NGO, NRDC, WMD, USAF	10	5	5	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	fgsp-h1.1.1 [dp-2.1, 2.4, 3.2, 3.3]	Maintain and enhance Florida grasshopper sparrow habitat on acquired lands or lands under conservation easement or agreement.	continuous	FWS, FWC, USAF, FDEP, WMD, NPS	5/acre	5/acre	5/acre	Total cost dependent upon number of acres maintained.
2	fgsp-h1.1.2 [dp-2.1, 2.5, 2.6]	Encourage purchase of lands to protect fgsp.	continuous	FWS*, FDEP, FWC*, WMD				Cost dependent upon specific site and amount of land acquired.
2	fgsp-h1.1.3 [dp-2.2, 3.4]	Discourage changes in present level of cattle grazing where conducive to fgsp.	continuous	FWS*, FDEP, FWC*, tribes	1	1	1	Cost may increase if incentives are provided.
1	fgsp-h1.2.1 [dp-2.8, 3.1, 3.2]	Continue prescribed burns at periodic intervals.	continuous	FWS, FDEP, FWC, USAF, private	.02/acre	.02/acre	.02/acre	Total cost dependent upon number of acres burned.
2	fgsp-h1.2.2 [dp-3.1, 3.2]	Maintain pastures in native vegetation to the extent possible.	continuous	FWS, FDEP, FWC, USAF				Task currently implemented on public lands and cost is included in managing agency's budget.
2	fgsp-h1.2.3	Do not allow reforestation of prairies.	continuous	FWS*, FDEP, FWC*, USAF				Task currently implemented on public lands and cost is included in managing agency's budget.
2	fgsp-h1.2.4 [dp-3.2]	Establish appropriate burn seasonality.	1-2 years	FWS, FDEP, FWC, USAF, NPS, DOF, private	30	30		
2	fgsp-h1.2.5 [dp-2.4]	Avoid construction of fences or other structures in fgsp habitat.	continuous	FWS, FDEP*, FWC*, USAF*				Task currently implemented on public lands and cost is included in managing agency's budget.
2	fgsp-h1.2.6 [dp-2.4 3.2]	Avoid land management and maintenance activities during fgsp nesting.	continuous	FWS, FDEP*, FWC*, USAF*, COE				Task currently implemented on public lands and cost is included in managing agency's budget.
2	fgsp-h1.3	Conduct section 7 consultations on all Federal activities that might affect	continuous	All Federal agencies				Cost included in standard operating procedures of

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		grasshopper sparrows and their habitat.						Federal agency's budget.
2	fgsp-h2.1 [dp-1.3]	Identify areas of suitable unoccupied habitat for fgsp.	3 years	FWS*, FWC*, USAF, USGS, FDEP	25	25	25	
3	fgsp-h2.2 [dp-4.0]	Restore selected areas for fgsp as needed.	continuous	FWS, FWC, USAF, WMD, COE, NPS	5/acre	5/acre	5/acre	Total cost dependent upon number of acres restored.
3	fgsp-h2.3	Expand fgsp habitat in occupied areas, locate and restore habitat in unoccupied areas.	continuous	FWS*, NGO, FWC*, USAF*, COE	5/acre	5/acre	5/acre	Total cost dependent upon number of acres restored.
2	fgsp-h3.0 [dp-2.7, 5.1-5.4]	Continue research on fgsp/habitat interactions.	continuous	FWS*, FDEP*, NGO, FWC*, tribes, universities*, USGS/BRD, USAF	35	35	35	
1	fgsp-s1.0 [dp-1.1, 1.2]	Determine the distribution and abundance of fgsp.	3 years	FWS*, NGO, FDEP*, FWC*, tribes, WMD, USAF*	30	30	30	
3	fgsp-s2.1	Encourage natural colonization of restored habitat by fgsp.	continuous	FWS, NGO, FWC, USAF, WMD, COE	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
3	fgsp-s2.2	Develop and implement a plan to reintroduce fgsp into historic habitat in the Kissimmee River Valley.	continuous	FWS*, FWC*, universities	60	60	60	
3	fgsp-s2.3	Develop and implement, as warranted, a captive propagation plan for fgsp.	3-5 years	FWS*, FWC, universities	150	75	75	
2	fgsp-s3.1 [dp-3.5]	Develop information on fgsp's biology, including genetic/ecological studies.	continuous	FWS*, FDEP*, NGO, FWC*, tribes, universities*, USGS/BRD, USAF	60	60	60	
2	fgsp-s3.2	Continue winter ecology studies of fgsp.	3 years	FWS*, FWC, universities*	25	25	25	
2	fgsp-s3.3	Develop a reserve design for fgsp.	2-3 years	FWS*, FWC, universities*	30	30	30	
2	fgsp-s4.1	Develop consistent survey/census protocols and evaluate and assure continuation/ consistency of ongoing monitoring protocols.	2-3 years	FWS, FWC*, FDEP*, universities, USAF*, USGS/BRD	15	15	15	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	fgsp-s4.2 [dp-3.5, 3.6]	Monitor fgsp on public land to evaluate management actions.	continuous	FWS, NGO, FDEP*, FWC*, tribes, universities, USAF*, USGS/BRD	65	65	65	
3	fgsp-s4.3 [dp-3.5]	Monitor the success of reintroduced fgsp.	continuous	FWS*, NGO, FDEP, FWC*, tribes, universities, USAF, USGS/BRD	25	25	25	
3	fgsp-s5.0 [dp-6.1, 6.3]	Increase public awareness of and provide information on the biology, ecology, and status of the fgsp.	continuous	FWS*, FDEP*, FWC*, NGO, WMD, USAF	10	5	5	

<b>Freshwater Marsh/Wet Prairie Implementation</b>								
csss = Cape Sable seaside sparrow			cuok = Okeechobee gourd		eski = Everglade snail kite			
fm = freshwater marsh/wet prairie			s = species task		h = habitat task			
Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	csss-h1.1	Review the effects of hydrological restoration in Everglades, Big Cypress, and Southern Glades WEA and make appropriate management decisions.	continuous	FWS*, NPS*, FWC*, WMD, COE	70	70	70	
3 <sup>†</sup>	csss-h1.2	Develop detailed maps of csss habitat.	completed	FWS, universities*, NPS*, COE, USGS				
1	csss-h1.3	Monitor changes in habitat as a result of changes in hydrologic regimes and fire events.	continuous	FWS, FWC*, NPS*, COE*, WMD	60	60	60	
2	csss-h1.4 [fm-1.2, 1.3]	Determine necessary management practices to maintain or restore csss habitat.	5 years	FWS, NPS*, WMD, COE, FWC*	50	50	50	
1	csss-h2.2 [fm-1.2, 1.3]	Establish and implement the appropriate hydrologic regimes necessary to support Cape Sable	continuous	FWS, COE*, NGO, FWC, tribes, NPS*, universities*, USGS/BRD, WMD*	25000	25000	25000	Cost difficult to determine because task involves extensive cooperation and

