

***NERODIA FASCIATA FASCIATA* (Banded Watersnake). INTER-WETLAND MOVEMENT.** Although many animals regularly display seasonal migrations or periodic long-distance dispersal, few instances of long-distance movements by snakes have been

reported (Browne and Bowers 2004. *Landscape Ecol.* 19:1–20; Roe and Georges 2007. *Biol. Conserv.* 135:67–76). Notable exceptions to this generalization are Australian Water Pythons (*Liasis fuscus*), which undertake up to 12 km seasonal migrations between floodplain and high-ground habitats (Madsen and Shine 1996. *Ecology* 77:149–156) and long-distance “wandering” of snakes displaced by humans (e.g., Plummer and Mills 2000. *J. Herpetol.* 34:565–575; Reinert and Rupert Jr. 1999. *J. Herpetol.* 33:45–61). *Nerodia fasciata* is a mid-sized natricine snake that is ubiquitous in the south-eastern USA, occurring in virtually all aquatic habitats (Gibbons and Dorcas 2004. *North American Watersnakes: a Natural History*. Univ. Oklahoma Press, Norman. 438 pp.). Although this species is often abundant in isolated wetlands, these habitats may become unsuitable for aquatic snakes when severe droughts render them dry, sometimes for years at a time (Willson et al. 2006. *Wetlands* 26:1071–1078). Large numbers of *N. fasciata* captured leaving wetlands at the onset of droughts (Seigel et al. 1995. *Herpetologica* 51:424–434) have suggested that these snakes may emigrate overland to more permanent wetlands to escape drought conditions, but how far snakes travel and whether or not they successfully reach other aquatic habitats has not been confirmed. Here we report two *N. fasciata* that successfully moved long distances (> 3 km) between wetlands in response to drought.

Between February 2003 and June 2007, two of us (JDW and CTW) captured and marked over 900 individual *N. fasciata* at Ellenton Bay, a large Carolina bay wetland located on the Department of Energy's Savannah River Site in Aiken Co., South Carolina, USA. Ellenton Bay dried partially in the summer of 2006 and fully in June 2007. In 2007, one of us (TML) captured two marked *N. fasciata* in trashcan traps (Luhring and Jennison 2008. *J. Fresh. Ecol.* 23:445–450) at Dry Bay, a Carolina bay with a longer hydroperiod, located approximately 3.1 km N of Ellenton Bay. Both animals had been originally captured and marked with medical cautery units (Winne et al. 2006. *Herpetol. Rev.* 37:52–54) at Ellenton Bay. The first *N. fasciata* was a male (SVL = 449 mm; 94 g), originally captured on 20 September 2005 in a plastic minnow trap within Ellenton Bay. It was captured three more times between 22 and 28 September 2005 at Ellenton Bay, prior to being captured 22 months later on 21 July 2007, at Dry Bay (SVL = 488 mm; 102 g). The second snake was a female (SVL = 603 mm; 170 g), originally captured on 1 April 2003 in a box trap along a terrestrial drift fence surrounding Ellenton Bay as it attempted to enter the wetland following a previous extreme drought that lasted from 2000–2003 (Willson et al. 2006. *Wetlands* 26:1071–1078). This snake was recaptured at Dry Bay on 13 September 2007 (SVL = 802 mm; 486 g), 4 years and 5 months after its initial capture. These two snakes represented 4% (2 out of 56) individual *N. fasciata* captured at Dry Bay in 2007 by TML.

These observations provide the first unambiguous evidence that *N. fasciata* move long distances between wetlands in response to drought conditions. Whether this is a case of directed migration between known habitats or the chance outcome of undirected dispersal, remains unknown. The majority of the intervening habitat between Ellenton Bay and Dry Bay is forested and relatively undisturbed by development, and includes some (mostly temporary and dry during the 2006–2007 period) wetlands that could have been used during transit. However, in addition to > 3 km of distance, the route between Ellenton Bay and Dry Bay is bisected by a well-traveled two-lane highway (SC Hwy 125) and a large (> 5 m across, > 1 m deep) creek (Upper Three Runs Creek). The motivation required to traverse these obstacles (roads) and potential refuges (creek) suggests that these snakes may have been purposefully seeking refuge at Dry Bay.

This interpretation is supported by the fact that other *Nerodia* use wetland complexes on a landscape scale; Copperbelly Watersnakes (*N. erythrogaster neglecta*) regularly move between ephemeral wetlands under normal environmental conditions (Roe et al. 2004. *Biol. Conserv.* 118:79–89). Additionally, at least three species of freshwater turtles have been documented moving between Ellenton Bay and Dry Bay in the past (Buhlmann and Gibbons 2001. *Chelon. Conserv. Biol.* 4:115–127). Neither snake has been recaptured at either location since 2007, leaving unresolved the question of whether the snakes attempted to return to Ellenton Bay when normal water levels resumed.

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