

# Goal 1: Prevent the introduction of invasive exotic species

Objectives and Strategies	Action Steps – <u>Current</u> Projects/Resources	Action Steps – <u>Needed</u> Projects/Resources
<b>Objective 1A: Prepare for and prioritize prevention efforts.</b>		
Strategy 1A1: Identify pathways and prioritize potential threats and invasive exotic species.	<ul style="list-style-type: none"> <li>• High Risk Areas-target domestic inspection activities at vulnerable points in the safeguarding continuum.</li> <li>• Complete Structured Decision-Making exercise and report on prevention of python establishment in Loxahatchee NWR (POC Fred Johnson, USGS)</li> </ul>	<ul style="list-style-type: none"> <li>• Assemble a multi-agency/multi-disciplinary work group to conduct the following prevention efforts:               <ul style="list-style-type: none"> <li>○ Catalog high pressure exotic species.</li> <li>○ Define needed research on nonnative species and their impacts to adequately inform prioritization efforts.</li> <li>○ Prioritize species by assessment of ecological, economic, and human health risk.</li> <li>○ Determine invasion pathways.</li> </ul> </li> </ul>
Strategy 1A2: Engage stakeholders and the public to support prevention efforts.	<ul style="list-style-type: none"> <li>• Create public awareness about the threat of invasive exotic species through continued implementation of Habitattitude. (NPS, FWS, NOAA, PIJAC)(also in 1B3)</li> </ul>	<ul style="list-style-type: none"> <li>• Design and implement outreach initiatives to engage public and stakeholders and increase awareness.</li> </ul>
<b>Objective 1B: Prevent entry of invasive exotic species.</b>		
Strategy 1B1: Enhance and improve the pathway inspection/screening process.	<ul style="list-style-type: none"> <li>• Increase predictive screening/risk assessment on importation of non-native plants (USDA-APHIS through Q37 NAPPRA authority)</li> <li>• Increase the ability to properly identify exotic fruit fly species in the genus <i>Anastrepha</i> by implementing the Enhancement of Fruit Fly Immature Stage Identification and Taxonomy project (USDA-APHIS and USDA-ARS)</li> <li>• Increase knowledge and awareness of exotic species of first detectors by implementing First Detector Training (Southern Plant Diagnostic Network and University of Florida extension)</li> <li>• Enhanced pest detection at high-risk domestic interdiction sites and marinas/canals systems</li> <li>• Brown Marmorated Stink Bug (interception and research for potential biocontrol)</li> <li>• Enhancement of Fruit Fly Immature Stage ID and</li> </ul>	<ul style="list-style-type: none"> <li>• Implement predictive screening/risk assessment tool(s) for assessing potential harm of importation of non-native wildlife (USFWS through existing Lacey Act authority; would also require new/additional authority)</li> <li>• Increase first detector training.</li> <li>• Increase capacity for regulatory inspections.</li> <li>• Increase success of public declarations.</li> <li>• Increase detector dog program at ports</li> <li>• Implement better state-to-state screening for USPS and other mailing and delivery providers</li> </ul>

	<p>Taxonomy</p> <ul style="list-style-type: none"> <li>• Exotic Psyllids and Liberibacter species</li> <li>• Detector Dog Pilot Program FWS Law Enforcement (no project sheet received)</li> <li>• Genetic analyses of invasive reptiles to assess invasion pathways in Florida (USDA POC Michael Avery; UF POC Kenney Krysko)</li> </ul>	
<p>Strategy 1B2: Develop new/utilize existing voluntary and regulatory tools.</p>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Broaden or seek new legislative authorities (i.e. expand the legal framework to provide agencies with authority to identify, respond to and control potential invasions of damaging exotic species).</li> <li>• Seek new regulatory tools.</li> <li>• Evaluate existing legislative tools to maximize applications to existing problems (part of this process already)</li> <li>• Develop and implement predictive screening/risk assessment tool(s) for assessing potential harm of non-native wildlife for use by State of Florida (FFWCC) and federal government (USFWS)</li> <li>• Encourage the use of prevention practices in partner agency contracts and by entities working on or on the behalf of all partner agencies.</li> <li>• Work with partners to develop and promote voluntary codes of conduct for the Florida Nursery, Growers, and Landscape Association or other South Florida nursery industry/landscape practices, following The Nature Conservancy’s model.</li> </ul>
<p>Strategy 1B3: Improve pathway awareness and engage the public in prevention efforts.</p>	<ul style="list-style-type: none"> <li>• Continue to implement the Don’t Pack a Pest program (USDA/CBP/FDACS)</li> <li>• Continue to implement the FWC Exotic Pet Amnesty Program. (FWC)</li> <li>• Continue to implement the USDA/APHIS Greater Caribbean Safeguarding Initiative.</li> <li>• Exotic Species Reporting Hotline and Database Maintenance</li> <li>• Everglades Non-Native Fish Round Up</li> <li>• Miami-Dade County Environmentally Endangered</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and secure funding resources to support and expand existing outreach efforts and initiate new outreach efforts. (i.e. UPS, Fed Ex, Pet industry, Boating industry, and other )</li> <li>• Develop an exotic fish/ fish pet amnesty program or expand pet amnesty to add a focus and capability for fish.</li> </ul>