**Freshwater Marsh/Wet Prairie Implementation**

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
		seaside sparrows.						cost sharing among a number of agencies.
1	csss-h2.3 [fm-1.2, 1.3]	Establish and implement the appropriate fire management necessary to support csss.	continuous	FWS, NPS*, WMD, FWC*, FDEP, private	.05/acre	.05/acre	.05/acre	Total cost dependent upon number of acres burned.
2	csss-h2.4 [fm-1.2, 1.3, 3.0]	Remove woody species and/or exotics from disturbed habitats previously used by csss.	continuous	FWS, NPS*, WMD, FWC, FDEP	3/acre	3/acre	3/acre	Total cost dependent upon number of acres managed.
3	csss-h3.1	Conduct a quantitative study to better understand changes in dominant plant species that have occurred within the csss breeding habitat in response to local hydrological conditions.	3-5 years	FWS, NPS, FWC, FDEP, NGO, universities*	70	70	70	
3	csss-h3.2 [fm-1.2, 1.3]	Implement study to determine the factors that regulate woody plant growth and colonization in short-hydroperiod prairies.	3 years	FWS*, NPS*, FWC, universities*	50	50	50	
3	csss-h3.3	Develop methods to manipulate vegetative communities.	2-3 years	FWS*, NPS*, FWC, universities*	20	20	20	
3	csss-h3.4	Determine the effects of altered hydrologic patterns on the fire frequency of marl prairies.	3-5 years	FWS, NPS*, FWC*, COE, WMD, universities*	50	50	50	
2	csss-h3.5	Continue research on the effects of fire frequency on Cape Sable seaside sparrow habitat use.	2-3 years	FWS, NPS*, USGS/BRD, universities*	80	80	80	
2	csss-h4.0	Monitor Cape Sable seaside sparrow habitat by implementing a long-term vegetation monitoring program.	10-15 years	FWS*, NPS*, FWC*, universities	50	50	50	
3	csss-h5.0 [fm-2.2]	Increase public awareness about short-hydroperiod marl prairies and their key role in the Everglades ecosystem.	continuous	FWS*, FWC, NPS, NGO, USGS/BRD	5	5	5	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	csss-s1.1	Continue and expand distribution surveys.	continuous	FWS*, COE, FWC*, NPS*	65	65	65	
3 <sup>†</sup>	csss-s1.2	Incorporate wintering ecology studies on csss habitat use into a GIS database.	completed	Private*				
2	csss-s1.4	Survey habitat components of occupied and unoccupied habitat to determine why csss is absent from some areas.	3-5 years	FWS, NPS*, universities	75	75	75	
1	csss-s2.1 [fm-1.2, 1.3]	Develop or establish and implement the appropriate water management regimes to protect csss in Everglades NP, Big Cypress National Preserve, and the Southern Glades Wildlife and Environmental Area.	5-10 years	FWS, COE*, NGO, FWC*, tribes, NPS*, universities, USGS/BRD, WMD*	25000	25000	25000	Cost difficult to determine because task involves extensive cooperation and cost sharing among a number of agencies.
2	csss-s2.2	Conduct section 7 consultations on Federal activities that may affect Cape Sable seaside sparrows.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	csss-s2.3	Develop and implement Reasonable and Prudent Alternatives to avoid the likelihood of jeopardy.	continuous	FWS, COE*, counties, FWC, NPS, tribes, WMD	40	40	40	
1	csss-s3.1	Recover the core subpopulation west of Shark River Slough.	10 years	FWS*, WMD, NPS*, COE	150	150	150	
1	csss-s3.2	Recover East Everglades-Taylor Slough subpopulations to levels consistent with restored hydropatterns.	5-10 years	FWS, COE, NPS, WMD	100	100	100	
3	csss-s3.3 [fm-1.3]	Restore disturbed habitats identified as potential Cape Sable seaside sparrow, creating opportunities for recolonization of former habitat.	continuous	FWS, NPS*, FWC*, WMD, COE, FDEP, private	5/acre	5/acre	5/acre	Total cost dependent upon number of acres restored.
3	csss-s3.4.1.1	Determine the sub-population levels that will trigger translocation.	2-3 years	FWS*, FWC*, NPS*, USGS/BRD, universities	50	50	50	
3	csss-	Determine the sub-population levels at	2-3 years	FWS*, FWC*, NPS*,	50	50	50	

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					FY 1	FY 2	FY 3	
	s3.4.1.2	which the removal of individuals from the donor site has minimal risk.		USGS/BRD, universities				
3	csss-s3.4.1.3	Determine whether translocated individuals must have a specific age structure to be successful.	2-3 years	FWS*, FWC, NPS*, USGS/BRD, universities*	50	50	50	
3	csss-s3.4.2	Identify recipient sites for translocated csss.	2 years	FWS*, FWC*, NPS*, USGS/BRD, universities*	30	30		
3	csss-s3.5.1	Develop a protocol for controlled propagation of csss.	3-5 years	FWS*, FWC*, NPS, universities	100	75	75	
3	csss-s3.5.2	Review propagation protocol developed for the Dusky seaside sparrow, identify weaknesses, and make appropriate changes for the Cape Sable seaside sparrow.	2 years	FWS*, FWC*, NPS, universities	50	50		
3	csss-s3.5.3	Develop a genetic management plan for csss.	3-5 years	FWS*, NPS, USGS/BRD, universities, FWC	100	75	75	
3 <sup>†</sup>	csss-s4.1.1	Identify all areas that provide habitat for all life stages of csss.	completed	FWS, NPS*, private, USGS, universities*				
3	csss-s4.1.2	Determine seasonal movement patterns and colonizing ability.	3-5 years	FWS*, NGO, FWC, NPS*, universities*, USGS/BRD	90	90	90	
2	csss-s4.2	Better define the habitat requirements of csss.	3-5 years	FWS*, FWC, NPS*, NGO, USGS/BRD, universities*	60	60	60	
3	csss-s4.3	Determine age-specific survivorship of csss.	2 years	FWS, NPS*, FWC, universities*	50	50		
3	csss-s4.4	Determine age-specific fecundity of csss.	2 years	FWS, NPS*, FWC, universities*	50	50		
2	csss-s4.5	Research predation rates and how other factors influence predation for csss.	3-5 years	FWS*, NPS*, FWC, universities*	60	60	60	
2	csss-s4.6 [fm-1.4]	Continue development of population models for the csss.	2-3 years	FWS*, NPS*, USGS, FWC, universities*	30	30		

