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(SE = 5.8 d) and mean last date for 1981–1983 was 7 October (SE = 6.6 d). During the same periods, *Thamnophis sirtalis* tended to be found both earlier (mean first date: 18 April; SE = 3.2 d) and later (mean last date: 29 October, SE = 3.3 d), but the difference was significant only for the end of the season (paired-*t* tests: spring – *t* = 1.589, d.f. = 2, *p* = 0.253; fall – *t* = 6.803, d.f. = 2, *p* = 0.021). These observations present a more detailed documentation of general descriptions of activity periods presented in regional field guides (e.g., Vogt, *op. cit.*). Voucher specimens were placed in the University of Wisconsin-Madison Zoology Museum (UWZM 22556, 22594) and the Milwaukee Public Museum (MPM 30266, 33146).

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THAMNOPHIS SIRTALIS SIRTALIS (Eastern Gartersnake).

HABITAT USE. Terrestrial snakes typically congregate during colder months in dry, underground refugia; however, some snake species will partially or completely submerge themselves in flooded sites to hibernate (Carpenter 1953. *Ecology* 34:74–80; Costanzo 1985. *Physiol. Zool.* 58:682–692). *Thamnophis sirtalis* normally hibernate in terrestrial habitats such as rock piles, debris filled wells, old stumps, rodent burrows, crevices in shale, ant mounds, crayfish and prairie dog burrows (Ernst and Ernst 2003. *Snakes of the United States and Canada*. Smithsonian Books, Washington, DC. 680 pp.). Published accounts of crayfish burrow use by *Thamnophis* spp. indicate either daily refugia use (Dalrymple and Reichenback 1984. *Biol. Cons.* 30:195–200) or were identified by burrow excavation (Carpenter, *op. cit.*). Few observations have identified either the frequency/seasonality of use or the species of crayfish creating burrows.

During an investigation of *T. s. sirtalis* ecology in Lake Forest, Illinois, USA (42.260°N, 87.883°W; datum WGS84) we observed snakes entering and exiting burrows of an invasive crayfish species, *Cambarus diogenes* (Devil crayfish). On 11 March 2011 three juvenile snakes were observed emerging from a *C. diogenes* burrow and were PIT tagged. The PIT tagged snakes were found again on 6 June and 10 October 2011 at the same site with individuals either partially emerged or basking outside of the burrow. Additional anecdotal evidence of use was presence of silty, clay-like soil on freshly emerged individuals, and high density of individuals surrounding burrows. Our observations are the first confirmation that *T. s. sirtalis* use burrows of *C. diogenes* and indicate that they use these structures throughout the year as refugia.

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VIPERA ASPIS HUGYI (Southern Italian Asp). MELANISM.

Melanism, excess of dark pigmentation in the skin, is common in some snakes (Lorioux et al. 2008. *Amphibia-Reptilia* 29:1–5), resulting from the over-production or dispersion of melanin by melanophores (Sherbrooke et al. 1989. *Amer. Mus. Novit.* 2943:1–14). In cold environments, dark phenotypes (with low reflectance on the skin) may have a thermoregulatory advantage over lighter phenotypes (Clusella-Trullas et al. 2008. *Funct. Ecol.* 22:232–238) but are less cryptic and therefore may be more vulnerable to predation (Clusella-Trullas et al. 2007. *J. Therm. Biol.* 32:235–245).

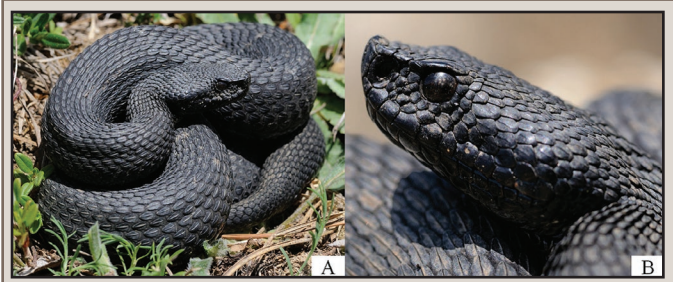


FIG. 1. Melanistic adult female *Vipera aspis hugyi*: whole body (A); close up on the head (B).

PHOTOS BY M. R. DI NICOLA

Vipera aspis hugyi is endemic to southern Italy and usually treated as subspecies of *Vipera aspis*, although in some studies it has been raised to species rank (Zuffi 2002. *Amphibia-Reptilia* 23:191–213). Color polymorphism is not accentuated in this subspecies and the pattern usually consists of a broad wavy line, often fragmented in round or oval patches, with a dark outer edge that is often black, and a lighter central area.

