bird's beak. A few minutes later, the bird finished eating the snake and flew away from the site.

Members of the family Momotidae feed on insects and small vertebrates (Lovette and Fitzpatrick 2016. Handbook of Bird Biology. Third edition. John Wiley & Sons, Chichister, West Sussex. 736 pp.). Some species have been recorded preying on herpetofauna, such as *Baryphthengus martii* (Master 1999. Wilson Bull. 111:439–440) and *Eumomota superciliosa* (Ortiz-Lachica et al. 2017. Mesoam. Herpetol. 4:630–631). To our best knowledge, this observation represents the first record of predation on *T. canula*.

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Fig. 1. Adult female *Thamnophis elegans terrestris* as first encountered, ingesting an adult *Taricha torosa* in San Luis Obispo County, California, USA.

***THAMNOPHIS ELEGANS TERRESTRIS* (Coast Gartersnake). TETRODOTOXIN POISONING.** The interaction between toxic Pacific newts (*Taricha* spp.) and predatory gartersnakes (*Thamnophis* spp.) has become a model system for addressing questions of arms-race coevolution (e.g., Brodie and Brodie 1999. Bioscience 49:557–568; Thompson 2005. The Geographic Mosaic of Coevolution. University of Chicago Press, Chicago, Illinois. 443 pp.), the adaptive process (Feldman et al. 2009. Proc. Nat. Acad. Sci. USA 106:13415–13420; McGlothlin et al. 2016. Curr. Biol. 26:1616–1621), and even convergent molecular evolution (Feldman et al 2012. Proc. Nat. Acad. Sci. USA 109:4556–4561; Brodie and Brodie 2015. Brain Behav. Evol. 86:48–57; Hague et al. 2017. Evolution 71:1504–1518). Newts contain tetrodotoxin (TTX; Mosher et al. 1964 Science 144:1100–1110; Wakely et al. 1966. Toxicon 3:195–203), a powerful neurotoxin that disrupts nerve transmissions and muscle activity (Hille 2001. Ion Channels of Excitable Membranes. Third edition. Sinauer Associates, Sunderland, Massachusetts. 812 pp.), leading to paralysis or even death in nearly all predators (Brodie 1968. Copeia 1968:307–313). TTX levels vary across species of *Taricha* as well as geographically within species (Hanifin et al. 1999. J. Chem. Ecol. 25:2161–2175; Hanifin et al. 2008. PLoS Biol. 6:e60), with some populations containing newts with almost no TTX (Brodie and Brodie 1991. Evolution 45:221–224; Hague et al. 2016 Ecol. Evol. 2016. 6:2714–2724), whereas other populations contain newts so deadly that a single individual could kill >30 people (Stokes et al. 2015. Northwest. Nat. 96:13–21). Despite the potent effects of TTX, three gartersnake species have evolved varying degrees of resistance to TTX in western North America (Feldman et al. 2009, *op. cit.*). To date, nearly all observations of *Thamnophis* preying on transformed newts in the wild include only those three coevolved gartersnakes species: *T. sirtalis* (Brodie 1968, *op. cit.*; Brodie and Brodie 1990. Evolution 44:651–659; Brodie et al. 2002. Evolution 56:2067–2082), *T. couchii* (Brodie et al. 2005. J. Chem. Ecol. 31:343–356; Pool and Wiseman 2007. Herpetol. Rev. 38:344–345), and *T. atratus* (Fox 1951. Univ. California Publ. Zool. 50:485–530; Greene and Feldman 2009. Herpetol. Rev. 40:103–104). Here, we report a novel predator-prey interaction between a *Thamnophis* species not previously known to prey on toxic *Taricha*.

At 1400 h on 1 March 2020 under cool, cloudy skies, RWH and RS encountered an adult female *Thamnophis elegans terrestris* (ca. 70 cm TL) in the process of ingesting an adult California Newt (*Taricha torosa*; Fig. 1) along San Carpoforo Creek in San Luis Obispo County, California, USA. Under normal conditions, the snake would have fled as we approached, but in this case she remained motionless. After a short period of observation, we moved on but marked the location for later examination. We returned to the spot ca. 30 min later and observed that the snake had not moved. Suspecting TTX-induced impairment given that the snake's body showed no signs of injury, we touched the snake's tail to check for paralysis. The snake responded by slowly moving its tail but was unable to crawl or otherwise move its body. We then noticed a food bolus that most likely was another adult newt ingested earlier (Fig. 2).

Given that the snake was a full-grown adult living in an area with an abundant newt population, it seems likely that newts have been part of this snake's diet. Newts from this area contain 0.1–0.3 mg of TTX (mean = 0.13 mg of TTX; Hanifin et al. 2008, *op. cit.*), only enough to reduce the sprint speed of a sympatric *T. sirtalis* to 85% of its baseline speed (Brodie et al. 2002, *op. cit.*), but enough to reduce the crawl speed of a sympatric *T. elegans* to 50% or more of its normal ability (Feldman et al. 2009, *op. cit.*). Based on this, we

Fig. 2. Photo taken ca. 30 min after first encounter (Fig. 1), showing little or no progress in completing ingestion of the newt. Arrow denotes a food bolus that presumably represents another adult newt. The snake was unable to flee, disgorge newt, defend itself, or otherwise move its body—physical impairments consistent with TTX poisoning.

suggest that the snake observed here was experiencing the sublethal effects of TTX and that the impairment eventually subsided, and the snake fully recovered. We cannot speculate on the duration of the snake's immobility and thus exposure to predators (or the elements), but lab studies show that recovery in *T. sirtalis* generally occurs within 1 to 3 h (Williams et al. 2003. Herpetologica 59:155–163), though some snakes remain impaired for over 7 h (Brodie and Brodie 1990, *op. cit.*). This observation is noteworthy because it is the first to document predation by *T. elegans* on metamorphosed *Taricha* in the wild and suggests yet a fourth snake species may be engaged in the complex arms-race with newts.