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	csss-s5.0	Monitor Cape Sable seaside sparrow sub-populations to assure that further declines in range and numbers do not occur and that recovery actions are being implemented and are effective.	continuous	FWS, NPS*, FWC*, NGO, universities*	30	30	30	
3	csss-s6.0 [fm-2.2]	Increase public awareness of csss and its habitat.	continuous	FWS*, COE, FWC*, NGO, NPS*, WMD	10	5	5	
1	cuok-h1.1 [fm-1.2, 1.3, 1.6]	Determine water regulation practices that promote recovery of cuok, assess the implications on an ecosystem-wide scale, and make recommendations to water managers.	5-10 years	FWS*, WMD, NGO, COE, FWC	50	50	50	
2	cuok-h1.2 [fm-1.2, 1.3, 3.0]	Control or remove exotic vegetation in wetlands in a manner that will avoid impacts to cuok.	continuous	FWS, WMD*, FWC*, NPS, FDEP, NGO	1/acre	1/acre	1/acre	Total cost dependent upon number of acres infested with exotics.
3	cuok-h1.3 [fm-1.2, 1.3, 3.0]	Plant native trees or shrubs to replace exotics.	continuous	FWS, WMD*, FWC*, NPS, NGO	10/acre	10/acre	10/acre	Total cost dependent upon number of acres restored.
2	cuok-h1.4 [fm-1.2, 1.3]	Use controlled burns to open up areas of overly dense vegetation in lake littoral zones and marshes.	continuous	FWS, WMD*, FWC*, NPS, NGO, FDEP, private	.03/acre	.03/acre	.03/acre	Total cost dependent upon number of acres burned.
2	cuok-h1.5 [fm-1.2, 1.3, 2.1]	Prevent cultural eutrophication of lakes and marshes.	continuous	FWS, WMD*, FWC*, NPS, FDEP, EPA, COE	5000	5000	5000	
2	cuok-h2.1 [fm-1.2, 1.3]	Ensure that habitat needs of cuok are incorporated into restoration of Kreamer, Torrey, and Ritta Islands.	as needed	FWS*, WMD, COE				Task currently implemented and cost is included in managing agency's budget.
3	cuok-h2.2	Coordinate translocation plans for cuok with the Kissimmee River restoration activities.	as needed	FWS*, WMD, COE				Task currently implemented and cost is included in managing agency's budget.
2	cuok-h3.0	Research the acute and long-term	1-5 years	FWS*, WMD, EPA,	15	15	15	

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					FY 1	FY 2	FY 3	
	[fm-3.0]	tolerance of cuok to herbicides used to control nuisance aquatic vegetation.		private, universities, FWC				
2	cuok-h4.0	Monitor habitat and ecological processes to determine effects on cuok.	continuous	FWS*, WMD, FWC, COE, NGO, universities	40	40	40	
3	cuok-h5.0 [fm-2.2]	Increase public awareness of ecological relationships, environmental stressors, and restoration activities in South Florida.	continuous	FWS*, FWC, WMD, COE, NGO	10	5	5	
1	cuok-s1.1	Conduct regularly scheduled surveys for cuok.	continuous	FWS*, COE, WMD*, NGO, universities, FWC	20	15	15	
3	cuok-s1.2	Encourage individuals to provide information on sightings of cuok.	continuous	FWS*, WMD, COE, FWC	2	2	2	
2	cuok-s2.1 [fm-3.0]	Ensure that spraying to control aquatic vegetation does not impact cuok.	continuous	FWS*, WMD, COE, FWC	1	1	1	Majority of cost included in WMD and spraying agency's budget.
2	cuok-s2.2 [fm-1.2, 1.3, 3.0]	Assess the effect of Melaleuca and Brazilian pepper control efforts and use techniques to avoid direct impact to cuok.	1-2 years	FWS, WMD*, NPS, FWC*, USGS/BRD, universities, NGO	15	15		
2	cuok-s2.3	Use provisions of section 7 of the ESA to protect cuok.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2	cuok-s2.4.1	Establish a protocol for translocation.	2-3 years	FWS*, WMD, NPS, FWC, NGO	20	10	10	
2	cuok-s2.4.2	Locate potential translocation sites.	2-3 years	FWS*, WMD, NPS, FWC, NGO	10	10	10	
2	cuok-s2.4.3	Translocate plants to selected sites.	3-5 years	FWS*, WMD, NPS, FWC, NGO	15	15	15	
2	cuok-s3.1	Test the viability of cuok seeds submerged for long periods.	3 years	FWS, WMD, NGO*, universities	1	1	1	

**Freshwater Marsh/Wet Prairie Implementation**

csss = Cape Sable seaside sparrow

cuok = Okeechobee gourd

eski = Everglade snail kite

fm = freshwater marsh/wet prairie

s = species task

h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	cuok-s3.2	Characterize range of soil conditions where cuok grows and provide detail mapping of soil types in southeastern Lake Okeechobee.	1 year	FWS, WMD, NGO, universities*	10			
1	cuok-s3.3	Through field surveys, determine dates of germination under natural conditions.	3 years	FWS, WMD, NGO*, universities	20	15	15	
1	cuok-s3.4	Test the effect of seasonally rising water level on the survival of young cuok.	3 years	FWS, WMD, NGO, universities*	15	15	15	
1	cuok-s3.5 [fm-1.4]	Conduct population viability and risk assessment studies for cuok.	3 years	FWS*, WMD, NGO, universities	30	30	20	
3	cuok-s3.6	Investigate the role of animals in dispersing cuok seeds.	3 years	FWS, WMD, NGO, universities*	15	15	15	
2	cuok-s3.7	Document the potential relationship between the American alligator and the cuok.	3 years	FWS, WMD, NGO, universities*	15	15	15	
3 <sup>†</sup>	cuok-s3.8	Investigate the genetic distance between the two populations of cuok.	completed	FWS, WMD, NGO*, USDA, universities	10			
1	cuok-s4.1	Determine the most effective approach to monitor the condition of cuok and its habitat on an annual basis.	2-3 years	FWS*, WMD, NGO, universities	20	15	15	
1	cuok-s4.2	Conduct monitoring on an annual basis.	continuous	FWS*, WMD, FWC, NGO, universities	15	15	15	
3	cuok-s5.0 [fm-2.2]	Increase public awareness of cuok.	continuous	FWS*, COE, DOF, FWC, NGO, WMD	10	5	5	
2	eski-h1.1 [fm-1.2, 1.3]	Plan/carry out periodic drawdowns of lakes on a rotational basis in the Kissimmee Chain of Lakes.	continuous	FWS, COE, WMD*, FWC*	200	200	200	Cost difficult to determine because task involves extensive cooperation and cost sharing among a number of agencies.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	eski-h1.2 [fm-1.2, 1.3, 3.0]	Control or remove exotic vegetation in wetlands.	continuous	FWS, COE, FDACS, FDEP, FWC, NPS, WMD	1/acre	1/acre	1/acre	Total cost dependent upon number of acres infested with exotics.
2	eski-h1.3 [fm-1.2, 1.3]	Use controlled burns to open up areas of overly dense vegetation in lake littoral zones and marshes.	continuous	FWS, WMD*, FWC*, FDEP, private	.03/acre	.03/acre	.03/acre	Total cost dependent upon number of acres burned.
2	eski-h1.4	Ensure that information on wetlands of importance for eski nesting and feeding is considered in review of regulatory permits.	continuous	FWS*, COE, counties, FWC*, NPS, tribes, WMD				Cost included in standard operating procedures of reviewing agency's budget.
2	eski-h1.5 [fm-1.2, 1.3, 2.1]	Prevent cultural eutrophication of lakes and marshes.	continuous	FWS, WMD, FWC, NPS, FDEP, EPA				
2	eski-h1.6	Evaluate effects of Lake Okeechobee's regulation schedule on eski habitat.	5-10 years	FWS*, WMD, COE*	45	45	45	
2	eski-h2.1 [fm-1.2, 1.3, 2.1]	Reverse the expansion of cattails in portions of the Everglades.	continuous	FWS, NPS, FWC, WMD, EPA, COE, FDEP	60	60	60	
2	eski-h2.2 [fm-1.2, 1.3]	Construct and operate the Modified Water Deliveries to Everglades National Park and C-111 projects.	5-10 years	FWS, WMD, COE*, NPS*	25000	25000	25000	Cost difficult to determine because task involves extensive cooperation and cost sharing among a number of agencies.
2	eski-h2.3 [fm-1.2, 1.3, 1.5]	Investigate, plan, and carry out restoration projects for eski in the Kissimmee, Okeechobee, and Everglades watershed.	10-20 years	FWS*, WMD*, COE, FWC*, tribes, private	10000	10000	10000	Cost difficult to determine because task involves extensive cooperation and cost sharing among a number of agencies.
2	eski-h3.1 [fm-1.4]	Conduct and use ATLSS model for eski to predict the response of eski to changes in hydropattern for specific water management proposals.	2-3 years	FWS, USGS*, FWC, universities*	30	30	30	