	<p>Lands Program-Volunteer Workdays (MDC-EEL; POC Cynthia Guerra)</p> <ul style="list-style-type: none"><li>• Promote responsible pet ownership practices to prevent the accidental or intentional release of invasive animals by pet owners through continued implementation of Habitattitude. (NPS, FWS, NOAA, PIJAC)(also in 1A2)</li><li>• Increase awareness of the impacts of invasive exotic species on south Florida’s environment, economy, culture, and human health through continued implementation of Zoo Miami/Miami-Dade County Invasive Species Outreach and Educational Programs (Miami-Dade County) (Also in 3B4)</li></ul>	
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## Goal 2: Eradicate invasive exotic species by implementing EDRR

Objectives and Strategies	Action Steps – <u>Current</u> Projects/Resources	Action Steps – <u>Needed</u> Projects/Resources
<b>Objective 2A: Prepare and monitor to enhance early detection.</b>		
Strategy 2A1: Implement a systematic, prioritized, multi-species monitoring and inventory plan.	<ul style="list-style-type: none"> <li>• USDA Monitoring for Plants</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a system wide SFER regional monitoring network, by synthesizing ongoing IES monitoring networks , leveraging existing monitoring networks when possible and assessing gaps in monitoring by taxa and geography.</li> </ul>
Strategy 2A2: Utilize existing and develop needed regional monitoring/reporting networks to increase likelihood of detection.	<ul style="list-style-type: none"> <li>• Continue to implement the Corridors of Invasiveness Vital Sign project for Plants. [Also under Strategy 2-B.1] (SFCN NPS; POC Kevin Whelan)</li> <li>• Continue to implement the Everglades Invasive Reptile and Amphibian Monitoring Program (FWC/UF; POC Jenny Eckles)</li> <li>• Continue to implement the early detection of new exotic fish species in adjacent canals vital sign project (NPS; POC: Kevin Whelan/Jeff Kline)</li> <li>• Continue trapping program to detect new exotic forest pests (FDACS-DPI; POC Gordon Bonn)</li> <li>• Continue monitoring program to detect presence of any exotic psyllids and Liberibacter species that might prove harmful to Florida agriculture. (FDACS-DPI; POC Gordon Bonn)</li> <li>• Continue to implement the Project-Interdiction Marinas and Canals Survey in order to detect presence of exotic arthropods and plant pathogens at Florida’s interdiction stations and marinas and canals in the South Florida Ecosystem. (FDACS-DPI; POC Gordon Bonn)</li> <li>• Continue to conduct Northern African python surveys (FWC; POC Jenny Eckles; USGS POC Michael Cherkiss, Kristen Hart)</li> <li>• Continue to monitor for the Mexican Red Bellied</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct an assessment of existing surveillance and monitoring efforts to identify gaps.</li> <li>• Develop improved methods for monitoring through research and statistical designs</li> <li>• Increase capacity/coordination for conducting systematic reconnaissance for invasive species and responding to reports of potential new species from I’ve Got1 network and others.</li> <li>• Evaluate existing marine/estuarine surveillance protocols or programs and develop or augment programs for key natural areas.</li> <li>• Apply existing Burmese python eDNA method in systematic surveys of south Florida waterways to monitor possible range expansions</li> <li>•</li> <li>•</li> </ul>

