

Western Chicken Turtles (*Deirochelys reticularia miaria*) at Boehler Seeps and Sandhills Preserve, Oklahoma

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Boehler Seeps and Sandhills Preserve, located in Atoka County, Oklahoma, is composed of a mixture of habitats that are unique for the area, and the unusual assemblage of flora and fauna contained in these habitats is more typical for Gulf Coast states, such as Texas and Louisiana, than for Oklahoma. This 194 hectare site can be broadly split into two communities: bluejack oak woodlands and acid hillside seeps. These seeps feed into two beaver-formed lakes (Boehler Lake and Hassel Lake) which are a central feature of this site (Figure 1). Boehler Lake has a surface area of 2.82 ha and Hassel Lake has a surface area 2.05 ha. Both lakes are shallow and heavily vegetated with multiple species of both emergent and submerged plants.

The two lakes support a rich herpetofauna community that includes western chicken turtles (*Deirochelys reticularia miaria*). Chicken turtles exhibit a number of traits that are unusual for turtles in the Emydidae family. For example, unlike most Emydids, they are primarily carnivorous, and they tend to inhabit small ephemeral pools rather than larger permanent bodies of water (Buhlmann 1995; Jackson 1996; Demuth and Buhlmann 1997). Chicken turtles are also known to frequently come on land to estivate and escape desiccation when ponds dry (Bennett et al. 1970; Gibbons et al. 1983). Previous studies have shown that chicken turtles have an unusual growth pattern. Unlike most turtles, which are very long

lived, chicken turtles tend to grow very rapidly and have short life spans (generally only 10–15 years; Gibbons and Greene 1978; Gibbons 1987). Perhaps the most interesting aspect of chicken turtles' ecology, however, is their reproductive cycle. In contrast to



Figure 1: A map of Boehler Seeps and Sandhills Preserve, located in Atoka County, Oklahoma.

most turtles, chicken turtles have two nesting seasons: spring and fall (Congdon et al. 1983; Buhlmann et al. 2009). It has also been documented that they have the ability to retain eggs for several months, and females can nest twice in a given year (Cagle and Tihen 1948; Buhlmann et al. 1995; Gibbons et al. 1982).

Despite having so many novel traits, almost all of the research on chicken turtles has been restricted to the eastern chicken turtle (*D. r. reticularia*), and little is known about the other subspecies (*D. r. miaria* and *D. r. chysea*). Thus, while it is often assumed that all three subspecies share the bimodal breeding season and other unusual traits of the eastern chicken turtle, scientists have yet to actually confirm the presence of these traits.

Beyond simple scientific inquiry, research on the western chicken turtle is also necessitated by its conservation status. Western chicken turtles are disappearing from much of their range. Currently, the western chicken turtle is listed a Tier II species of greatest conservation need in Oklahoma, and it is rare in many of the states where it occurs (Oklahoma Comprehensive Wildlife Conservation Strategy). In fact, chicken turtles have only been confirmed at three sites in Oklahoma. The presence of chicken turtles at Boehler Seeps and Sandhills Preserve was documented in 2008, but no additional research had been conducted on this population (Patton and Wood 2009).

During the spring and summer of 2012, turtle traps were placed in Boehler Lake and Hassel Lake in an effort to both confirm that chicken turtles were still present at this site and to collect baseline data about the current population. In order to capture both adults and juveniles, a variety of traps were used. These traps included: minnow traps, hoop nets of various sizes, and traps with leaders attached to them (Vogt 1980; Dinkelacker and Hilinger 2009). The same number of each type of trap was placed in each lake to allow comparisons to be made between the lakes.

Fourteen chicken turtles were caught (eight in Boehler Lake and six in Hassel Lake; Table 1). Each turtle received a unique notch code and PIT tag to allow future identification, and several of them have already been recaptured (Cagle 1939; Galois et al. 2002). Radio transmitters (RI-2B 10g and RI-2B 15g, Holohil Systems Ltd., Corp., Ontario Canada) were also placed on several turtles. Our data suggest that all of the chicken turtles that have been captured are either juveniles or females. This may be the result of a trapping bias, or it could indicate a strongly female biased sex ratio. More research is required to determine which of these is occurring. Interestingly, all three of the juvenile turtles that were captured were found in Hassel Lake. While the current data are limited, this may suggest that Hassel Lake has either a higher nesting rate or a higher percentage of successful nests.

Despite the distance between the two lakes (830 meters) and the fact that they separated by a road, there appears to be

Table 1: Sizes and locations of 14 western chicken turtles captured at Boehler Seeps and Sandhills preserve in 2012.

Lake	Carapace length (mm)	Plastron length (mm)	Mass (g)
Boehler	134	118	410
Boehler	147	132	510
Boehler	151	132	495
Boehler	161	139	700
Boehler	166	143	710
Boehler	201	176	1250
Hassel	55	50	24
Hassel	69	64	65
Hassel	80	72	90
Hassel	108	100	270
Hassel	145	129	530
Hassel	156	136	550
Hassel	170	142	740
Hassel	186	166	1200

some migration between them. For example, one female chicken turtle was found leaving Boehler Lake in the direction of Hassel Lake. Radio tracking indicated that she never actually entered Hassel Lake, but she did spend several days in the adjacent woods. Also, two individual red-eared sliders (*Trachemys scripta elegans*) were captured in one lake, then recaptured in the other lake. These data suggest that the two lakes at this site contain metapopulations of turtles rather than isolated populations in each lake.

These preliminary data have laid the groundwork for a variety of future research projects. Having now established that a reproducing population exists at Boehler Seeps and Sandhills Preserve, research on the reproductive strategies of the western chicken turtle can be initiated. Also, it would be valuable to examine their diet to determine whether or not it is the same as the eastern subspecies. Other research on their movements, population dynamics, and general ecology will also be valuable. Our current data, combined with the results of these projects will provide much needed life history information on this fascinating species and will be invaluable for determining appropriate conservation measures.

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