

MULTI-STAKEHOLDER PYTHON ACTION WORKSHOP

December 10, 2008 / Stuart, FL

HIGHLIGHTS/ACTION ITEMS

Background

Preliminary coordination among interagency partners has initiated basic biological studies, limited monitoring of the occurrence and spread of pythons, evaluation of trapping techniques and opportunistic removal of snakes within Everglades National Park and the Florida Keys. However, the magnitude of the present distribution, number of pythons, and the potential for far greater spread, suggest that a much wider consortium, more coordinated intense activity and significant efforts will be required to address this problem.

To coordinate interagency action among multiple partners, and provide a common base for next steps, a workshop was held in January of 2008 to prioritize actions for python management. Action category needs were selected based on the typical integrated pest management approach of planning, assessment (monitoring), control, research and public awareness. Goals for invasive snake management include prevention, eradication, containment, and reduction. Narratives outlining priority needs for snake management have been written including why the action is needed, what partners would be involved in completing the action, what the action will accomplish, and what the action will cost.

Assessment (University of Florida, National Park Service, US Geological Survey, Davidson College, and South Florida Water Management District)

- Pythons removed in 2008 from Everglades National Park as of December 9, 2008: 311
- Pythons removed from the Frog Pond (1,500 acres): 2005 – 22; 2006 – 44; 2007 -55; 2008 – 44
- Locations where snakes have been removed were identified (see presentation for this information)
- Diet analysis to date includes a wide variety of mammals and birds, including the endangered Key Largo woodrat and juvenile wood stork (see presentation for specific species)
- Habitat usage from snake radio telemetry: prairie 41%, forest 37%, scrub 18%, other 4%
- Monitoring python body temperatures can help us understand activity patterns and habitat use to develop more effective control methods. To maintain body temperatures within preferred ranges, pythons behaviorally thermo-regulate by moving among various microhabitats. Continuous measurements of snake and environmental temperatures allow researchers to determine when snakes are active and what microhabitats they are occupying.
- Everglades National Park has developed an invasive species curriculum for its environmental education program as well as other materials such as the “Don’t Let It Loose” sticker and the web site - www.FloridaInvaders.org
- The University of Florida is collaborating with various partners to investigate python impacts in south Florida ecosystems and develop procedures for controlling pythons. High priority items identified include determining the status and extent of the python population and other reptiles of concern on CISMA and other DOI lands in South Florida, investigating movements and habitat use through radiotelemetry to determine effective times and locations for traps, refining methods to estimate impacts of pythons through studies of diet and energetics, and to capture and remove pythons.
- The core area of the current population of Burmese pythons is fairly well known, however, the periphery of their range and reproduction is less understood. Worse, almost nothing is known about the extent of or risks from other large constrictor snakes and reptiles of concern. Sensitive environments such as DOI lands and the Florida Keys should take high priority to determine if

breeding snake populations of pythons are present and to determine the risk of invasion from other large constrictor snakes and reptiles of concern.

- Inside the core population of Burmese pythons, a better understanding of population dynamics and genetics will enable a refinement of control methods by identifying key size/age classes for removal (e.g. breeding females).

Action Items:

- Maintain, analyze, and distribute a comprehensive map of python sightings/distribution and distribute to this forum
- A high priority item is an inventory and risk assessment of the Everglades Cooperative Invasive Species Management Area and DOI lands in South Florida for large constrictor snakes and other reptiles of concern.
- Action is needed on developing a genetic profile and population model for Burmese pythons in South Florida.

Public Education/Awareness and Pet Trade (National)

- The Department of the Interior (DOI) has signed an MOU with The Pet Industry Joint Advisory Council (PIJAC) that will enable all DOI agencies to fully participate in the Habitattitude™ campaign. PIJAC and the National Park Service (NPS) are currently collaborating on public service announcements and campaign messaging. See www.pijac.org for campaign info.
- Funds permitting, the reptile and amphibian version of Habitattitude™ will be launched this spring/summer at Everglades National Park. PIJAC has a fundraising campaign underway.
- The National Reptile Improvement Plan (NRIP), which sets standards for the husbandry of reptiles and amphibians with the intent of minimizing the risk of herps or their parasites from becoming invasive, is currently being revised to be more comprehensive and inclusive of hobbyists as well as commercial enterprises.
- PIJAC also has a campaign designed to reduce the risk of spread of the highly invasive fungus, *Batrachochytrium dendrobatidis* (“Bd”), through the trade and husbandry of amphibians. For more information on the “Bd-free Phibs Campaign,” see www.pijac.org and http://www.parcplace.org/Bd_conference.html.
- In 2008, a decision of the Convention on Biological Diversity (CBD) tasked PIJAC and the Global Invasive Species Programme (GISP) with developing a toolkit of best management practices for reducing the risk of biological invasion via the pet trade pathway. The toolkit will be presented to governments at a CBD meeting in 2010. PIJAC is currently looking for financial co-sponsors (\$55K of \$75K has been raised) and case studies to include in the toolkit. For more information on any of these PIJAC programs, contact Dr. Jamie K. Reaser, PIJAC Senior Adviser for Health and Environmental Stewardship at pijacscience@nelsoncable.com or 434-990-9494.