On 2 May 2012, around 1020 h, a melanistic adult female *V. aspis hugyi* was encountered basking at the edge of a pine forest at 1300 m elev. in the Sila mountainous plateau, Calabria, Italy. The body was almost completely black except for some small pale dots on the labial scales and a few reddish ventral scales in the terminal part of the tail; the eyes were also very dark, with barely visible reddish pigmentation (Fig. 1). A normally-pigmented adult female *V. aspis hugyi* was found in the same area two days earlier.

Although melanism has been reported for other subspecies of *V. aspis* (Monney et al. 1996. *Rev. Suisse Zool.* 103:81–100; Naulleau 1973. *Bull. Soc. Zool. France* 98:595–596) it doesn't seem to have been scientifically recorded for *V. aspis hugyi*, although a photograph of a melanistic specimen was published in Brodmann (1987. *Peter Brodmann, Die giftschlanger Europas und die gattung Vipera in Africa und Asien*, Kummerly+Frey 148 pp.). Thus, this record constitutes only the second published account of melanism in *V. aspis hugyi*. It is unclear whether melanism is rare in *V. aspis hugyi* or if the paucity of records is simply due to insufficient sampling. We thank Johan De Smedt for his advice and Arthur Anker and Marco Colombo for their comments to the manuscript.

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XENOCHROPHIS MACULATUS (Spotted Keelback). DIET.

Xenochrophis maculatus is a terrestrial and semiaquatic diurnal snake with a distribution restricted to southeastern Asia (Das 2010. *A Field Guide to the Reptiles of South-east Asia*. New Holland Publishers Ltd., London, U.K. 376 pp.). Along the Lower Pierce Trail in the Central Catchment Nature Reserve, Singapore, at 2217 h on 05 January 2013, we found an adult female *X. maculatus* (SVL = 64.6 cm, tail length = 14.4 cm, 105 g) with an obvious food bolus near its mid-body. The snake was perched 56 cm off the ground on vegetation approximately 3 m from a reservoir edge. The snake died in transport to the laboratory and dissection revealed the prey item as an adult *Limnonectes malesianus* (27.89 g, ~ 36% of the snake's pre-ingestion mass; Fig. 1). Both the *X. maculatus* and *L. malesianus* were deposited in the Raffles Museum of Biodiversity Research (ZRC 2.7000 and ZRC 1.12501, respectively). *Xenochrophis maculatus* is known to prey upon



FIG. 1. *Xenochrophis maculatus* with ingested *Limnonectes malesianus* in Central Catchment Nature Reserve, Singapore.

frogs and fish (David and Vogel 1996. *The Snakes of Sumatra: An Annotated Checklist and Key with Natural History Notes*. Edition Chimaira, Frankfurt, Germany. 260 pp.); however, we were unable to find any references documenting specific prey or prey size. We thank the National Parks Board of Singapore for issuing us work permit NP/RP11-03-1 and Kelvin K. P. Lim at the Raffles Museum of Biodiversity Research for accessioning specimens.

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XENOPHOLIS SCALARIS (Wucherer's Ground Snake). DEFENSIVE BEHAVIOR. *Xenopholis scalaris* is a dipsadid snake found in leaf litter in humid tropical forests of Bolivia, Brazil, Peru, Ecuador, Colombia, Suriname, and French Guiana (Lehr and Doan 2013. *In IUCN Red List of Threatened Species*, version 2013.1. <www.iucnredlist.org>. Downloaded 5 March 2013). Defensive behavior of this species is relatively unknown. We observed defensive behavior of *X. scalaris* on three occasions in southern Bahia, Brazil. The observations occurred on 1) 17 September 2012 at 2230 h in an area of Atlantic forest at Michelin Ecological Reserve (13.816667°S, 39.133333°W; datum SAD69),



FIG. 1. *Xenopholis scalaris* from southern Bahia, Brazil, exhibiting flattening and head hiding defensive behavior.

Igrapiúna municipality; 2) 3 May 2009 at 1600 h on a trail between a secondary forest and cocoa plantation at RPPN Serra Bonita (15.42387°S; 39.54736°W), Camacan municipality; and 3) 24 February 1992 at the Centro de Pesquisas do Cacau, CEPEC/CEPLAC (14.767492°S; 39.228062°W), Ilhéus municipality. In all observations, the snakes flattened their bodies, hid their heads, and remained motionless for several minutes (Fig. 1). The third observation was of two neonates. Although body flattening behavior has been described for this species (Martins 1996. *In K. Del Claro [ed.], Anais do XIV Encontro Annual de Etologia*, pp. 185–199. Sociedade Brasileira de Etologia, Universidade Federal de Uberlândia, Brazil) this is the first time the head-hiding behavior (Greene 1988. *In Gans and Huey [eds.], Biology of the Reptilia*, pp.1–152. Alan R. Liss, New York) has been noted.

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