(*Campostoma* spp.), Hornyhead Chub (*Nocomis biguttatus*), Bluntnose Minnow (*Pimephales notatus*), White Sucker (*Catostomus commersoni*), Rock Bass (*Ambloplites rupestris*), and Johnny (*Etheostoma nigrum*), Rainbow (*E. caeruleum*), and Fantail Darters (*E. flabellare*). Stonecats (*Noturus flavus*) were found with Mudpuppies at all but one of the Upper Iowa River sites; like the Mudpuppy, this species is strongly associated with rock slabs or boulders.

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***PLETHODON CHATTAHOOCHEE* (Chattahoochee Slimy Salamander). PREDATION.** Relatively few instances of predation upon members of the *Plethodon glutinosus* complex have been reported. To our knowledge, predation by *Thamnophis sirtalis* (Common Gartersnake) has been reported for *P. cylindraceus* (Uhler et al. 1939. Trans. Am. Wildl. Conf. 4:605–622), *P. albagula* (Konvalinka and Trauth 2003. Herpetol. Rev. 34:378), and *P. glutinosus* (McCoard 2008. Unpubl. MS Thesis. Marshall University). Here, we report the first documented instance of predation of *P. chattahoochee* by *T. sirtalis*. At approximately 1400 h on 13 April 2013, we encountered a small adult *T. sirtalis* swallowing the last few inches of the tail of an adult *P. chattahoochee* in Fannin Co., Georgia, USA (34.73923°N, 84.141092°W, datum: WGS 84). Upon being discovered, the snake rapidly swallowed the remainder of the salamander and crawled away (Fig. 1). Soil and leaf litter were stuck to the face and snout of the snake presumably due to the defensive skin secretions produced by the salamander.

PHOTOGRAPH BY MALAVIKA RAJEEV.

FIG. 1. *Thamnophis sirtalis* swallowing *Plethodon chattahoochee*, showing debris stuck to the face of the snake.

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***SIREN LACERTINA* (Greater Siren). HABITAT.** Typically, *Siren lacertina* is associated with permanent or semi-permanent freshwater marshes, rivers, lakes and other freshwater bodies throughout the southeastern United States (Petranka 1998. Salamanders of the United States and Canada. Smithsonian Books, Washington, DC. 587 pp.). Though some salamanders have displayed salt tolerance, including *Siren lacertina* (Neill 1958. Bull. Mar. Sci. Gulf Caribb. 8:1–96) and the closely related *S. intermedia* (Asquith and Altig 1986. Comp. Biochem. Physiol. 84:683–685), observations of estuarine water habitat usage by caudates is rare in the literature.

On 04 May 2013, while conducting aquatic surveys using standard aquatic funnel traps in Everglades National Park, Dade Co., Florida, USA, two *S. lacertina* were trapped at a sampling site directly adjacent the Main Park Rd near the Hell's Bay canoe trail launch (25.232367°N, 80.823283°W; datum WGS 84). The habitat was a monoculture of Red Mangrove (*Rhizophora mangle*), and salinity was measured with a refractometer (Cole-Parmer RHS-10/ATC). Salinity at the time of capture was 4 ‰, indicative of the oligohaline mixing of upper estuaries typical in the southern Everglades (Davis et al. 2005. Wetlands 25:832–842). Specimens were photographed, but not vouchered due to permit constraints. This represents the first documented instance of mangrove swamp habitat usage and one of only two (Neill, *op. cit.*) known instances of tolerance of saline conditions by *S. lacertina*. Red mangrove provides a highly structured habitat that *S. lacertina* may prefer given its well-known preference for such microhabitats (Petranka, *op. cit.*).

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***TRITURUS IVANBURESCHI* (Buresch's Crested Newt). DEFENSIVE BEHAVIOR.** Defensive behaviors of salamanders have been well reviewed (Brodie et al. 1974. Herpetologica 30:79–85; Brodie 1977. Copeia 1977:523–535). *Triturus ivanbureschi* is a member of the *T. karelinii* group (Salamandridae), which is distributed over the south-eastern Balkan Peninsula, covering most of Bulgaria, eastern parts of Greece, eastern Republic of Macedonia, Serbia, European and Asian Turkey (western parts up to ca. 300 km inland; Wielstra et al. 2013. Zootaxa 3682:441–453). To date, the defensive behavior of this species has not been described.

On 5 April 2005, one of us (PB) found and photographed a subadult specimen of *T. ivanbureschi* near Primorsko in southeastern Bulgaria (42.31435°N, 27.75773°E, datum WGS 84; elev. 103 m). The specimen was found under a stone together with a specimen of the snake *Malpolon insignitus*. The salamander coiled its tail and upper part of the body while was being handled. After releasing it on the ground, the salamander remained in the same position, then it also crooked its front and back finger tips, closed its eyes, lifted up the back part of its body above ground at which time we observed the aposematic coloration on the ventral part of its body (Fig. 1A, B). It remained in this position for two minutes and after that it returned to its normal position.