	<p>Squirrel (NPS/BNP; POC Tony Pernas)</p> <ul style="list-style-type: none"> <li>• Continue digital area sketch mapping for Laurel Wilt within the ECISMA boundary (NPS)</li> <li>• Continue NPS/USGS efforts to develop reporting and response network for DOI lands in the South Florida Ecosystem (USGS POCs Kristen Hart, Robert Reed, NPS POC – Tylan Dean)</li> <li>• Fruit Fly Survey and Detection</li> <li>• Cooperative Agricultural Pest Survey</li> <li>• Nile Monitor Eradication Project</li> </ul>	
<p>Strategy 2A3: Employ science and technology for development of early detection tools, e.g., surveys, traps, inspections.</p>	<ul style="list-style-type: none"> <li>• Continue to develop and validate eDNA methods for detection of invasive reptiles (USGS; POCs Margaret Hunter, Sara Oyler-McCance, Kristen Hart)</li> <li>• Development of eDNA for Nile Monitor detection and removal (USDA; POC Toni Piaggio/Michael Avery)</li> <li>• Fruit Fly Eradication Methods Development</li> <li>• Metagenomic survey in south Florida waters (USDA; POC Toni Piaggio/Michael Avery)</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct eDNA sampling to detect expansion of pythons into Loxahatchee NWR</li> <li>• Conduct quarterly eDNA sampling in area occupied by Northern African Python to assess success of eradication effort</li> <li>• Conduct mesocosm trials to detect eDNA levels in flowing water, soils, and other varying environmental conditions</li> <li>• Investigate/Develop pheromone attractants for use in detecting incipient populations</li> </ul>
<p>Strategy 2A4: Engage the public and provide exotic species reporting mechanisms.</p>	<ul style="list-style-type: none"> <li>• Support and promote existing FWC phone and internet-based centralized reporting systems 1-888-IVE-GOT1 and IVEGOT1.org (FWC)</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a public outreach and communication strategy coordinated among all managing agencies for stakeholder engagement.</li> </ul>
<p>Strategy 2A5: Establish rapid assessment and response programs/processes/cooperatives/tools that allow for nimble attempts at eradication.</p>	<ul style="list-style-type: none"> <li>• Utilize existing FWC on-call expert and responder lists (FWC)</li> </ul>	<ul style="list-style-type: none"> <li>• Develop on-call expert and responder lists.</li> <li>• Assemble technical expert work groups for specific species of concern.</li> <li>• Develop Response Action Plan (RAP) for each taxa, utilizing the ECISMA EDRR response protocol.</li> <li>• Expand and enhance training programs for rapid responders.</li> <li>• Reduce barriers to interagency EDRR efforts such as permitting issues for responders.</li> <li>• Establish and provide the resources (funding and staff) for an EDRR Team to conduct rapid assessment and initiate rapid response.</li> <li>• Update and provide access to EDRR guidelines,</li> </ul>

		<ul style="list-style-type: none"> <li>model response plans, and other resources.</li> <li>Establish a rapid response fund in addition to consistent, dedicated resources for early detection. (FWC working on potential leg. budget request for rapid response fund)</li> </ul>
<p><b>Objective 2B: Ensure rapid assessment of newly detected species.</b></p>		
<p>Strategy 2B1: Rapidly assess the status and potential threat of newly detected incipient invasive exotic species populations and develop a response/no response plan.</p>	<ul style="list-style-type: none"> <li>ECISMA EDRR Plan (POC Tony Pernas and Dennis Giardina)</li> <li>Continue to assess the effects of exotic fish on Everglades structure and function: risk assessment. (ENP/USGS; POC: Jeff Kline for ENP, Pam Scofield for USGS)</li> <li>Continue to implement the Corridors of Invasiveness Vital Sign project for Plants. [Also under Strategy 2-A.2] (SFCN NPS; POC Kevin Whelan)</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Notify the appropriate agencies, land managers, responders, and technical experts (EDRR Team)</li> <li>Conduct ecological risk assessments and RAP. (EDRR Team)</li> <li>Form a consensus plan of action for the response utilizing the ecological risk assessments and RAP. (EDRR Team)</li> <li>(Note: FWC working on getting resources for the above.)</li> </ul>
<p><b>Objective 2C: Rapidly respond to identified threats.</b></p>		
<p>Strategy 2C1: Initiate rapid response based upon the plan of action developed during the assessment phase.</p>	<ul style="list-style-type: none"> <li>Develop and implement a FWS Florida Invasive Species Strike Team [Project ID 2504] (USFWS)</li> <li>Continue to eradicate <i>Chrysopogon aciculatus</i> from Air Force base property in Homestead. (FDACS-DPI/CISMA; POC Gordon Bonn)</li> <li>Giant African Land Snail Eradication Program</li> <li>Continue developing response network including Authorized Agents for rapid response to new invasive reptile observation on NPS lands (USGS POC: Bryan Falk, NPS POC Tylan Dean)</li> <li>Sacred ibis retrieval</li> </ul>	<ul style="list-style-type: none"> <li>The EDRR team will establish strike teams to implement the action plan.</li> <li>Develop Incident Command Structure and training courses for rapid response activities, modeled on successful programs elsewhere</li> <li>Continue/expand support and funding for a formal interagency invasive species strike team</li> </ul>

