regurgitated larva, we presumed that the snake swallowed it from the head. We were unable to determine if the snake fed on the larva and earthworm independently or on the earthworm being bitten by the larva, because the larvae of *Stenocladius* are known to feed on earthworms (Ohba et al. 1996. Sci. Rept. Yokosuka City Mus. 44:21–31).

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***DIADOPHIS PUNCTATUS* (Ring-necked Snake) and *STORERIA OCCIPITOMACULATA* (Red-bellied Snake). PREDATION.** Small woodland snakes are commonly predated by invertebrates (Ernst and Ernst 2003. Snakes of the United States and Canada. Smithsonian Books, Washington, D.C. 668 pp.). Here, we provide observations of two woodland snake species, *Diadophis punctatus* and *Storeria occipitomaculata*, being attacked or preyed upon by *Faxonius cristavarius* (Spiny Stream Crayfish).

Fig. 1. *Faxonius cristavarius* holding *Storeria occipitomaculata* after being captured.

Fig. 2. *Faxonius cristavarius* feeding on a *Storeria occipitomaculata* after release.

This is the first documented observation of active predation on either *D. punctatus* or *S. occipitomaculata* by a crayfish. At 0210 h, on 14 July 2018 on University of Kentucky's Robinson Forest in Knott County, Kentucky, USA (37.4639°N, 83.1193°W; NAD 83), one of us captured an adult *D. punctatus* within the riparian zone of an intermittent stream. The captured snake was rinsed in a stream to remove musk and subsequently attacked by an *F. cristavarius*. Although we removed the crayfish from the *D. punctatus*, we noticed that the crayfish was actively searching in the stream for the snake. Shortly after the predation attempt, we observed a second *F. cristavarius* feeding on a *S. occipitomaculata* at 0220 h (Figs. 1, 2). The *F. cristavarius* was captured and photographed, yet it did not release the prey item. These events suggest that *F. cristavarius*, and likely all larger stream dwelling crayfish, actively prey upon small woodland snake species (as well as small aquatic snakes; Ernst and Ernst 2003, *op. cit.*) when they enter aquatic environments.

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***HEBIUS PRYERI* (Pryer's Keelback Snake). PREDATION.** *Hebius pryeri* is a mid-sized colubrid snake that is endemic to the Okinawa and Amami Islands in the Ryukyu Archipelago, Japan (Kaito and Toda 2016. Biol. J. Linn. Soc. Lond. 118:187–199). The snake is cathemeral and preys on lizards, frogs, and amphibian larvae and eggs. Its only reported predators are three other snakes (*Dinodon semicarinatum*, *Protobothrops flavoviridis*, and *Ovophis okinavensis*), and knowledge of these prey–predator relationships is limited (Hamanaka et al. 2014. Bull. Herpetol. Soc. Jpn. 2014:167–181). Here, I report the predation of *H. pryeri* by the *Otus semitorques pryeri* (Japanese Scops Owl).

On 6 March 2018, I observed an *O. s. pryeri* holding down an adult *H. pryeri* (Fig. 1) on an asphalt road in Uka, Kunigami, Okinawa-jima Island, Japan (26.8108°N, 128.2725°E; WGS 84; 293 m elev.). The snake was immobile, and the owl repeatedly pulled the snake's neck upward using its beak. A few minutes later, the owl flew into the forest by the side of the road with the snake in its talons.

The diet of *O. s. pryeri* consists mainly of insects, non-insect invertebrates, and reptiles, including snakes (Toyama and Saitoh 2011. J. Raptor Res. 45:79–87). However, there is no detailed description which snake species are consumed or the owls' predatory behavior. My observation revealed that the owl uses *H. pryeri* as a food resource, but it is unknown whether the snake was alive or dead when the owl captured it. There are snakes smaller than *H. pryeri* inhabiting the Ryukyu Archipelago, which may be preyed upon by owls. Further

Fig. 1. Predation of *Hebius pryeri* by *Otus semitorques pryeri.*

knowledge concerning the predators of these snakes should be accumulated.

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***HETERODON NASICUS* (Plains Hog-nosed Snake). MOVEMENT.** Relatively little is known about the spatial ecology of *Heterodon nasicus* when compared to its congeners *H. simus* (Beane et al. 2014. Copeia 2014:168–175) and especially *H. platirhinos* (Plummer and Mills 2000. J. Herpetol. 34:565–575; LaGory et al. 2009. J. Wildl. Manag. 73:1387–1393; Rouse et al. 2011. Copeia 2011:443–456; Robson and Blouin-Demers 2013. Copeia 2013:507–511; Buchanan et al. 2015. J. Herpetol. 50:17–25; Vanek and Wasko 2017. Herpetol. Conserv. Biol. 12:109–118). The only published study that used radio-telemetry to track *H. nasicus* found that individuals spent about 71% of their time above ground (but did not report movement distances or home range sizes; Hoaglund and Smith 2012. IRCF Reptiles and Amphibians 19:163–169).

In June 2011, we radio-tracked *H. nasicus* at Thomson Sand Prairie in Carroll County, Illinois, USA, a relatively isolated sand prairie ca. 100 ha in size (see Durso and Mullin 2014. Ethology 120:140–148). Because we lacked access to veterinary surgical expertise, we elected to attach transmitters (Holohil BD-2N [0.53 g]) externally by gluing them to the skin of snakes dorso-laterally at ~15% of their total body length (i.e., toward the head) using either commercially-available superglue or epoxy (Riley et al. 2017. Wildl. Soc. Bull. 41:132–139). We held snakes in captivity for up to 24 h and only affixed transmitters to snakes weighing >5.4 grams. Unfortunately, all transmitters fell off within 1–5 days when the antennae became tangled in grass or while the snakes were burrowed in sand, preventing us from gathering long-term data on *H. nasicus* movements. Here, we present what short-term data we were able to gather.