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h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	eski-h3.2	Continue and expand research on the effects of natural and human-caused hydrologic events on the ecology of the apple snail.	3-5 years	FWS*, FWC, WMD, universities*	50	30	30	
3	eski-h3.3 [fm-1.4]	Evaluate long-term climate predictions to reduce likelihood of coincidence of human-caused drawdown and drought.	continuous	FWS, WMD				Negligible cost because task implemented through managing agency's correspondence with climatologists.
3 <sup>†</sup>	eski-h3.4 [fm-1.4]	Perform analysis of rainfall records throughout central and South Florida to identify the intensity and spatial and temporal extent of droughts.	completed	Universities*, USGS				
2	eski-h3.5 [fm -1.2, 1.3, 2.1]	Evaluate need for secondary treatment in addition to nutrient removal by stormwater treatment areas.	3-10 years	FWS, WMD, FDEP, universities, FWC	500	500	500	
2	eski-h4.0	Monitor eski habitat and ecological processes.	continuous	FWS*, COE, EPA, FWC*, NGO, NPS, WMD*, universities*, USGS/BRD*	60	60	60	
3	eski-h5.0 [fm-2.2]	Increase public awareness of ecological relationships, environmental stressors, and restoration activities in South Florida.	continuous	FWS*, FWC*, WMD, NGO, NPS, COE, private	10	5	5	
1	eski-s1.1	Estimate population size and survival, through mark/resighting of banded eski.	continuous	FWS*,USGS, universities*, WMD,				
1	eski-s1.2	Continue surveys of nesting effort and breeding success of eski.	continuous	FWS, COE*, NGO, FWC, NPS, WMD*, tribes, universities*	80	80	80	
2	eski-s1.3	Expand and refine existing information on movements and distribution of eski, particularly related to drought.	continuous	FWS*, FWC, USGS/BRD, universities*	80	80	80	

Freshwater Marsh/Wet Prairie Implementation								
csss = Cape Sable seaside sparrow			cuok = Okeechobee gourd			eski = Everglade snail kite		
fm = freshwater marsh/wet prairie			s = species task			h = habitat task		
Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	eski-s1.4	Organize and maintain a network of biologists to report eski sightings.	continuous	FWS*, FWC*, NPS, NGO, COE	10	10	10	
2	eski-s2.2	Use provisions of section 7 of the ESA to protect eski.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
2 <sup>†</sup>	eski-s3.1	Expand information on survival of juvenile and adult eski.	completed	FWS, FWC, universities*				
1	eski-s3.2 [fm-1.4]	Develop and validate a model that can evaluate natural and human-caused changes to eski habitat throughout its range.	2-3 years	FWS*, COE, EPA, FWC, NGO, WMD, universities*, USGS*	30	30	30	
3 <sup>†</sup>	eski-s3.3	Investigate genetic variability of eski.	completed	FWC, private				
1	eski-s4.1	Monitor population size and survival over time through long-term mark/resighting of banded eski.	continuous	FWS*, FWC*, NGO, universities*	60	60	60	
2	eski-s4.2 [fm-2.1]	Monitor contaminants in eski and apple snails.	continuous	FWS*, FDEP, EPA, universities	40	40	40	
3	eski-s5.0 [fm-2.2]	Increase public awareness of eski.	continuous	FWS*, COE, counties, FWC*, NGO, tribes, universities*, WMD, private	10	5	5	

Mangrove Implementation									
amcr = American crocodile			mn = mangrove			s = species task			h = habitat task
Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments	
					FY 1	FY 2	FY 3		
3	amcr-h1.1 [mn-2.1.1-]	Acquire or otherwise protect habitat for American crocodiles.	continuous	FWS*, FWC, NPS, private, counties				Cost dependent upon specific site and amount of	

### Mangrove Implementation

amcr = American crocodile

mn = mangrove

s = species task

h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	2.1.5]							land acquired.
3	amcr-h1.2 [mn-2.1.1, 2.1.4-2.1.5, 2.3.2, 2.4, 2.5, 5.1.2]	Protect essential crocodile habitat on private lands.	continuous	FWS*, FWC, NPS, private, counties				Cost dependent upon type of protection afforded.
2	amcr-h2.1 [mn-2.1.5, 3.2, 5.1.2]	Continue to maintain nesting sites adequate to maintain viability of the American crocodile.	continuous	FWS*, FWC, NPS, private	1.5/acre	1.5/acre	1.5/acre	Total cost dependent upon number of acres maintained.
3	amcr-h2.2 [2.3.3, 2.5, 3.1, 3.4, 3.5, 4.1, 5.4]	Restore areas to suitable habitat.	continuous	FWS*, FWC, NPS, private, counties	10/acre	10/acre	10/acre	Total cost dependent upon number of acres restored.
2	amcr-h2.3 [mn-3.1, 4.2, 4.3]	Complete the Project to Modify Water Deliveries to Everglades NP and Canal 111.	5 years	FWS, FWC, WMD, NPS, FDEP, COE*, FDACS, EPA, counties	25000	25000	25000	Cost difficult to determine because task involves extensive cooperation and cost sharing among a number of agencies.
2	amcr-h2.4	Continue to monitor the effects of the Interim Operating Plan (for protection of the Cape Sable seaside sparrow) to Everglades NP on the American crocodile to determine optimal operations schedules.	5 years	FWS, FWC, WMD, NPS, FDEP, COE*, FDACS, EPA, counties	30	30	30	
2	amcr-h2.5 [mn-5.3]	Continue habitat and population modeling to determine operational schedules for structures associated with the Program to Modify Water Deliveries to Everglades NP, Canal 111, and the Southern Florida Flood Control Project that provide optimal habitat for the American crocodile.	5 years	FWS*, FWC, WMD, NPS, FDEP, COE, FDACS, EPA, counties	125	125	125	
3	amcr-h2.6	Create additional nesting habitat for	continuous	FWS*, FWC, private, NPS,	4/acre	4/acre	4/acre	Total cost dependent upon