## Goal 3: Contain the spread of invasive exotic species

Objectives and Strategies	Action Steps – <u>Current</u> Projects/Resources	Action Steps – <u>Needed</u> Projects/Resources
<b>Objective 3A: Utilize existing control tools to contain invasive exotic species.</b>		
<p>Strategy 3A1: Implement best management practices to prevent the inadvertent spread of invasive exotic species.</p>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Require that all activities that have the potential to introduce or disseminate invasive species on public lands include an analysis to determine the potential for the introduction or movement of invasive species.</li> <li>• Develop a prevention plan (e.g. Hazard Analysis and Critical Control Point (HACCP) plan) or appropriate set of prevention and containment practices that will be implemented to mitigate or reduce the potential for invasive species movement onto and off of public lands and privately-owned/publicly managed lands.</li> <li>• Encourage the use of containment practices in contracts and by entities working on or on the behalf of all partner agencies.</li> <li>• Public outreach initiatives to implement HACCP plans and practices (i.e. clean your hiking boots when hiking in new area, and use local fire wood)</li> </ul>
<p>Strategy 3A2: Implement control efforts at containment boundaries and known pathways.</p>	<ul style="list-style-type: none"> <li>• Continue Tegu interdiction to prevent expansion into ENP and natural areas. (FWC/UF/USGS/ENP; POC: FWC/UF - Jenny Eckles/Frank Mazotti, USGS - Michelle McEachern/Bob Reed/Nick Aumen, ENP - Tylan Dean)</li> <li>• Continue to contain and eradicate known populations of <i>M. micrantha</i> as well as survey other areas to allow for early detection and rapid response. (FDACS-DPI/UF/CISMA; POC Gordon Bonn)</li> <li>• Eradicate the Gambian Pouch Rat [Project ID 2700] (FWC/USDA)</li> <li>• Continue to implement EWBB (Exotic wood boring Beetles) section for multiple forest pests. (FDACS-DPI-CAPS; POC Gordon Bonn)</li> <li>• Temporal and Spatial Habitat Use, Genetics, Diet and Disease Survey of the Boa Constrictor (<i>Boa constrictor</i> spp.) at the</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate 2011-2014 tegu capture records to assess efficacy of control efforts and identify dispersal corridors</li> <li>• Increase Tegu containment efforts including population reduction through intense trapping in the interior and full containment lines to the north and east of known populations.</li> <li>• Develop detector dog program to aid in containment and control efforts.</li> </ul>