We located four snakes multiple, consecutive times (Table 1). All subjects were juveniles (19.7–21.5 cm SVL, 6.12–9.33 g) that presumably hatched in September 2010 and were ca. 9 mo old when they were radio-tracked. One female was initially marked in September 2010, 49 m from its first capture in June 2011, and the other three (all males) were first captured in June 2011 in an area about 425 m away (Fig. 1). Because we were unsure how long the transmitters would remain attached, we tracked each snake as often as feasible each day, up to a maximum of 8 locations per snake per day. All four snakes made short-distance movements (mean ± 1 SE = 4.4 ± 0.5 m; N = 18 movements) in the morning and evening. Most consecutive locations of subjects in the exact same location (N = 12) occurred from 1200–1600 h, suggesting that movement occurs mostly in the morning and evening. Occasional longer-distance movements were documented: one snake moved 20.6 m over 5.5 h, and the largest snake (SVL = 21.5 cm) was recaptured 135 m from its last known location 8 days after its transmitter had fallen off. Finally, an adult female (53.4 cm SVL, 190 g; tracked using slightly larger Holohil BD-2 [0.85 g]) was relocated once, 100 m from her release point, and a transmitter affixed to a second adult female snake (61.3 cm SVL, 262 g) was recovered having fallen off > 300 m from her release location less than 24 h later; this snake was subsequently recaptured in the same area where she was originally captured.

All juvenile *H. nasicus* remained within or near (≤ 25 m) to sandy "blowouts." These 260–1400 m^2 bowl-shaped, elliptical depressions of bare sand are formed by wind action when a disturbance (e.g., borrow pit, ungulate grazing) interrupts a

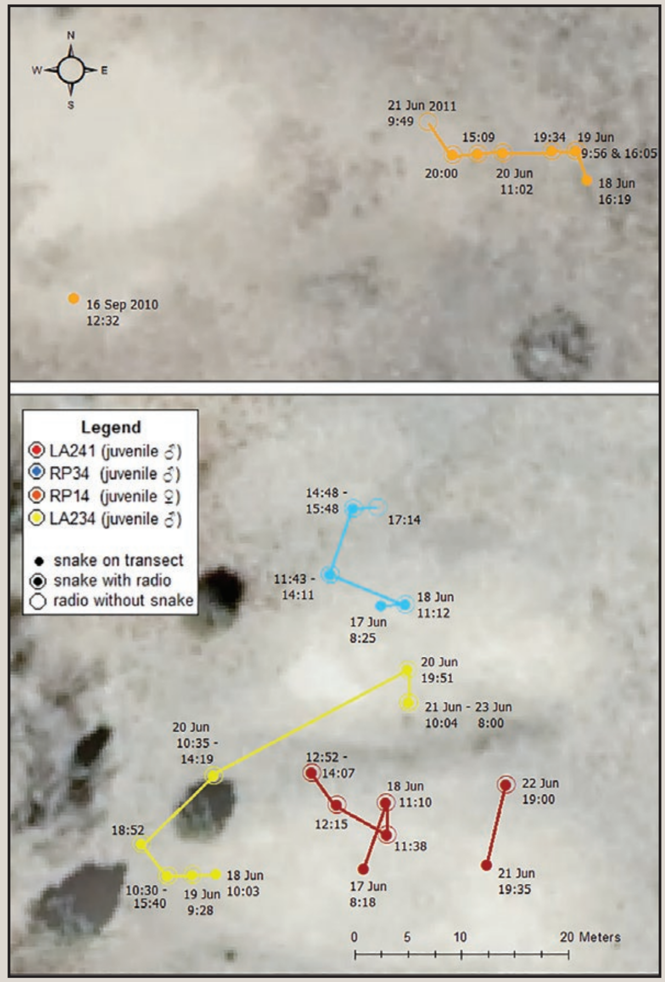

FIG. 1. Locations occupied by three juvenile male Plains Hog-nosed Snakes (*Heterodon nasicus*) at Thomson Sand Prairie, Carroll County, Illinois, over periods of 24–96 h in June 2011 (values labeling each point indicate time of day, CDT, and some points have >1 label if the snake was relocated there multiple times). Sandy blowouts are visible as light areas. Orthophotography basemap collected in March 2011 by Illinois Department of Transportation.

bunch-grass stand and allows the wind to carry sand away (Hart and Gleason 1907. Bull. Illinois State Lab. Nat. Hist. 7:1–272; Gleason 1910. Bull. Illinois State Lab. Nat. Hist. 9:1–174). Few species of plants are able to colonize the bare sand in the blowout basin (e.g., *Acerates* spp., *Lespedeza* spp., *Tephrosia virginiana*), and these constitute an important microhabitat for *H. nasicus* (Thol 2008. Graduate Certificate in Geographic Information Systems. Iowa State University, Ames, Iowa; Durso 2011. M.S. Thesis. Eastern Illinois University, Charleston, Illinois. 80 pp.; Reedy et al., unpubl. data).

On 6 July 2011, we found a post-partum female *H. nasicus* exiting a nest located within one of these blowouts, which likely represent excellent nesting habitat both because they are open, with few herbs and shrubs, allowing them to get significantly warmer than more heavily vegetated areas (Peet-Paré and Blouin-Demers 2013. Can. J. Zool. 90:1215–1220) and because they are excellent foraging habitat for juveniles, which feed primarily on *Aspidoscelis sexlineata* (Six-lined Racerunner) and their eggs (Durso et al. 2011. Herpetol. Rev. 42:439–440; Durso and Mullin 2017. Zoology 120:83–91).