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***VIPERA ASPIS HUGYI* (Southern Italian Asp). COLORATION.** *Vipera aspis* is a polytypic species for which four subspecies are currently recognized: *V. a. aspis*, *V. a. francisciredi*, *V. a. hugyi*, and *V. a. zinnikeri* (Golay et al. 2008. Amphibia-Reptilia 29:71–83; Di Nicola et al. 2019. Anfibi & Rettili d'Italia. Edizioni Belvedere, Latina, Italy. 568 pp.). The polymorphism level is high in all subspecies, with dorsal ground hues usually varying from light grey to brown or reddish. The most common dorsal pattern is the blotched morph and varies in the different subspecies with more or less separated blotches of variable size (*V. a. aspis* and *V. a. francisciredi*), variably thick zig-zag band (*V. a. aspis* and *V. a. zinnikeri*) or elliptical, roundish or quadrangular shapes (*V. a. hugyi*; Zwahlen et al. 2012. 7th World Congress of Herpetology, Vancouver, Canada. 739 pp.; Di Nicola et al. 2019, *op. cit.*). Melanistic individuals are known for all *V. aspis* subspecies (Bruno 1976. Atti Soc. Ital. nat. Museo civ. Stor. nat. Milano. 117:165–194; Bruno 1985. Le vipere d'Italia e d'Europa. Edagricole, Milan, Italy. 278 pp.; Brodmann 1986. Die giftschlanger Europas und die gattung Vipera in Afrika und Asien. Kümmerly + Frey, Bern, Switzerland. 148 pp.), even though they are only rarely reported for *V. a. hugyi* (Di Nicola and Meier 2013. Herpetol. Rev. 44:698). A rarer condition is the patternless or concolor morph (showing no or greatly reduced dorsal pattern), which is well known for the nominate subspecies (Mebert et al. 2011. Elaphe 1:9–13; Tessa 2016. Atti XI Congresso Nazionale della Societas Herpetologica Italica, Trento 2016) and poorly reported for *V. a. zinnikeri* (De Smedt 2006. The Vipers of Europe. – Eigenverlag, Halblech, Germany. 340 pp.; K. Mebert, pers. comm.). This color morph was also observed on a putative hybrid between the latter subspecies and *V. latastei* (Zuazo et al. 2019. Bol. Asoc. Herpetol. Esp. 30:35–41) and was reported in a generic way for *V. a. francisciredi* (De Smedt. 2006, *op. cit.*). The adaptive function of the concolor morph still requires further investigation (Zwahlen et al. 2012, *op. cit.*; Tessa 2016, *op. cit.*) although several hypotheses have already been proposed (see Dubey et al. 2015. BMC Evol Biol 15:99).

Vipera aspis hugyi is endemic to southern Italy, being distributed in central and southern Campania, Apulia and Basilicata (excluding the northernmost portions), Calabria, Sicily and on Montecristo Island (where it was introduced in historical times; Masseti and Zuffi 2011. Br. Herpetol. Bull. 117:1–9; Di Nicola et al. 2019, *op. cit.*). On 29 May 2019, at 1129 h, an adult patternless *V. a. hugyi* was observed in the territory of Noto, Province of Siracusa, Sicily, Italy (36.96°N, 14.93°E; 520 m asl), by some forest workers who photographed (Fig. 1), filmed, and then let the snake go. The individual had a totally uniform light brown dorsal color; unfortunately, no detailed images of the head and belly are available. The snake was found moving in a small grassy clearing, located on the edge between a pine reforestation and a garrigue with scattered bushes and rocky outcrops. The authors did not have the opportunity to personally examine the snake, but the morphological evaluation of the animal habitus and the finding point leave no doubts about the reliability of the observation and the subspecific identity of the individual. This report constitutes the first observation of patternless morph in *V. a. hugyi.* Further field investigation will be useful to check if it is an isolated case or if this morph can be locally widespread, as happens in other asp populations (Mebert et al. 2011, *op. cit.*)

PHOTO BY VINCENZO LOMBARDO

Fig. 1. Adult patternless *Vipera aspis hugyi* individual from Noto territory, Siracusa, Sicily.

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***XENOCHROPHIS TRIANGULIGERUS* (Triangle Keelback). DIET and FEEDING BEHAVIOR.** The diet of *Xenochrophis trianguligerus*, a widespread aquatic natricine, has been reported to include frogs, including frogspawn and tadpoles (e.g., Stuebing and Inger 1999. A Field Guide to the Snakes of Borneo. Natural History Publications (Borneo), Kota Kinabalu, Malaysia. 262 pp.), and fish (Das 2010. A Field Guide to the Reptiles of South-East Asia. New