

Note

Spotless burnsi pattern in Northern Leopard Frog (*Lithobates pipiens*) in Maine

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Abstract

We document the spotless “burnsi” morph in Northern Leopard Frog (*Lithobates pipiens*) in Maine.

Key words: Northern Leopard Frog; *Lithobates pipiens*; amphibian; pattern variant; Maine

The “burnsi” mutation in Northern Leopard Frog (*Lithobates pipiens*) results in loss of the frog’s characteristic spots from the back, and sometimes also from the dorsal surface of the legs (McKinnell *et al.* 2005). Herpetologists have studied this mutation since the early 20th century, and Moore (1942) demonstrated that the burnsi mutation allele is dominant over the wild-type allele. More recently, this mutation has been used to study the effects of genetic bottlenecks in this species of conservation concern (McKinnell *et al.* 2005). This mutation is reported most frequently in central Minnesota and the surrounding area, where it occurs in 4.0–7.1% of *L. pipiens*, although it has also been documented rarely outside this region (Merrell 1965; Brown and Funk 1977; McKinnell *et al.* 2005; Rogers and Peacock 2012).

On 3 June 2018, S.B.L. and D.E.P. discovered a burnsi-type *L. pipiens* (Figure 1) along the bank of the north branch of Presque Isle Stream (46.641949°N, 68.177440°W) on Scapan Maine Public Reserved Land, T11 R4 WELS township, Aroostook County, Maine, USA. The frog was sitting in grass along a stream channel lined with Speckled Alder (*Alnus incana* subsp. *rugosa* (Du Roi) R.T. Clausen), which was further surrounded by scrub-shrub wetland and mixed coniferous–deciduous forest. The frog was identified as *L. pipiens* by the gold colouration of the

dorsolateral fold, lack of colouration on the groin, white venter, and green dorsum. Four wild-type conspecifics were also found at the same site (Figure 1).

Burnsi-type *L. pipiens* have been collected from only one other locality in Maine, as determined from a review of the Maine Amphibian and Reptile Atlas Project (MARAP 2019) database, which is maintained by the Maine Department of Inland Fisheries and Wildlife. MARAP contains specimen records from most major North American herpetology collections, as well as most smaller regional ones. In addition, MARAP includes observations from the citizen science iNaturalist Web site (www.inaturalist.org). Four specimens at the American Museum of Natural History (AMNH 51343–6) were collected in 1940 in Woodland (i.e., Baileyville, located 175 km south-southeast of the June 2018 collection), Washington County; these were briefly noted by Merrell (1965), but he did not provide catalog numbers or specific locality data. In addition, the Museum of Comparative Zoology houses a series of specimens (MCZ 25541–50) collected on the same date and from the same locality as the AMNH specimens, and the MCZ catalog ledger notes: “Of the 36,000 frogs collected in three seasons, about 4% were unspotted, but in other respects wholly typical like the true *pipiens* occurring at the spot, intergrades between them were present also”.



FIGURE 1. Burnsi-type (a) and wild-type (b) Northern Leopard Frogs (*Lithobates pipiens*) from Presque Isle Stream, Aroostook County, Maine, USA. Photos: Scott B. Lindemann.

Some of the specimens at both AMNH and MCZ retain spotting on the hind limbs similar to ours, while others are completely unspotted. Assuming the MCZ catalog ledger note is accurate, the burnsi mutation was apparently, at least at this location in Maine, as common as reported in central Minnesota and surrounding areas. We have not surveyed the Woodland area for Leopard Frogs, and the MCZ catalog ledger also states that “The pond has since been destroyed by peat cutting”. Aside from this series of specimens, the Presque Isle Stream individual is the only example of unspotted *L. pipiens* we are aware of from Maine.

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