Action Items:

- Collaborate in the launch of the reptile and amphibian component of the Habitattitude™ campaign.
- Promote the Habitattitude™ campaign at Nonnative Species Amnesty Day and other public events.
- Become a sponsor/partner of one or more of PIJAC’s education/outreach campaigns.
- Help promote/distribute the revised NRIP program materials when they become available.
- Collaborate with large constrictor hobbyists in the training and implementation of python patrols.

Public Awareness/Education (State of Florida – Fish and Wildlife Conservation Commission)

- Non-native Pet Amnesty Day – March 21, 2009 - Miami Metro Zoo

Amnesty days are providing an alternative for those who no longer want their non-native pet animal. This will be the fifth event held in Florida. At this one-day event, people who are keeping exotic animals for pets, but no longer want them, can give them up for free, no questions asked. It is illegal to release a nonnative animal into the wild, and it is potentially harmful to both the animal and the environment. The ECISMA will be setting up a display table with education materials on invasive plants/animals. Everyone is invited to attend.

- Unwanted Pet Snake Adoption Options - Contact Jenny Trinnell (jenny.tinnell@myfwc.com), (850) 926-0128. For those who cannot attend an amnesty day event, the Florida Fish and Wildlife Conservation Commission can be contacted on a limited basis regarding adoption options for their pet by a certified adopter.

Action Item: Design special web page for the new State of Florida Reptiles of Concern (ROCs) rule (Pythons- Burmese, African Rock, Amethystine, Reticulated; Green Anaconda; Nile Monitor Lizard) on the FWC Non-native Website including photos of each species. (ROCs are nonnative reptile species that have the potential to become established in Florida and can threaten native wildlife, cause economic damage or pose a threat to human safety.)

Planning - NEPA Requirements (USDA, Wildlife Services)

- USDA, Wildlife Services will be Lead Agency with other Federal Agencies/NGO's as Cooperating Agencies in the completion of an environmental assessment to determine the impacts of alternative control options or methods on major invasive reptiles in south Florida.

Action Items:

- Preparation of Environmental Assessment (EA) - USDA, Wildlife Services
 - o Determine Timetable for Completion of Draft and Final EA
 - o Determine Assistance/Information Needed from Cooperating Agencies
- Compile List of Control Methods for EA Analysis
- Determine Control Priorities (Geographic Areas)

Research (US Geological Survey, National Park Service, University of Florida, South Florida Water Management District, and USDA, National Wildlife Research Center)

Trap Design, Development, and Deployment

In 2008, the USGS initiated an integrated interdiction and eradication program for invasive pythons in the Florida Keys. Our greatest efforts have been directed towards developing and deploying python traps. As of 31 December 2008, we have deployed 59 traps, of which 35 are attractant traps baited with a live rat in an enclosed chamber. The traps are of three designs: the standard trap has round one-way entrance flaps and hardware cloth walls, the plywood trap has round one-way entrance flaps and plywood walls, and the rectangular flap trap has rectangular one-way entrance flaps and hardware cloth walls. All traps are equipped with "escape hatches" of a size allowing Key Largo woodrats and smaller non-target species to escape. No pythons were captured in 2008, and incidental capture of non-target species was fairly minimal (five opossums, one raccoon, one squirrel, nine yellow rat snakes, one southern racer, and several species of invertebrates). We experienced zero mortality of non-targets, all of which were released unharmed, and we note that all of the non-target snakes exited the traps through the escape

