PENNSYLVANIA GAME COMMISSION
BUREAU OF WILDLIFE MANAGEMENT
PROJECT ANNUAL JOB REPORT

PROJECT CODE NO.: 06107

TITLE: Commonwealth Autonomous Monitoring Program

JOB CODE NO.: 10701

TITLE: Commonwealth Autonomous Monitoring Program

PERIOD COVERED: 1 July 2023 to 30 June 2024

WORK LOCATION(S): State Game Lands 13, 280 (Blue Marsh), & 290 (Haldeman Island)

COOPERATING AGENCIES: State University of New York College of Environmental Science and Forestry; University of Pittsburgh

PREPARED BY: Sean Murphy, Andrew Ward, and Melanie Weaver

DATE: 2 July 2024

ABSTRACT Effective monitoring is critical to evaluating the success of wildlife management activities. Traditional monitoring methods, including visual encounter and point count surveys, are well-established but are expensive and logistically challenging to scale to large numbers of survey points and long time periods. Moreover, observer experience and ability are commonly major sources of heterogeneity. In recent years, the use of camera traps and automated recording units (ARUs) have provided a new means to achieve large scale wildlife monitoring goals while reducing costs and human effort. The Commonwealth Autonomous Monitoring Program is designed to explore the applicability of these two monitoring technologies and state of the art abundance estimators to State Game Lands and species survey needs. The successful inclusion of camera traps and ARUs in future Game Commission monitoring programs can increase the scale at which wildlife monitoring can take place while simultaneously reducing staff effort.

OBJECTIVES

1. Monitor wildlife population changes in response to management actions.

2. Develop protocols for ARU's and TC to monitor changes in occupancy probabilities of target wildlife species.

3. Develop visual and audio classifiers to identify presence of priority habitat associated species in different habitat such as: wetlands, mature forests, early successional habitat, and generalists.

INTRODUCTION

Automated recording units (ARUs) and trail cameras have been successfully used to monitor site occupancy for many wildlife species. These technologies can allow researchers to collect data across more locations, with higher sampling intensity, using less staff time than with human point counts. As a result, this could allow us to answer more research questions or improve the precision of population estimates and models of wildlife-habitat relationships in the future. Understanding tradeoffs with programming ARUs and cameras to gather sufficient data for research and monitoring while minimizing staff effort and resources will help us develop the most efficient way to use these devices. Our overall goal in this project is to investigate how to effectively monitor priority wildlife species using camera traps and ARUs across three primary ecosystems: wetlands, grasslands, and forests. We intend to focus on developing methods and models that will be used to inform field protocols for monitoring wildlife in these ecosystems.

STUDY AREA

For the pilot year of this project, ARUs were placed at State Game Lands (SGLs) 13, 280 (Blue Marsh) and 290 (Haldeman Island). Cameras were also deployed at the same locations at SGLs 13 and 280.

METHODS

For this pilot year, methods differed between study areas.

Forest

The cameras and ARUs were deployed at the same locations within SGL 13. The ARUs were deployed for 2 months from 15 April to 15 June. They recorded from 30 minutes before sunrise to 90 minutes after sunrise, for a 2-hour recording period in the morning, and from 90 minutes before sunset to 30 minutes after sunset, for a 2-hour recording period in the evening. Recording units were distributed on a 400 m grid and at least 200 m from the edge of the forest stand boundary and deployed on a small tree at or above chest height. Cameras were deployed at the same locations as the ARUs. Cameras were used to record images from 1 July to 31 July. Vegetation surveys around the deployment locations were conducted when cameras were retrieved.

Grassland

Cameras and ARUs were deployed at the same locations within SGL 280 (Blue Marsh), Cameras were deployed before the ARUs at 93 locations. Vegetation surveys were conducted at the deployment points at the end of June and in early July after the ARUs were retrieved.

Wetland

Autonomous Recording Units were deployed from 15 May to 30 June. These ARUs were placed at the water's edge approximately 100 – 150 m apart.

RESULTS

Pilot year results are still pending. The SD cards from the cameras were delivered to the State University of New York College of Environmental Science and Forestry, and SD cards from the ARUs were delivered to the University of Pittsburgh for analysis. Analysis is ongoing.

DISCUSSION

Since deployment of the cameras and ARUS at the 3 locations, a contract with the State University of New York College of Environmental Science and Forestry was agreed upon to determine if monitoring of this type is feasible for the Pennsylvania Game Commission. For future years of this project, methods and locations may differ.

RECOMMENDATIONS

1. Work with university partners to analyze pilot year data.

2. Work with university partners to create a protocol for the remainder of the project and support the research until the end of the project.