### Mangrove Implementation

amcr = American crocodile

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	[mn-2.3.3]	crocodiles in South Florida.		universities				number of acres created for nesting habitat.
2	amcr-h2.7 [mn-2.2, 4.1.1, 4.5]	Restore or create nursery habitat for American crocodiles in South Florida.	continuous	FWS*, FWC, private, NPS, universities	4/acre	4/acre	4/acre	Total cost dependent upon number of acres restored.
3	amcr-h2.8 [mn-2.3.1- 2.3.3, 2.4, 3.4]	Continue to enforce land-use restrictions in essential crocodile habitat.	continuous	FWS*, FWC, NPS				Cost included in budget of agency responsible for enforcing restrictions.
3	amcr-h3.0 [mn-5.1.3]	Conduct research on the habitat relationships of the American crocodile.	3 years	FWS*, FWC, NPS, universities	45	45	45	
3	amcr-h4.1 [mn-3.5, 1.2]	Continue to monitor crocodile nesting habitat.	continuous	FWS*, FWC*, NPS*, private*, universities*	50	50	50	
3	amcr-h4.2 [mn-2.4]	Continue long-term assessments of pesticide and heavy metal contamination levels in South Florida ecosystems.	continuous	FWS*, FWC, WMD, NPS, USGS/BRD, EPA, universities				Cost difficult to determine because task involves extensive cooperation and cost sharing among a number of agencies.
2	amcr-h5.0 [mn-6.0, 6.3]	Increase public awareness of the habitat needs of crocodiles.	continuous	FWS*, FWC, county parks, state parks, NPS, universities	50	50	50	High cost required for developing extensive outreach and education program.
3	amcr-s1.1 [mn-1.1, 1.3,2.1.5, 5.1.2, 5.1.3]	Evaluate coastal wetlands to determine their suitability for crocodiles.	continuous	FWS*, FWC, NPS, universities	25	25	10	
3	amcr-s1.2 [mn-5.1, 5.1.2]	Survey crocodile colonies in suitable habitats in South Florida.	continuous	FWS*, FWC, NPS, universities	30	30	30	
3	amcr-s2.1.1 [mn-4.4,	Control human-induced crocodile mortality and disturbance.	continuous	FWS*, FWC, NPS	35	35	35	

### Mangrove Implementation

amcr = American crocodile

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h = habitat task

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
	2.4]							
3	amcr-s2.1.2	Alert motorists on roads where repeated collisions between automobiles and American crocodiles have occurred.	continuous	FWS*, FWC, NPS, DOT	5	1	1	
2	amcr-s2.1.3 [mn-4.4]	Reduce the incidence of American crocodile road mortalities by installing box culverts.	continuous	FWS*, FWC, NPS, DOT				Too many variables, such as width and location of road, to accurately determine cost.
3	amcr-s2.1.4 [mn-3.4]	Control terrestrial predators of crocodile eggs and hatchlings in areas where they may be artificially high.	continuous	FWS*, FWC, NPS*, private*	6	6	6	
3	amcr-s2.2 [mn-3.4]	Continue long-term assessment of pesticide and heavy metal contamination levels in crocodile eggs.	every 5 years	FWS*, FWC, WMD, NPS, USGS/BRD, EPA, universities	10			Approximately 10 eggs will be analyzed once every five years at a cost of \$1,000 per egg.
2	amcr-s2.3 [mn-2.5-2.7, 3.2, 3.3]	Assure coordinated management actions by interagency agreements or other means.	continuous	FWS*, FWC, NPS, WMD, COE	60	60	60	Cost encompasses consensus-building efforts among agencies involved in Everglades restoration efforts.
3	amcr-s3.1 [mn-5.1.3]	Determine the carrying capacity of remaining crocodile habitat in South Florida.	continuous	FWS, FWC, NPS, universities*	35	35	35	
3 <sup>†</sup>	amcr-s3.2 [mn-5.1.2, 5.1.3]	Conduct research to determine basic biological needs of the American crocodile.	completed	FWS, FWC, NPS, private, universities*				
3	amcr-s3.3 [mn-3.4, 3.5]	Evaluate the effects of human disturbances on crocodile behavior.	continuous	FWS*, FWC*, NPS, universities	75	75	75	
3 <sup>†</sup>	amcr-s3.4	Develop identification techniques for American crocodiles.	completed	universities*				See Mazzotti and Cherkiss (2003).

Mangrove Implementation								
amcr = American crocodile			mn = mangrove		s = species task			h = habitat task
Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	amcr-s4.1	Coordinate monitoring programs and protocols.	continuous	FWS*, FWC, NPS, FDEP, counties, universities	5	5	5	
3	amcr-s4.2 [mn-5.1.2]	Conduct surveys for American Crocodiles.	continuous	FWS, FWC*, private*, NPS, universities*	50	50	50	
3	amcr-s4.3	Conduct a mark-recapture program for the American crocodile.	continuous	FWS, FWC*, private*, NPS*, universities*	75	75	75	
3	amcr-s5.1	Continue State program for relocation of crocodiles that threaten human safety.	continuous	FWS, FWC*	50	50	50	Cost includes tracking individuals after relocation.
3	amcr-s5.2	Assess the effectiveness of road signage for reducing the numbers of American crocodiles killed by automobiles.	continuous	FWS*, FWC, NPS, DOT	1	1	1	
3	amcr-s5.3	Develop and distribute informational brochures regarding the biology and conservation of American crocodiles.	continuous	FWS, FWC*, NPS, universities*, county parks, state parks	20	20	20	

Coastal Salt Marsh Implementation									
lkra = Lower Keys marsh rabbit			rira = rice rat		s = species task			h = habitat task	sm = coastal salt marsh
Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments	
					FY 1	FY 2	FY 3		
2	lkra-h1.1.1 [sm-2.2]	Continue Federal acquisition efforts for Lower Keys rabbit.	continuous	FWS*				Cost dependent upon specific site and amount of land acquired.	
2	lkra-h1.1.2 [sm-2.3]	Support State acquisition efforts.	continuous	FWS, FWC*				Cost dependent upon specific site and amount of land acquired.	
2	lkra-h1.1.3 [sm-2.0, 3.0]	Support and encourage land acquisition by non-governmental agencies.	continuous	FWS, NGO*				Cost dependent upon specific site and amount of land acquired.	

