

2022 COOPERATIVE SUMMER FELLOWSHIP PROGRAM – PROJECT PROPOSAL

APPLICANT TYPE: ESA;

PROJECT TITLE: MACHINE LEARNING AND CLASSIFICATION OF BOX TURTLES IN A CAPTURE - RECAPTURE STUDY

Andy Royle,

Discipline: Ecology; Wildlife Biology;

PROJECT DESCRIPTION

BACKGROUND

FWS Patuxent refuge has an on-going population study of box turtles. The study involves searching for turtles, measuring them and physically marking them by notching their shells. Data on capture rates and locations provide information about population size, survival probabilities and habitat use. We are developing a new framework for automated identification of individuals using digital photographs and machine learning concepts.

INTERN TASKS

Student interns will engage in the following activities: (1) search for box turtles on Patuxent refuge. This will involve searching on foot along prescribed search routes or transects; (2) encountered turtles will be physically marked, digital photos will be obtained; (3) Determining methods for processing images and isolating characteristic patterns from the carapace of turtles; (4) Assembling and organizing historical data and images of turtles; (5) The study may involve VHF telemetry and genetic sampling.

BENEFITS TO INTERN

The intern will gain specific experience marking and processing turtles in the field, collecting field data, and computer processing of data and digital images in the R programming environment and will have the opportunity to demonstrate independent thinking and creativity in the development of a novel identification system for box turtles.

MENTORING PLAN

I will work with the intern to develop and implement the field sampling schedule and activities, and meet weekly or more frequently as needed to instruct the intern on data organization and processing.

ADDITIONAL DETAILS

STUDENT SKILLS AND INTERESTS

hiking in medium difficulty conditions; computing skills: GIS, excel, data processing in R

LOCATION: Laurel MD

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	50-75%	VIRTUAL?	No
LAB WORK	None		
OFFICE WORK	25-50%		
OTHER	25-50%		

PROJECTED START DATE	5/2/2022
EXPECTED DURATION	20 weeks