Oregon Wildlife Institute

Project Briefing: **Population Demography and Movement Patterns of the Northwest Pond Turtle in the Willamette Valley, Oregon: 2007 Pilot Study**

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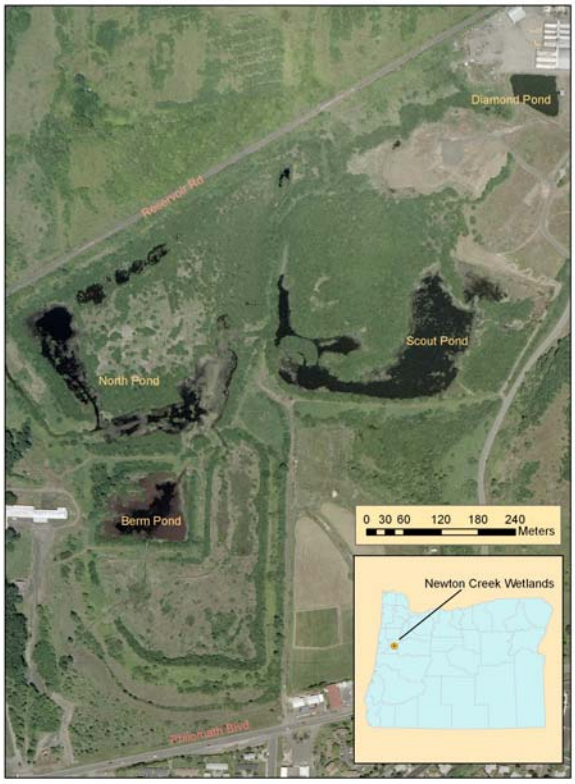
Introduction

The Oregon Wildlife Institute (OWI) is collaborating with a number of partners that are undertaking research and educational activities that we hope will help ensure the long-term persistence of the Northwestern pond turtle populations in the Willamette Valley of Oregon. In 2007, we began a pilot study for a multi-year investigation of pond turtle demography and movement patterns.

Site Description



We conducted the pilot study in the Marys River watershed, Benton County, Oregon at a 65 ha site locally known as the Newton Creek wetlands. A lumber mill was once located on the property, but the facility was closed decades ago. Dikes that were constructed to create log-holding ponds for the mill still stand largely intact, but were deliberately breached and the ponds emptied when mill operations ceased. In recent years, beavers (*Castor canadensis*) have occupied the site and have dammed some of the breaches creating a mosaic of palustrine wetlands and three impoundments named Scout, North, and Berm ponds. We also tracked turtles to a fourth artificial pond (we named Diamond Pond) located at an active lumber mill at the northern end of the study area.

Methods

Capture and Marking

Trapping was conducted from April 26 to May 15, 2007 using 13 traps of the two designs. Traps were checked for captured turtles once per day. Each captured turtle was marked to facilitate re-observation and identification. We attached a small radio transmitter to each of the captured females and selected males. For each individual captured, we recorded the following data: date of capture, trap location where captured, the unique identification number, sex, carapace length (mm), body mass (g), capture/recapture status, and the transmitter frequency (if applicable).

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Monitoring Turtle Movement & Nesting Activity

We attempted to determine the location of every radio-tagged female at least once every day from May 30 to July 12, 2007 using radio telemetry receivers. We concentrated our daily search effort during late afternoons and early evening hours to correspond to the time of day when terrestrial movements and nesting activity are most frequent. When possible, we used a wildlife detector dog to search for turtles on land, nests, and tracks left by turtles.

Results and Discussion

Population Structure

We captured a total of 26 turtles, mostly adult males. Recapture rates were also higher for males than females, suggesting that males are more likely to be captured than females given our methods. It is uncertain whether the population structure actually is skewed towards males, or females are less prone to capture because of behavioral or physical attributes. Further research is necessary to determine the different detection probabilities between sexes and among age classes to allow proper inference on population structure. We did observe two very small juveniles (estimated carapace length <60mm) basking on logs in Scout Pond, providing evidence of some recruitment of young at the site.

The average carapace length of captured females was 172 mm and their mean weight was 853 g. In the Willamette Valley, female Northwestern pond turtles probably are not mature enough to reproduce until they attain a length of 120-130 mm and are 10-12 years of age. All of the females we captured were sufficiently large to be capable of breeding.

Terrestrial Movement and Nesting Activity

Of the 26 turtles we captured, we attached a radio transmitter to six females and three males. We will estimate home ranges and describe movement patterns of all radio-tagged turtles in a later report. Here, we report on major movements of three females to demonstrate their use of multiple ponds and terrestrial landscape features.