### Coastal Salt Marsh Implementation

lkra = Lower Keys marsh rabbit      rira = rice rat      s = species task      h = habitat task      sm = coastal salt marsh

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	lkra-h1.2.1 [sm-2.4]	Protect marsh rabbit on private lands through acquisition, landowner agreements, conservation easements.	continuous	FWS*, FEMA, FDEP, TNC, private				Cost dependent upon type of protection provided. Several land acquisition programs are underway.
1	lkra-h1.2.2	Protect marsh rabbit on public lands.	continuous	FWS*, FWC, FEMA, counties				Cost dependent upon type of protection provided.
2	lkra-h1.2.3 [sm-3.2]	Coordinate with Federal, State and Monroe County agencies and private entities to develop management actions to protect marsh rabbit habitat.	1-2 years	FWS*, FWC, NASKW, FEMA, counties, private	5	5		
1	lkra-h1.2.4	Protect important corridors.	continuous	FWS*, FWC, NASKW, counties				Cost dependent upon type of protection provided.
2	lkra-h1.2.5 [sm-3.1.2, 3.1.3, 7.4]	Remove invasive exotic vegetation.	continuous	FWS*, NASKW	1.5/acre	1.5/acre	1.5/acre	Total cost dependent upon number of acres infested with exotics.
1	lkra-h1.2.6	Prevent habitat areas from being mowed.	continuous	FWS*, NASKW, counties, private	1	1	1	
2	lkra-h1.2.7 [sm-3.7]	Fence or barricade areas where off-road vehicle (ORV) use and/or dumping is a threat.	3-5 years	FWS*, NASKW	25	25	25	
1	lkra-h1.2.8	Continue cooperative management at NASKW, Key West. NASKW has minimized their impacts on the Lower Keys marsh rabbit through management actions.	continuous	FWS, NASKW*				Cost dependent upon type of management implemented.
3	lkra-h2.1 [sm-4.4.1, 4.4.3]	Restore natural tidal flow and hydrology by placing culverts or removing fill.	5-10 years	FWS*, DOT, COE, NGO, FDEP				Too many variables to accurately determine cost.
3	lkra-h2.2 [sm-3.6]	Manage mosquito ditches so they do not impact rabbit habitat.	continuous	FWS*, FDEP, NASKW, counties				Task currently implemented on public lands and cost is included in responsible agency's budget.

### Coastal Salt Marsh Implementation

lkra = Lower Keys marsh rabbit      rira = rice rat      s = species task      h = habitat task      sm = coastal salt marsh

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	lkra-h2.3	Improve water quality in freshwater sources and create additional freshwater sources.	3-5 years	FWS*, WMD, COE	35	35	35	
2	lkra-h2.4 [sm3.0, 5.1]	Enhance Lower Keys marsh rabbit habitat.	continuous	FWS*, NASKW	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres enhanced.
3	lkra-h2.5 [sm4.4.2, 5.4]	Improve habitat by planting or encouraging native plant species.	continuous	FWS*, NASKW	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres improved.
3	lkra-h2.6	Create habitat by filling and restoring areas that have been dredged or altered.	continuous	FWS*, NASKW	1/acre	1/acre	1/acre	Total cost dependent upon number of acres created for habitat.
1	lkra-h3.1.1	Conduct radio-telemetry on other subpopulations.	2 years	FWS, NASKW, universities*	17	17		Daytime telemetry conducted by Forys (1995) and Faulhaber (2003). In 2004-2005, TAMU, NASKW, and FWS cooperated to conduct additional telemetry and habitat studies that include nighttime telemetry (Perry 2005).
1	lkra-h3.1.2	Investigate the effect of habitat change.	3-5 years	FWS, NASKW, universities*	50	50	50	
2	lkra-h3.2.1	Investigate movement patterns and the spatial use of habitat to identify important core areas and corridors.	2 years	FWS, NASKW, universities*	17	17		Task largely completed by Forys (1995), then updated starting 2001 by TAMU.
1 <sup>†</sup>	lkra-h3.2.2	Determine home range and minimum area required.	completed	FWS, NASKW, universities*, FWC				Daytime telemetry conducted by Forys (1995) and Faulhaber (2003). In 2004-2005, TAMU, NASKW, and FWS cooperated to conduct additional telemetry and

### Coastal Salt Marsh Implementation

lkra = Lower Keys marsh rabbit      rira = rice rat      s = species task      h = habitat task      sm = coastal salt marsh

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								habitat studies that include nighttime telemetry (Perry 2005).
1 <sup>†</sup>	lkra-h3.2.3	Determine if the amount and configuration of habitat is sufficient to support a stable or increasing population of Lower Keys marsh rabbits.	completed	FWS, NASKW, universities*				See Forys (1995). Information gained from the updated distribution survey (Faulhaber 2003) should be incorporated into the population viability analysis model developed by Forys and Humphrey (1999).
2	lkra-h4.0	Monitor the status of marsh rabbit habitat and examine ecological processes.	continuous	FWS*, universities	20	20	20	
3	lkra-h5.0 [sm-8.0]	Increase public awareness of Lower Keys marsh rabbit habitat and instill stewardship.	continuous	FWS*, NGO, private	5	5	5	NKDR visitor center provides information.
2 <sup>†</sup>	lkra-s1.1	Conduct additional surveys to refine marsh rabbit distribution.	completed	FWS*, universities				See Faulhaber (2003).
2 <sup>†</sup>	lkra-s1.2	Conduct presence/absence surveys in areas of unoccupied habitat.	completed	FWS*, universities				See Faulhaber (2003).
2	lkra-s1.3 [sm-6.1, 6.2.1]	Investigate components of both occupied and unoccupied marsh rabbit habitat and determine why rabbits are present or absent.	2 years	FWS, NASKW, universities*	17	17		Partly completed by Forys (1995) and Faulhaber (2003). TAMU and NASKW initiated a quantitative habitat study in 2004 (Perry 2005).
3	lkra-s1.4	Maintain and improve the GIS database for marsh rabbit information.	continuous	FWS*, FWC, universities	3	3	3	
3 <sup>†</sup>	lkra-s2.1	Assign a biologist responsibility for implementing recovery actions for the threatened or endangered species of the Lower Keys.	completed	FWS*				FWS biologist assigned to South Florida Ecological Services Office and stationed at Big Pine Key.