	Charles Deering Estate at Cutler (Miami-Dade County)	
Strategy 3A3: Retreat or reassess areas to ensure containment of invasive exotic species.	<ul style="list-style-type: none"> <li>Nile Monitor Eradication Project (also applies to 3A4)</li> <li>Ongoing eDNA sampling (USGS, POC Margaret Hunter)</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Increase containment efforts or reduce interior populations of Nile Monitors (if needed)</li> <li>Apply existing Burmese python eDNA method to assess containment/removal efforts</li> </ul>
Strategy 3A4: Develop an EDRR approach outside containment areas that eliminates incipient populations.	<ul style="list-style-type: none"> <li>Nile Monitor Eradication Project (also applies to 3A3)</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Develop an emergency response fund to help support and increase the capacity of interagency/inter-jurisdictional teams to tackle emerging IES issues (FWC is requesting funds for this)</li> <li>Sustained resources to support joint effort of FWC, UF, USGS, NPS, Miami Dade County (Venom 1) to eradicate North African Rock pythons</li> <li>Apply existing tools such as eDNA to determine boundary of populations (i.e have Burmese pythons entered Lox NWR?)</li> </ul>
Strategy 3A5: Enforce existing laws regarding transporting and releasing exotic species to prevent spread.		
<b>Objective 3B: Improve effectiveness of containment efforts on invasive exotic species populations.</b>		
Strategy 3B1: Invest in science-based containment methods.	<ul style="list-style-type: none"> <li>Conduct tegu brumation study. Thermal biology and behavioral ecology of Argentine tegus in southern Florida. (USGS – Michelle McEachern, ENP – Tylan Dean)</li> <li>Continue radiotelemetric monitoring of Burmese pythons in Collier County to understand opportunities for control in upland habitats (POC Robert Reed USGS, Ian Bartoszek Conservancy of SW FL)</li> <li>Initiate radiotelemetric monitoring of Burmese pythons on Miccosukee tribe lands (USGS, POC Kristen Hart)</li> </ul>	<ul style="list-style-type: none"> <li>Develop new control tools to assist in the containment of invasive exotic species.</li> <li>Conduct inventory and monitoring to identify containment boundaries and pathways.</li> <li>Conduct research on priority containment species to enhance tool development.</li> <li></li> </ul>
Strategy 3B2: Assess effectiveness of containment efforts	<ul style="list-style-type: none"> <li>Evaluate positive eDNA ‘hits’ compared to known locations for pythons, boas, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Measure results of containment efforts.</li> <li>Evaluate environmental and economic benefits of containment.</li> </ul>

<p>and adapt to improve success.</p>		<ul style="list-style-type: none"> <li>• Determine impact of invasive exotic species on Everglades restoration efforts and benefits of containment efforts.</li> <li>• Incorporate lessons learned into ongoing and future containment efforts.</li> <li>• Redirect and reprioritize containment efforts.</li> </ul>
<p>Strategy 3B3: Standardize containment efforts through enhanced coordination.</p>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that partnership policies, mechanisms, and implementation tools help support and encourage cooperative efforts across agencies, landscapes, and jurisdictions.</li> <li>• Ensure vertical coordination amongst agencies on the ground combating invasive exotic species.</li> </ul>
<p>Strategy 3B4: Improve public awareness of the need for ongoing containment efforts.</p>	<ul style="list-style-type: none"> <li>• Increase awareness of the impacts of invasive exotic species on south Florida’s environment, economy, culture, and human health through continued implementation of Zoo Miami/Miami-Dade County Invasive Species Outreach and Educational Programs (Miami-Dade County)</li> <li>• Continue to implement the FWC Exotic Pet Amnesty Program. (FWC) (Also in 1B3)</li> <li>• Exotic Species Reporting Hotline and Database Maintenance (Also in 1B3)</li> <li>• Everglades Non-Native Fish Round Up (Also in 1B3)</li> <li>• Miami-Dade County Environmentally Endangered Lands Program-Volunteer Workdays (MDC-EEL; POC Cynthia Guerra) (Also in 1B3)</li> </ul>	<ul style="list-style-type: none"> <li>• Effectively communicate ongoing process of containment.</li> <li>• Develop outreach mechanisms to solicit public involvement in reporting or containment efforts in targeted geographic areas at containment boundaries.</li> </ul>

