Herpetological Review

DRYMARCHON COUPERI (Eastern Indigo Snake). **LONG-DISTANCE INTERPOPULATION MOVEMENT**

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DRYMARCHON COUPERI (Eastern Indigo Snake). **LONG-DISTANCE INTERPOPULATION MOVEMENT**. *Drymarchon couperi* was listed by the U.S. Fish and Wildlife Service (USFWS) as threatened in 1978 due to population declines caused primarily by habitat loss and habitat degradation (USFWS 1982. Eastern Indigo Snake Recovery Plan. U.S. Fish and Wildlife Service, Atlanta, Georgia. 23 pp.). In the northern part of their range (northern Florida and the Coastal Plain of southern Georgia, USA), adult *D. couperi* rely on Gopher Tortoise (*Gopherus polyphemus*) burrows for winter dens (Diemer and Speake 1983. J. Herpetol. 17:256–264; Stevenson et al. 2009. Herpetol. Cons. Biol. 4:30–42). In southeastern Georgia, *D. couperi* populations are typically restricted to sites where intact xeric sandhill habitats supporting *G. polyphemus* occur contiguous with extensive areas of poorly-drained or mesic upland habitats (pine flatwoods, mixed pine-oak forests, slope forests) and wetlands (Diemer and Speake 1981. *In* Odum and Guthrie [eds.], Proc. Nongame and Endangered Wildlife Symposium, pp. 52–61. Georgia Dept. Nat. Resources, Game and Fish Div. Tech. Bull.WL–5; Diemer and Speake 1983, *op. cit.*). Although *D. couperi* may use sandhill habitats throughout the year, during their period of greatest surface activity and movements (April–October) mesic habitats and wetlands are used frequently, particularly by foraging snakes (Hyslop 2007. Movements, Habitat Use, and Survival of the Threatened Eastern Indigo Snake [*Drymarchon couperi*] in Georgia. Unpubl. dissertation, University of Georgia, Athens). Adult *D. couperi* may range 2–6 km from their overwintering sites and typically exhibit overwintering site fidelity by returning to the same sandhills, commonly using some of the same tortoise burrows in successive years (Hyslop et al. 2009. Copeia 2009:460–466; Stevenson et al., *op. cit.*).

From 1998–2006, we monitored four *D. couperi* populations at Fort Stewart Military Installation in the lower Coastal Plain of southeastern Georgia. For the purposes of this note, we define a *D. couperi* population as overwintering adult *D. couperi* occupying a discrete sandhill area known to support *G. polyphemus* that is separated > 6.0 km from a similar sandhill area. Distances between populations in this study ranged from 6.5–27 km. We monitored these populations by surveying for snakes from mid-November through mid-March (see Stevenson et al., *op. cit.* for additional details). During the seven-year period we captured and marked 77 individual *D. couperi* (51 males, 26 females). We recaptured 33 of these snakes (20 males, 13 females) in at least one additional survey year, and we recaptured 17 individuals (12 males, 5 females)

in 3–5 different survey years. Of these multi-year captures, we documented only a single instance of a snake moving between populations.

On 8 November 2002, we captured an adult male *D. couperi* (SVL = 140 cm; 1.86 kg) in sandhill habitat along Beards Creek, Long Co., Georgia, USA. The snake was marked with a passive integrated transponder (PIT) implanted subcutaneously and was released at the site of capture. On 23 December 2004, the snake was recaptured 22.2 km linear distance NE of its initial capture site in sandhill habitat N of the Canoochee River, Bryan Co., Georgia, USA. The snake was twice recaptured (at different tortoise burrows) the following fall/winter at the same sandhill site in Bryan Co.

The snake may have moved in search of mating opportunities; the Long County site where it was originally captured seems to support a very small *D. couperi* population, with only four males and no females found during our eight-year survey, while the site it moved to supports a larger population (9 adult females captured). If this snake moved between sites in a direct route (ca. 22 km), it would have traversed extensive areas of mesic pine flatwoods dotted with depressional wetlands and would have crossed numerous blackwater creek swamps. Because of poorly-drained soils, *G. polyphemus* are very uncommon and locally distributed on this part of Fort Stewart. Alternatively, a less direct route (ca. 27 km) would have the snake traveling north along a north-south trending upland terrace, and then traveling east (parallel to the Canoochee River), often through sandy uplands populated by *G. polyphemus*.

Interpopulation dispersal in snakes is generally thought to be low (Parker and Plummer 1987. *In* Seigel et al. [eds.], Snakes: Ecology and Evolutionary Biology, pp. 253–301. McGraw Hill, New York, New York), and even short distances (e.g., 1.6 km) of unsuitable habitat can potentially restrict gene flow (Prior et al. 1997. Conserv. Biol. 11:1147–1158). This type of long-distance movement by an imperiled species underscores the importance of conserving large tracts of land and the value of maintaining habitat connectivity and dispersal corridors between populations.

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