### Coastal Salt Marsh Implementation

lkra = Lower Keys marsh rabbit      rira = rice rat      s = species task      h = habitat task      sm = coastal salt marsh

Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	lkra-s2.2.1	Develop a standard protocol for conducting, monitoring, and evaluating all reintroduction, translocation and supplementation efforts of Lower Keys marsh rabbits using the IUCN/SSC Guidelines for Reintroductions.	1-2 years	FWS*, NASKW, universities	10	10		Incorporating data from Faulhaber (2003), TAMU initiated a project in 2003 to accomplish this task (Perry 2005).
1 <sup>†</sup>	lkra-s2.2.2	Reintroduce marsh rabbits on Water Key.	completed	FWS*, universities				Seven rabbits were translocated to Water Key in May-July 2004, by Neil Perry of TAMU. Additionally, 11 rabbits were translocated to Little Pine Key in January-April 2002 (Faulhaber 2003). Monitoring indicates that the projects continue to be successful as of September 2005, including evidence of reproduction on both keys.
1	lkra-s2.2.3	Conduct reintroduction of marsh rabbits to other areas.	3 years	FWS*, NASKW, universities	10	10	10	Seven rabbits were translocated to Water Key in May-July 2004, by Neil Perry of TAMU.
3	lkra-s2.3	Utilize Federal regulatory mechanisms for protection.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	lkra-s2.4	Provide information about marsh rabbits to Federal, state, county and city agencies.	continuous	FWS*, FWC, NGO, counties	3	3	3	
2	lkra-s2.5.1.1	Continue coordination efforts with NASKW to eliminate free roaming cats from that Federal facility.	continuous	FWS*, NASKW	4	4	4	No systematic effort to control feral and free-range domestic cats is presently in place.

### Coastal Salt Marsh Implementation

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
1	lkra-s2.5.1.2	Reduce impacts by free roaming cats. Develop deed restrictions to prohibit free roaming cats in rabbit sensitive areas.	continuous	FWS, NASKW, counties*, private	4	4	4	No systematic effort to control feral and free-range domestic cats is presently in place.
3	lkra-s2.5.2	Control raccoon predation. Raccoon populations are unnaturally high in some areas of the Lower Keys.	continuous	FWS*, NASKW, counties	2	2	2	No systematic effort to control raccoons is presently in place.
3	lkra-s2.5.3.1	Install chatter strips at known rabbit crossing areas on NASKW and Monroe County roads, where feasible.	1 year	FWS*, NASKW, counties, DOT	18			
3	lkra-s2.5.3.2	Implement slower speed zones and increase enforcement of existing zones to decrease rabbit roadkills.	continuous	FWS*, NASKW, counties, DOT	4			After task is implemented, cost of enforcing speed zones will be included in responsible agency's budget.
3	lkra-s2.5.4	Control poaching.	continuous	FWS*, FWC				Although not a documented problem, task is currently conducted and cost is included in responsible agency's budget.
1	lkra-s2.6	Establish captive propagation protocols and plans.	1 year	FWS*, universities	10			An <i>in situ</i> rather than an <i>ex situ</i> captive breeding program has been suggested (see Faulhaber 2003).
2 <sup>†</sup>	lkra-s3.1	Determine if the total population size is large enough to prevent functional extinction and genetic extinction.	completed	FWS, FWC, universities*				
1	lkra-s3.2	Examine effects on the persistence of the Lower Keys marsh rabbit.	2-3 years	FWS*, NASKW, universities	35	35	35	
3	lkra-s3.3	Determine the effective population size.	3-5 years	FWS, universities*	50	50	50	
2 <sup>†</sup>	lkra-s3.4.1	Identify subpopulations vulnerable to extinction.	completed	FWS*, NASKW, universities				See Forys (1995), Forys et al. (1996), and Faulhaber

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
								(2003).
2	lkra-s3.4.2	Determine the necessary number of subpopulations and level of exchange that will enable the rabbit to persist for 100 years.	2-3 years	FWS, universities*	50	50	50	
1 <sup>†</sup>	lkra-s3.5	Conduct an experimental marsh rabbit reintroduction and evaluate its effectiveness in increasing the rabbits' persistence.	completed	FWS*, universities				
1	lkra-s4.1	Conduct long-term monitoring.	continuous	FWS*, universities	10	10	10	See Faulhaber (2003) and Perry (2005).
1	lkra-s4.2	Develop methods to monitor demographic parameters.	continuous	FWS*, universities	15	15	15	
3	lkra-s5.1	Prepare informational material for the general public.	continuous	FWS*, NGO, counties	5	5	5	NKDR visitor center provides information.
1	lkra-s5.2	Develop and implement a free-roaming cat control program.	continuous	FWS, NASKW, counties*, private	4	4	4	No systematic effort to control feral and free-range domestic cats is presently in place.
3	lkra-s5.3	Continue to inform military and civilian personnel at NASKW. Inform personnel about the marsh rabbit's presence, its protection under the ESA, and ways to minimize impacts on it.	continuous	FWS, NASKW*	1	1	1	NASKW has natural resource personnel assigned to this task.
2 <sup>†</sup>	rira-h1.1 [sm-1.1]	Determine the status of rice rat habitat	completed	FWS*, FWC, universities				
2	rira-h1.2.1 [sm-2.2]	Continue Federal acquisition efforts.	continuous	FWS*				Cost dependent upon specific site and amount of land acquired.
2	rira-h1.2.2 [sm-2.3]	Support State, local and non-governmental organizations' acquisition efforts.	continuous	FWS, FWC*, counties, FDEP, WMD, NGO				Cost dependent upon specific site and amount of land acquired.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	rira-h1.3.1	Protect rice rats on public lands.	continuous	FWS*, FEMA, FWC, COE, counties				Cost dependent upon type of protection provided.
2	rira-h1.3.2 [sm-2.4]	Protect rice rats on private lands.	continuous	FWS*, FEMA, private				Cost dependent upon type of protection provided.
2	rira-h1.3.3 [sm-3.2]	Coordinate with Federal, State and Monroe County agencies and private entities to develop management action to protect silver rice rat habitat.	1-2 years	FWS*, FWC, FDEP, counties, WMD, private	5	5		
2	rira-h1.3.4	Establish and protect 500 m buffers around Priority habitat.	continuous	FWS*				Cost dependent upon specific site and amount of land acquired for buffer zones.
3	rira-h1.3.5	Control free roaming horses on Cudjoe Key.	continuous	FWS*				Task currently conducted and cost is included in responsible agency's budget.
2	rira-h1.3.6 [sm-3.7]	Restrict access to silver rice rat habitat.	continuous	FWS*, counties, private, FDEP, NASKW				Task currently conducted and cost is included in responsible agency's budget.
3	rira-h1.3.7 [sm-3.1.2-3.1.3, 7.4]	Eliminate exotic vegetation.	continuous	FWS*, counties, private, FDEP	1.5/ acre	1.5/ acre	1.5/ acre	Total cost dependent upon number of acres infested with exotics.
2	rira-h2.1 [sm-4.4.1-4.4.2]	Re-establish natural hydrology and water circulation in silver rice rat habitat.	5-10 years	FWS*, DOT, COE, NGO, FDEP				Too many variables to accurately determine cost.
3	rira-h2.2 [sm-5.1]	Restore both occupied and unoccupied silver rice rat habitat.	continuous	FWS*, FWC, FDEP, NASKW, private	1/acre	1/acre	1/acre	Total cost dependent upon number of acres restored.
2	rira-h2.3 [sm-3.1.3, 4.4.3]	Improve water quality in freshwater sources and create freshwater sources.	3-5 years	FWS*, WMD, COE	35	35	35	
3	rira-h2.4 [sm-4.4.2]	Improve habitat by planting or encouraging native plant species.	continuous	FWS*	.5/acre	.5/acre	.5/acre	Total cost dependent upon number of acres improved.
3	rira-h2.5	Create habitat by refilling and creating	continuous	FWS*	1/acre	1/acre	1/acre	Total cost dependent upon