## Goal 4: Reduce the populations of widely established invasive exotic species and maintain at lowest feasible levels

Objectives and Strategies	Action Steps – <u>Current</u> Projects/Resources	Action Steps – <u>Needed</u> Projects/Resources
<b>Objective 4A: Reduce population and extent of established invasive exotic species through Integrated Pest Management approaches.</b>		
<p>Strategy 4A1: Strive to eliminate the impact of invasive exotic species on natural areas by implementing an Integrated Pest Management approach.</p>	<ul style="list-style-type: none"> <li>• Continue to implement Invasive Exotic Plants Control in Terrestrial and Aquatic Natural Systems [Project ID 2502] (SFWMD)</li> <li>• Continue to implement Melaleuca Eradication and Other Exotic Plants [Project ID 2505] (USACE)</li> <li>• Continue to implement Everglades National Park Exotic (PLANT) Control Program (melaleuca, Australian pine, and Lygodium) [Project ID 2506] (ENP; POC Hillary Cooley)</li> <li>• Continue to implement Hole-in-the-Donut Hole in the Donut wetland restoration mitigation project (remove Brazilian pepper monoculture) [Project ID 2507] (POC Jonathan Taylor)</li> <li>• Continue to implement Aquatic and Upland Invasive Plant Management [Project ID 2508]</li> <li>• Continue to implement Exotic Species Removal [Project ID 2509] (Seminole Tribe of Indians)</li> <li>• Continue to implement Melaleuca Biological Control Agents [Project ID 2602]</li> <li>• Continue to implement Python authorized agent program for Everglades National Park. (NPS; POC Tylan Dean)</li> <li>• Continue to implement FWC Python Removal Program</li> <li>• Continue to implement Arthur R. Marshall Loxahatchee NWR exotic plant control program – Maintain funding to continue control efforts of four priority plant species (melaleuca, <i>Lygodium</i>, Australian pine, and Brazilian pepper) following methods outlined in the Refuge Integrated Pest Management Plan.</li> <li>• Continue to treat invasive exotic plants on acreage acquired through the Environmentally Endangered Lands Program</li> </ul>	<ul style="list-style-type: none"> <li>• Develop biocontrol for Brazilian pepper. (Is this already in development? POC USDA)</li> <li>• Identify and secure more funding for more mass rearings and releases of biocontrols already approved.</li> <li>• Identify and secure more funding at all jurisdictional levels to support land management and broad scale treatment of invasive exotic species.</li> <li>• Increase number of authorized agents and agent participation in Everglades NP, acquire hybrid vehicle to reduce costs and carbon emissions (USGS POCs Robert Reed, Kristen Hart)</li> <li>• Develop invasive species internship program to provide workforce and education/experience with invasive species (NPS POC – Tylan Dean)</li> <li>• Invest in developing pheromones or other attractants to increase detection and control success for pythons and other species.</li> <li>• Implement a detector dog program to improve detection and removal efficiency for pythons and other species.</li> </ul>

	<p>(MDC-EEL; POC Cynthia Guerra)</p> <ul style="list-style-type: none"> <li>• Enhanced Mitigation Techniques for Control of Cactus Moth</li> <li>• Arthur R. Marshall Loxahatchee National Wildlife Refuge - Invasive Exotic Control Program</li> <li>• Lionfish assessment and control in South Florida National Parks</li> <li>• Population suppression and biology of Black spiny-tailed Iguanas <i>Ctenosaura similis</i> (USDA; POC Michael Avery)</li> <li>• Bring all major exotics into a management level in Big Cypress National Preserve (melaleuca, <i>Lygodium</i>, Australian pine, and Brazilian pepper)</li> <li>• Incorporate invasive species management into CERP projects and future restoration projects in accordance with the CERP guidance memorandum – (POC = Jon Lane)</li> </ul>	
Strategy 4A2: Conduct routine surveys of widely established species to determine status of populations.	<ul style="list-style-type: none"> <li>• Digital Area Sketch Mapping</li> </ul>	
<b>Objective 4B: Reduce impacts of invasive exotic species through restoration of native habitats and species.</b>		
Strategy 4B1: Support efforts to increase the total spatial extent of natural areas and restore natural hydrology.	<ul style="list-style-type: none"> <li>• Protect wading bird foraging habitat by continuing melaleuca eradication efforts in the northern Refuge. (ARM Loxahatchee NWR)</li> </ul>	
Strategy 4B2: Coordinate invasive exotic species management with restoration activities to prevent degradation of habitat.	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that control measures are not deleterious to native species.</li> <li>• Coordinate invasive species management activities with monitoring of existing rare and listed plant and animal species to minimize unintended impacts to rare and listed species.</li> <li>• Coordinate invasive species management with restoration activities to prevent degradation of habitat.</li> <li>• Build upon <i>Lygodium</i> herbicide efficacy studies to weigh long-term control strategies with non-target</li> </ul>