hatches when the traps were checked. That no target captures were made during the trapping period is not unduly surprising, as no road-killed pythons were found in our trapping zone, no python sightings were reported from our trapping zone, and our extensive visual survey work did not produce any target captures or sightings within our trapping zone. Three pythons were encountered in the Key Largo area in 2008: two were recovered near the Everglades Ranger Station (prior to our having traps deployed there), and one from US 1 approximately 5 kilometers north of Key Largo. Our trapping zone will increase in 2009 to account for these recent python capture locations. In addition to our baited traps, we have also deployed unbaited intercept traps along drift fences to intercept and trap pythons. We have erected three 75 meter drift fences near the western boundary of the Crocodile Lake National Wildlife Refuge. Two fences were placed in line and extend from near the water's edge in the north to near the tree line along County Road 905 in the south. These two fences are separated by a 5 meter gap. The third fence is located 10 meters east of the first two, and is centered on the 5 meter gap. This drift fence design allows for the interception of pythons while not completely prohibiting the movement of native wildlife. All fences are 1.5 meters tall and made of plastic netting (which further allows for the movement of small native species). Eight standard traps were deployed at 25 meter intervals along each fence (four traps per side). The unbaited traps produced captures of land crabs, but no other non-target species (all crabs were released unharmed). We will continue to trap extensively in North Key Largo, but will also extend our trapping zone to include the US 1 land bridge between Key Largo and the Florida mainland. By trapping along the "stretch" we will intercept pythons prior to their reaching Key Largo. We will also be markedly increasing our road surveys. We will continue to improve our current trap designs while developing new trap designs. In all, our control efforts during 2008, and our forthcoming efforts in 2009 will reduce the likelihood that a population of invasive giant constrictors will become established in the Florida Keys.

Also in 2008, the UF, USGS, USNPS, and SFWMD began a program to develop an effective python trap array and to implement a python trapping program on lands managed by the South Florida Water Management District (Frog Pond) and the National Park Service (ENP). Research and development has included testing of trap entrances, development of traps, and testing of traps with and without intercept devices (drift fences) and attractants such as adult females (see below) and bait (see below). **We can announce here for the first time that we have developed a trap and fence array that successfully captured a Burmese python. We are now in the process of making this trap better.**

Action Item: Share 2009 Trap Design/Capture and Road Survey Results with this forum

Baiting/Pheromone Testing

Bait and Toxicant Testing for Burmese Pythons

NWRC has been conducting and planning tests on pythons (and Nile monitors) that parallel our successful development of control tools for brown tree snakes. First, we found acetaminophen to be an effective toxicant for juvenile Burmese pythons from the pet trade. Next, a variety of commercially available, non-living baits were tested for acceptance using control group pythons (and monitors) from the acetaminophen tests. Baits tested included: beef flavored dog treats, coturnix quail eggs, zebra finch eggs, dead coturnix quail chick, squid, tilapia, ground turkey, chicken livers, and dead neonatal mouse. One trial used a presentation of fresh baits, while a second trial examined acceptance after the baits were aged for 24 hr at 80° F at 50% RH. Paralleling the results for brown tree snakes, the dead quail chick and neonatal mouse were well received and the only baits accepted. Only the dead quail chick was accepted after aging. We are now planning large-pen trials for our Gainesville field station to examine prey seeking behavior by evaluating the importance of prey scent trails, and the attractivity of two bait types to the pythons (similar bait types to those previously found in the above lab tests on juveniles), with and without scent trails. We also have plans to identify a dose of acetaminophen that will kill large adult pythons.

The UF, USGS, USNPS, and SFWMD have initiated field trials of the effectiveness of using bait as an attractant in traps. Both baited and self-baiting traps are being tested. An advantage of self-baiting traps is that potential prey items leave their own scent trails to traps.

Pheromonal Control of the Burmese Python

NWRC is proposing methods for using pheromones to control the Burmese Python based on those currently under development for the Brown Tree Snake. Pheromonal control is a particularly promising approach because (1) it offers a means of large-scale population reduction; (2) it would be a good detection and monitoring tool; and (3) it would have no adverse environmental or non-target effects. A pheromone, when applied on a large scale, could effect a population reduction by disrupting breeding activity during the snake's single mating season each spring. On a small scale, it could be used to detect leading edges of population expansion and "hot spots" which could be mitigated using pheromone trails leading snakes to traps or consolidation points in conjunction with other control methods. NWRC has developed a detailed pheromonal control methods development plan with internal Go/no-Go decision points to direct and/or limit research in an economical manner.

The UF, USGS, USNPS, and SFWMD are conducting preliminary field trials on effectiveness of using adult females to attract male pythons to trap arrays.