We observed three of the basic antipredator behaviors typical of salamandrids: defensive posture, immobility, and presentation of ventral aposematic coloration (Brodie et al. 1974, *op. cit.*; Brodie 1977, *op. cit.*; Grillitsch 1983. Salamandra 20:61–63; Marco and Leguía 2001. Rev. Esp. Herpetol. 15:5–11). By exposing brightly colored parts of the body, individuals warn (or possibly confuse,

Fig. 1. *Triturus ivanbureschi* in defensive posture. A) lateral view. B) dorsal view.

see Batesian mimicry) their potential predators about noxious or toxic skin secretions, which is well known in many species of amphibians (cf. Brodie et al. 1974, *op. cit.*; Brodie 1977, *op. cit.*; Toledo et al. 2011, *op. cit.*). In addition, by coiling in an immobile position, the salamander probably hampers recognition as prey by a snake, bird, or mammal predator.

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ANURA — FROGS

***ANAXYRUS BOREAS* (Western Toad). PREDATION.** Unpalatability to predators is a well-documented defense mechanism found in several families of amphibians (Peterson and Blaustein 1990. Ethol. Ecol. Evol. 3:63–72). However, there is some debate over whether larval amphibians benefit from chemical defenses. A review of the palatability of amphibian larvae revealed they were consumed by predators in 89% of experimental trials. Furthermore, even though bufonid larvae are often considered unpalatable, they were consumed at similar rates as all other species (Gunzburger and Travis 2005. J. Herpetol. 39:547–571). Nonetheless, bufonid eggs and hatchlings may be less palatable than older larval stages (Brodie and Formanowicz 1987. Herpetologica 43:369–373).

Anaxyrus boreas is an example of a species that uses chemical defenses against predators (Peterson and Blaustein 1990, *op. cit.*). On 23 May 2013, we observed a congregation of nine adult Barred Tiger Salamanders (*Ambystoma mavortium*) consuming recently-hatched boreal toad larvae (Gosner stage 20–23) at a constructed wetland near Moran, Wyoming, USA (43.832443°N, 110.35512°W, datum: WGS 84). After capturing three salamanders (all males) for a mark-recapture study we observed that their stomachs were noticeably engorged. The salamanders were anesthetized with MS-222 prior to PIT-tagging. As the salamanders were recuperating, but still unconscious, we observed tadpoles swimming out of their mouths. We monitored the salamanders for another hour after they awakened but no other tadpoles emerged. All tadpoles appeared un-masticated with no visible injury.

Previous accounts have suggested larval tiger salamanders might prey upon *A. boreas* tadpoles (Dodd 2013. Frogs of the United States and Canada, Volume 1. The Johns Hopkins University Press, Baltimore, Maryland. 460 pp.), which our observations now verify. Perhaps because the salamanders are suction feeders that engulf, rather than chew their prey, they were less affected by toxins that may have been present in the hatchlings (Pearl and Hayes 2002. Am. Midl. Nat. 147:145–152).

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***BUFO BUFO* (Common Toad). PREDATION.** On 22 March 2012, during an amphibian survey in Cuenca province, in eastern Spain (40.02250°N, 1.98288°W, datum: WGS84), an Ardea cinerea (Grey Heron) was found trying to swallow a large, female Bufo bufo. The heron flew to the top of a nearby tree. The heron had pierced the body cavity of the toad with its beak, revealing egg strings dangling from the injury. After a few minutes the heron came back to the pond, and continued trying to clean the toad in the water. Handling of the prey continued for more than ten minutes, and later the heron fled away from the pond with the toad in its beak. Throughout the predation event the toad appeared motionless and we assumed it was dead. We are uncertain whether the heron eventually consumed the toad. Taking into account that the observation was coincident with the breeding season of A. cinerea in Spain, it is possible that the toad could be transported to the nest to feed the fledglings.

Ardea cinerea is opportunistic predator; its diet consists mainly of fish, but it can prey on amphibians, reptiles, birds, and even mammals (Kushlan and Hancock 2005. The Herons. Oxford University Press, Oxford, U.K. 433 pp.). Usually its prey is swallowed without handling. But during this observation we witnessed a long period of handling of the prey by the heron. This was probably due to the presence of parotid glands, and also due to the presence of eggs protruding from the female toad, which are also unpalatable and toxic (Litch 1968. Herpetologica 24:93–98). *B. bufo* is usually discarded by predators due to its toxicity.