		<p>damage.</p> <ul style="list-style-type: none"> <li>• Develop Interagency Large Constrictor Strategic Coordination Team</li> <li>• Interagency Large Constrictor Strategic Coordination Management Plan</li> </ul>
<p>Strategy 4B3: Reintroduce populations of extirpated and rare species, and augment existing populations where appropriate, to improve native plant and animal species abundance and diversity.</p>	<ul style="list-style-type: none"> <li>• Biscayne National Park Schaus swallowtail butterfly (<i>Heraclides aristodemus ponceanus</i>) Habitat Enhancement (planting natives) (NPS POC Jed Redwine)</li> <li>• Continue native tree planting in Everglades and Francis S. Taylor, Rotenberg, and Holey Land Wildlife Management Areas (FWC)</li> <li>•</li> </ul>	
<p>Strategy 4B4: Recover ecological and natural system functions and ecosystem services.</p>	<ul style="list-style-type: none"> <li>• Continue to implement the Palmetto Bay/Cutler Bay coastal habitat restoration. (NPS POC Tony Pernas)</li> </ul>	
<p><b>Objective 4C: Improve effectiveness of long-term management efforts on invasive exotic species populations.</b></p>		
<p>Strategy 4C1: Assess effectiveness of long-term management efforts and adapt to improve success.</p>	<ul style="list-style-type: none"> <li>• Analyze sketch mapping data and the GRTS project (LeRoy and Tony?)</li> </ul>	<ul style="list-style-type: none"> <li>• Report successes/failures and lessons learned for each species and/or geographic region.</li> <li>• Conduct economic impact analyses of losses to natural areas, the built environment, and society by invasive exotic species.</li> <li>• Evaluate effectiveness of different treatment techniques and treatment intervals on invasive plants.</li> <li>• Incorporate lessons learned into ongoing and future management efforts (adaptive management).</li> <li>• Continue to review and update invasive species management techniques.</li> <li>• Increase funding to ensure agencies' abilities to conduct adequate follow-up treatments in order to maintain investments in initial work.</li> </ul>

<p>Strategy 4C2: Conduct inventory and monitoring to improve understanding of population growth of invasive exotic species in order to develop better control methods.</p>	<ul style="list-style-type: none"> <li>Continue to assess the effects of exotic fish on Everglades structure and function: risk assessment. (ENP/USGS; POC: Jeff Kline for ENP, Pam Scofield for USGS)</li> </ul>	
<p>Strategy 4C3: Develop and improve tools to assist in the long-term control of invasive exotic species.</p>	<ul style="list-style-type: none"> <li>Continue to implement Invasive Species Research and Information Exchange 2007 [Project ID 2503] (SFWMD)</li> <li>Continue to conduct Purple swampphen diet assessment. (FWC/Dale Gawlik with FAU; POC Jenny Eckles)</li> <li>Continue to develop genetic ID of gut content tool (USGS POCs Kristen Hart, Margaret Hunter)</li> <li>Continue to conduct Black spiny-tailed iguana assessment. (FWC)</li> <li>Continue to develop methods to produce and refine species-specific large constrictor control tools. (ENP/USGS; POC: ENP - Tylan Dean, USGS - Bob Reed/Kristen Hart/Nick Aumen)</li> <li>Continue to conduct Lionfish assessment and control in NPS units. (NPS; POC: Biscayne - Vanessa McDonough, ENP - Tylan Dean, Dry Tortugas - Tracy Ziegler)</li> <li>Biological Control of Air Potato</li> <li>Biological Control of Imported Fire Ant</li> <li>Python removal authorized agent program for South Florida National Parks</li> <li>Python Responder/Patrol Training (FWC)</li> <li>Thermal infra-red detection of Burmese pythons (USDA POC Michael Avery; UF POC Scot Smith)</li> <li>Python Chemical Communication/Pheromone Development (USDA POC Michael Avery; W&amp;L POC Rocky Parker)</li> <li>Trap and lure evaluation with Burmese pythons</li> <li>Tegu trap and lure evaluation (USDA POC Michael Avery/John Humphrey)</li> </ul>	<ul style="list-style-type: none"> <li>Conduct Key Largo woodrat, Lower Keys marsh rabbit, and feral cat populations modeling study (POC: Philip Hughes, FWS, National Key Deer refuge)</li> </ul>
<p>Strategy 4C4: Integrate federal, state, and local agency invasive exotic</p>	<ul style="list-style-type: none"> <li>ECISMA MOU</li> </ul>	

species control programs.		
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