

PREDATION ON THE COASTAL TAILED FROG (*ASCAPHUS TRUEI*)
BY A SHREW (*SOSEX SPP.*) IN WASHINGTON STATE

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Few observations exist of predation on post-metamorphic Coastal Tailed Frogs (*Ascaphus truei*). Karraker (2001) found a Common Garter Snake (*Thamnophis sirtalis*) with an adult male *A. truei* (36 mm snout-vent length [SVL]) in its mouth, and predation of metamorphosing *A. truei* by a hellgrammite (Megaloptera) and a larval Cope's Giant Salamander (*Dicamptodon copei*) also have been reported (Jones and Raphael 1998). To our knowledge, no reports exist of predation on *A. truei* by mammals. Here we report an observation of *A. truei* being captured and eaten by a shrew (*Sorex spp.*).

At 12:15 on 17 May 2007, JSM captured an adult female *A. truei* (approximately 40 mm SVL) 2 m from a stream edge along an unnamed tributary of the West Fork Rue Creek, Pacific County, Washington (5160283N, 445091E, UTM Zone 10, Datum WGS 1984; elevation 282 m). The capture site is along a 2nd-order stream segment (based on Strahler 1952) with a mean wetted channel width of 1.3 m at

the time of this observation; and located 220 m upstream of the electroshock-determined end of fish-bearing waters (Jason Walters, Weyerhaeuser Company, Federal Way, WA, pers. comm.) and 150 m below the stream origin. The site was located in a 60-y-old stand of Western Hemlock (*Tsuga heterophylla*) with a closed canopy. Understory vegetation included a scattered shrub layer of Oval-leaved Huckleberry (*Vaccinium ovalifolium*), Fool's Huckleberry (*Menziesia ferruginea*), and ground cover of mostly Wood Sorrel (*Oxalis oregana*), Deer Fern (*Blechnum spicant*), and Sword Fern (*Polystichum munitum*). The female *A. truei* was handled for measurement for about 2 min prior to being returned to a small stream pool (0.5 × 0.7 m, maximum depth 15 cm).

About 5 min later, EML, JSM, TRC, and KRY observed a large, black shrew with a whitish underside moving in and out of woody debris along the stream bank. The shrew came into full view, swam across the stream, passing within 0.5 m of the frog that had remained suspended at pool surface near its original release site, and then paused on the opposite stream

bank approximately 1 m away from the frog. It then pivoted, re-entered the stream and lunged at the *A. truei*, capturing it headfirst with its forelimbs and mouth. It swam to the edge of the stream with the frog, which remained peculiarly motionless in its mouth. It then grasped the *A. truei* between its front limbs and began chewing on it without taking cover. After about 10 s of chewing the shrew moved out of sight into a small hole in the stream bank with the frog in its mouth.

Without having the shrew in hand, we were not able to confirm the species identity. The Northern Water Shrew (*Sorex palustris*) and Marsh Shrew (*S. bendirii*), the 2 largest species of *Sorex* in North America, are both described as having black dorsal pelage and are often found close to small, forested streams in Washington State (Pattie 1973; Beneski and Stinson 1987; Eder 2002). Though the location of this observation might suggest *S. bendirii* (Ingles 1965; Pattie 1973), the whitish underside is more typical of *S. palustris* (Beneski and Stinson 1987; Eder 2002).

Shrew predation on other stream-associated amphibian species has been documented. Predation on *Dicamptodon* spp. by *S. palustris* has been reported several times (for example, Sorenson 1962; Nussbaum and Maser 1969; Beneski and Stinson 1987), and salamander remains have been found in the stomachs of various shrew species (Hamilton 1930); but shrew predation on anurans in the wild has only rarely been observed. Maier (2005) made 2 field observations of presumed predatory behavior by the Northern Short-Tailed Shrew (*Blarina brevicauda*) towards the Eastern Spadefoot (*Scaphiopus holbrookii*), but in both cases the observer disturbed the shrew, and no injuries were found on the toads. To our knowledge, the only report of shrew predation on an anuran in the wild is that of Dharmakumarsinhji (1946) who reported an attack on an Indian Bullfrog (*Rana tigrina*) by a Musk-shrew (*Suncus caeruleus*). Although reports of shrews preying on tailed frogs (*Ascaphus* spp.) are lacking, the habitats along forested streams typically used by *S. palustris* and *S. bendirii* (Pattie 1973, Beneski and Stinson 1987; Anthony and others 1987) overlap substantially with habitats used by *A. truei* (Diller and Wallace 2001; Nielsen and others 2001). Shrews may prey on tailed frogs in the

Pacific Northwest more frequently than our isolated observation suggests.

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