Action Item: Share 2009 test results with pheromonal control with this forum; Preliminary results from field trials conducted by UF, USGS, and USNPS suggest that adult male pythons with radio-transmitters can track and find adult, female pythons. Given the importance of removing breeding female pythons from the wild, a focused, concerted effort should be made to test the effectiveness of male pythons finding female pythons as a detection and control method.

Planning/Control

Early Detection/Rapid Response

Goals for early detection and rapid response in south Florida include establishment of a mechanism for development, testing, and coordination of an overall system. Control of invasive snakes is most feasible when intervention is early and when the area is small, isolated, and accessible. In general, oversight and resources needed to establish a rapid response system would need to be determined and who would participate in such a system. Consideration of resource needs would include: (1) determining what resources/programs are already in place; (2) what resources can be developed by drawing from existing funding or programs; and (3) what resources or capabilities will require substantial new development and resources. At this point, only the Florida Keys Python Patrol and a future limited early detection/rapid response capability through the Everglades Cisma partnership is planned should funding become available.

Everglades Cooperative Invasive Species Management Area (ECISMA)

Cooperative Invasive Species Management Areas, commonly referred to as Cisma's, are one of the newest and most effective ways to battle invading plants and animals in the United States. A Cisma is a formal partnership of Federal, State, local government agencies, Tribes, individuals; and various interested groups that manage invasive animals in a defined geographic area. The Cisma functions under the authority of a mutually developed memorandum of understanding (MOU) and is subject to statutory and regulatory invasive animal control requirements. The majority of landowners and natural resource managers in the area are involved (or represented) to utilize coordination efforts and expertise against common invasive species. Cisma's are unique because they attempt to address invasive animal

prevention and control under one local umbrella of organization. Key characteristics of a CISMA include: (1) they are headed by a steering committee with the purpose of determining which activities are undertaken and how funding is spent; (2) they are committed to cooperation; and (3) they operate under a comprehensive plan that addresses the management or prevention of one or more invasive animal (and plant) species incorporating a cross-taxon approach. The cooperative management area idea incorporates the strategy that all landowners in a given area, to be effective, must work together to prevent and control invasive species infestations. The cooperative management area concept has helped managers of public and private lands recognize the value in a collaborative approach that does not let ownership boundaries prevent necessary control and management work. The Everglades CISMA includes Everglades National Park, Big Cypress Preserve, the Water Conservation Areas, and the Arthur R. Marshall Loxahatchee National Wildlife Refuge, along with Tribal lands. The ECISMA Rapid Response Subcommittee is completing an Early Detection/Rapid Response Plan for the Everglades Cooperative Invasive Species Management Area. The CISMA structure is a workable alternative to development of an interagency response system in a defined geographic area. CISMA's are already in place in Florida and additional cooperative management areas are being created. The Everglades CISMA is developing rapid response capabilities for participating members. Current Everglades CISMA activities include the drafting of an agreement with the Department of Agriculture, Wildlife Services for rapid response across multi-jurisdictional boundaries of the Everglades ecosystem and for participating CISMA members to receive Wildlife Services certified training for animal removal. For more information on the ECISMA: <http://www.evergladescisma.org>.

- Proposal Introduced by Alison Higgins, TNC, entitled: *Python Patrol: Expanding an Early Detection and Rapid Response Team for Large Constrictor Snakes*.

This proposal addresses key aspects of building expanded capacity to coordinate and implement invasive snake early detection and rapid response in South Florida. This draft funding proposal is composed of early detection (50%), rapid response (30%), and prevention/public education (20%). Portions of this proposal combine narratives written from previous python workshops, in addition to using already successfully established coordination and geographic based partnerships such as the Florida Keys Python Patrol.

Action Items:

- Discuss the Python Patrol proposal at next ECISMA Rapid Response Subcommittee meeting for potential funding by way of the ECISMA membership and/or supporting groups.
- Finalize the Early Detection/Rapid Response Plan for the ECISMA. Python early detection and response will be a component of this plan along with other reptiles of concern.

All Stakeholders

Action Items:

- Pursue potential resources or coordination assistance with invasive snake management (e.g., National Invasive Species Council)
- Network with other Florida CISMA's/Private Landowners to share information and resources.

U.S. Fish and Wildlife Service

Action Items: Post Workshop Presentations, Highlights, and Action Items on FWS, South Florida Field Office Python Web Page.