Female 71 was first captured in Berm Pond in late May. During June and early July, she moved from the north end of Berm Pond to the southeast end of North Pond, to a channel west of North Pond, and then returned to the southeast end of the North Pond. We do not know the precise path taken by Female 71 between these positions, but all of these aquatic features were interconnected during our monitoring period and it would have been possible for her to accomplish these trips without leaving water.

Although our pilot study ended in July 2007, we attempted to relocate the radio-tagged turtles on December 4 and December 12, 2007 to identify over-wintering areas. Female 71 was the only turtle whose transmitter we were able to detect. On December 4, she was in a patch of shrubs

approximately 150 m west of Berm Pond. The following week, she had moved into a grove of oaks approximately 50 m south from her former position and was burrowed underground. These observations are consistent with other reports of Northwestern pond turtles over-wintering on land in the Willamette Valley.

Female 14 was originally trapped near the north edge of Scout Pond in May. She remained near that area until we relocated her on land on the evening of June 10. She was found in dense forbs, approximately 0.5 – 1.0 m tall. We then relocated her in Diamond Pond, where she was regularly relocated for several days. She eventually returned to Scout Pond, where she remained until the end of the study. We are unable to determine whether Female 14 migrated between the ponds using a narrow closed-canopy wetland extending north from Scout Pond to within 100 m of Diamond Pond, or alternatively, crossed the large open field between the two ponds.

Female 33 was originally trapped near the south end of Scout Pond. During June, she moved to Diamond Pond, where she was observed once on land in that area. She eventually returned to Scout Pond, where she remained until the conclusion of the pilot study. area until we relocated her on land on the evening of June 10. She was found in dense forbs, approximately 0.5 – 1.0 m tall. We then relocated her in Diamond Pond, where she was regularly relocated for several days. She eventually returned to Scout Pond, where she remained until the end of the study. We are unable to determine whether Female 14 migrated between the ponds using a narrow closed-canopy wetland extending north from Scout Pond to within 100 m of Diamond Pond, or alternatively, crossed the large open field between the two ponds.

Research and Management Recommendations

We initiated this pilot study to evaluate a method for locating nests using radio telemetry and detector dogs. We were generally satisfied with the performance of the radio transmitters and telemetry system. Nevertheless, we experienced some difficulty determining precise locations of turtles and nests. Earthen dikes and other topographic features on the landscape interrupted radio signals and caused them to bounce. CB radio traffic emanating from the nearby gravel mining operation and lumber mill caused severe telemetry interference near Scout Pond. The detector dog did make important contributions in finding one of the turtles on land, a nest start, and indicating the path of some turtles during their terrestrial movements. However, we cannot determine how many nests the dog may have missed. We will continue to evaluate our methods and address problems that became apparent during the pilot study.

We identified two locations that should be considered highly likely nesting areas for Northwest pond turtles given the frequency of activity we observed. Landowners at Newton Creek wetlands could benefit turtles by maintaining suitable nesting habitat (i.e., no trees or shrubs, sparse ground cover vegetation) and minimizing human activity in these areas during the nesting season. Other areas in Newton Creek wetlands also seem suitable for nesting, such as the open field near the Boy Scout camping site and the grasslands south of Berm Pond. However, our pilot study does not allow us to determine if turtles currently use these areas.

Perhaps the most important finding of our study from a management perspective is that we were able to determine that individual turtles at Newton Creek wetlands utilize large landscapes

composed of different aquatic and terrestrial habitat types. Ponds, grasslands, and woodlands, all provide important life requisites for turtles during different seasons of the year. Ensuring the persistence of Northwestern turtles at Newton Creek wetlands will demand management strategies that encompass not only the ponds where turtles are typically observed, but surrounding terrestrial areas where turtles are seldom seen but nevertheless contain critical resources essential for their survival in this area.

Acknowledgements

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The Authors

David G. Vesely-- Dave has been a wildlife ecologist for more than 12 years, specializing in the assessment of human land use affects on wildlife populations and their habitats. His interests include restoration planning for wildlife, natural resource inventory and monitoring designs, and modeling approaches to understand land management effects on wildlife habitats. Dave has also been investigating the use of dogs to detect rare wildlife and plants.

Daniel K. Rosenberg, Ph.D.-- Dan's research and educational outreach work is directed towards finding solutions to maintaining biological diversity in managed landscapes. His expertise is in understanding the population dynamics and movement patterns of a diversity of wildlife species, and approaches for monitoring wildlife response to management. Dan has recently coordinated several educational outreach programs that link research and education. In addition to co-directing OWI, Dan is a faculty member in the Department of Fisheries and Wildlife at Oregon State University where he works with graduate students through research projects and teaching classes.

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