

2022 COOPERATIVE SUMMER FELLOWSHIP PROGRAM – PROJECT PROPOSAL

APPLICANT TYPE: ESA;

PROJECT TITLE: BURMESE PYTHON MOVEMENT AND HABITAT USE

Kristen Hart,

Discipline: Ecology;Wildlife Biology;Field Mapping;

PROJECT DESCRIPTION

BACKGROUND

Background: The Burmese python (*Python bivittatus*), a native to Southeast Asia, can reach a length greater than twenty feet. This python is a long lived (15 – 25 years) behavioral, habitat, and dietary generalist, capable of producing large clutches of eggs (8 – 107). The invasive population of Burmese pythons in the United States is established across thousands of square kilometers of southern Florida, including within Everglades National Park, Crocodile Lake National Wildlife Refuge in the Florida Keys, in Big Cypress National Preserve and other state and public lands. Burmese Pythons present a threat to successful ecological restoration of the Greater Everglades Ecosystem, adversely impacting valued resources across the landscape. The main suite of impacts of Burmese pythons is caused by direct predation. Proposed management and control actions must include research strategies and further evaluation of potential impacts of pythons.

Although much research has been conducted on pythons in south Florida, we lack estimates of vital rates (e.g., age-specific survival rates, sex ratios, age at maturity, reproductive output and frequency, population growth rates and dispersal) and cannot construct a complete python life table. The accuracy of vital rates will inform the level of confidence that can be applied when modeling management scenarios.

Demographic models have been successfully applied to inform management and control of other damaging invasive species. Performing a study to gather demographic information that can be used to maximize efficacy of various control efforts is our goal. Vital rates are critical for accurately identifying key demographics to target for management, estimating population growth or declines, and understanding the number of individuals that must be removed to ensure population decline. Once vital rates are assessed with confidence intervals that estimate annual or geographic variance, we can: 1) understand which life stages have the greatest elasticity for targeted control, and 2) model population growth rates to then evaluate the effect of removals on that population trajectory

Objectives: In our on-going python project (Big Cypress National Preserve, Crocodile Lake National Wildlife Refuge and Everglades National Park), we have deployed pythons ranging in age from hatchling to adults implanted with VHF radio transmitters, with the goal of tracking these “Scout snakes” to better understand python movement patterns and habitat use, as well as removing additional snakes, including breeding females. A subset of study pythons also received acceleration data loggers (ADLs). With logged acceleration data, researchers can measure fine-scale body movements as well as body posture (i.e., pitch, roll). These devices thus represent a powerful tool for quantifying activity and behavior in animals that are difficult to observe directly for long periods. This information could allow researchers to better understand rates of social encounters (and thus the effectiveness of Scout removals) and understand if pythons are also still exhibiting feeding behavior during the breeding season.

This information will be critical for developing the Scout technique further, as well as for understanding how the risk to native wildlife changes throughout the year.

INTERN TASKS

The intern(s) will assist with prepping equipment for fieldwork and maintaining equipment during the field season, conducting both night-time and daytime tracking and captures of pythons with supervision from experienced project staff, assisting with working up pythons captured, collecting biological samples, with transmitter implantation surgeries and care pre/post-surgery, and entering data collected into established databases. Travel to field sites will mostly involve day trips (with some overnight stays in the field). The intern(s) will be responsible for drafting short written synopses of field activities for reports, online summaries (available to the public), and other USGS and NPS outlets (e.g., Soundwaves, see <http://soundwaves.usgs.gov/2008/12/>).

BENEFITS TO INTERN

The intern(s) will gain hands-on experience working directly with Burmese pythons and exposure to analyses of data collected on the project. The intern(s) may be involved with data manipulation for summary reports.

MENTORING PLAN

The intern would be in regular contact with PI or senior biologists.

ADDITIONAL DETAILS

STUDENT SKILLS AND INTERESTS

The ideal candidate(s) must be responsible and capable of working independently but as part of a larger team and must be able to function independently in remote and sometimes harsh field conditions. Experience with boats and trailering would be beneficial, but is not critical. The intern(s) must be comfortable working in remote locations. Candidate(s) must have a valid US driver's license and be capable of using hand-held GPS device. Proficiency with MS Office applications is a must, and a working knowledge of GIS is desired.

LOCATION: Davie/Florida

ACTIVITY LEVEL:

Level 8-2: The work requires some physical exertion such as long periods of standing, walking over rough, uneven, or rocky surfaces; recurring bending, crouching, stooping, stretching, reaching, or similar activities; or recurring lifting of moderately heavy items. The work may require specific, but common, physical characteristics and abilities such as above-average agility and dexterity.

FIELD WORK	25-50%	VIRTUAL?	No
LAB WORK	0-25%		
OFFICE WORK	0-25%		
OTHER	0-25%		

PROJECTED START DATE	4/11/2022
EXPECTED DURATION	5-6 months