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					FY 1	FY 2	FY 3	
		suitable habitat areas.						number of acres created for habitat.
3 <sup>†</sup>	rira-h3.1.1 [sm-6.2.1]	Investigate stable home range and minimum area requirements.	completed	FWS, FWC, universities*				
3	rira-h3.1.2 [sm-6.2.2]	Investigate the effect of habitat change.	3-5 years	FWS*, FWC, universities, private	50	50	50	
2 <sup>†</sup>	rira-h3.2.1 [sm-6.2.1]	Investigate movement patterns and the spatial use of habitat to identify important core areas and corridors.	completed	FWS, FWC, universities*				
2	rira-h3.2.2	Determine if the amount and configuration of habitat is sufficient to support a stable or increasing population of silver rice rats.	2-3 years	FWS, universities*	30	30	30	
2	rira-h4.0	Monitor the status of silver rice rat habitat, particularly critical habitat, and examine ecological processes.	continuous	FWS*, universities	20	20	20	
3	rira-h5.0 [sm-8.0]	Increase public awareness of silver rice rat habitat, especially critical habitat, and instill stewardship.	continuous	FWS*, FWC, FDEP, NGO, private	5	5	5	NKDR visitor center provides information.
2	rira-s1.1	Conduct presence/absence surveys to determine the status of rice rats and refine definition of range.	2 years	FWS*, universities	35	35		Distribution study, including rangewide trapping survey, was initiated by TAMU in 2004.
3	rira-s1.2	Survey for the presence/ absence of black rats simultaneously with rice rat trapping.	2 years	FWS*, universities	35	35		
3	rira-s1.3	Maintain and improve the GIS database for silver rice rats.	continuous	FWS*, FWC, universities	3	3	3	
3 <sup>†</sup>	rira-s2.1	Assign a biologist responsibility for implementing recovery actions for the threatened or endangered species of the Lower Keys.	completed	FWS*				FWS biologists assigned to South Florida Ecological Services Office and stationed at Big Pine Key.

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					FY 1	FY 2	FY 3	
3	rira-s2.2.1	Develop a standard protocol for conducting, monitoring, and evaluating all reintroduction, translocation and supplementation efforts of silver rice rats using the IUCN/SSC Guidelines for Reintroductions.	1-2 years	FWS*, NASKW, universities	10	10		
3	rira-s2.2.2	Reintroduce silver rice rats on islands on the periphery of the silver rice rat's range.	1 year	FWS*, universities	10			
3	rira-s2.2.3	Reintroduce silver rice rats on Little Pine Key or other remote backcountry islands.	1 year	FWS*, universities	10			
3	rira-s2.2.4	Conduct reinforcement/supplementation of silver rice rats.	1 year	FWS*, universities	10			
3	rira-s2.3	Utilize Federal regulatory mechanisms for protection.	continuous	All Federal agencies				Cost included in standard operating procedures of Federal agency's budget.
3	rira-s2.4	Provide information about silver rice rats to Federal, State, county, and city agencies. Distribute information regarding the presence of silver rice rats, their protection under the ESA, and ways to minimize impacts.	continuous	FWS*, FWC, FDEP, NGO, private	3	3	3	
2	rira-s2.5.1	Minimize cat predation on silver rice rats.	continuous	FWS*, FWC, FDEP, NASKW, private	5	5	5	No systematic effort to control feral and free-range domestic cats is presently in place.
3	rira-s2.5.2	Minimize competition and predation by black rats.	continuous	FWS*, FWC, FDEP, NASKW, private	4	4	4	No systematic effort to control black rats is presently in place.
3	rira-s2.5.3	Minimize raccoon impacts on silver rice rats.	continuous	FWS*, FWC, FDEP, NASKW, private	2	2	2	No systematic effort to control raccoons is presently in place.

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
3	rira-s2.5.4	Eliminate fire ant colonies near rice rat habitat.	continuous	FWS*, FWC, FDEP, FDACS, NASKW, private	1	1	1	
3	rira-s2.5.5	Control blatant killing and prevent poisoning.	continuous	FWS*, FWC, NASKW				Although not a documented problem, task is currently conducted and cost is included in responsible agency's budget.
3	rira-s2.6	Investigate captive propagation options.	3-5 years	FWS*, FWC, universities, private	1	1	1	
3	rira-s3.1	Determine if the total population size is large enough to prevent functional extinction and genetic extinction.	3-5 years	FWS, universities*	50	50	50	
3	rira-s3.2	Examine the effect of resource limitation on the persistence of the silver rice rat.	2-3 years	FWS, NASKW, universities*	35	35	35	
3	rira-s3.3	Examine factors that affect the abundance and distribution of the silver rice rat.	3-5 years	FWS, NASKW, universities*	50	50	50	
2	rira-s3.4.1	Identify subpopulations vulnerable to extinction.	2 years	FWS, NASKW, universities*	20	20		
3	rira-s3.4.2	Determine the necessary number of subpopulations and level of exchange that will enable the silver rice rat to persist for 100 years.	2-3 years	FWS, universities*	30	30	30	
3	rira-s3.5	Determine a stable age structure, sex ratio, and group size for the silver rice rat.	2-3 years	FWS, universities*	30	30	30	
3	rira-s3.6	Conduct a silver rice rat reintroduction and evaluate its effectiveness in increasing the rats' persistence.	2-3 years	FWS*, universities	15	15	15	
3	rira-s4.1	Develop methods to monitor demographic parameters.	continuous	FWS, universities*	15	15	15	

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Priority	Task Number	Task Description	Task Duration	Participants	Estimated Costs (\$000s)			Comments
					FY 1	FY 2	FY 3	
2	rira-s4.2	Conduct long-term monitoring of the silver rice rat.	continuous	FWS*, universities	10	10	10	
3	rira-s5.1	Prepare educational material for the general public.	continuous	FWS*, FWC, FDEP, private	5	5	5	NKDR visitor center provides information.
3	rira-s5.2	Develop and implement a cat, black rat, and raccoon control program.	continuous	FWS*, FWC, FDEP, NASKW, private	5	5	5	

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