AMPHIBIA: CAUDATA: AMBYSTOMATIDAE

Catalogue of American Amphibians and Reptiles.

UZZELL, THOMAS. 1967. Ambystoma laterale

**Ambystoma laterale**

**Hallowell**

**Blue-spotted salamander**


Date of collection unknown.

Ambystoma jeffersonianum var. laterale: Cope, 1867: 197. Emendation of generic name; varietal status proposed.


- CONTENT. No subspecies are recognized.

- **DEFINITION AND DIAGNOSIS.** A bisexual, diploid species \((2n = 28)\) of the Ambystoma jeffersonianum complex. Females are generally similar to females of *A. tremblayi*. During courtship, the male clasps the female in the axilla with his forelimbs. The digits are moderately long, but generally shorter than *A. jeffersonianum* and *A. platineum*. The plicate of the tongue radiate from the posterior margin of the tongue. The maxillary and premaxillary teeth form a single row posterior to the internal nares, usually separated into three groups by breaks behind the nares.

- **DESCRIPTION.** Eggs and deposition sites were described by Stille (1954), Clanton (1934) and Uzzell (1964) included brief notes. The eggs are deposited frequently as debris on the bottom of ponds, or on submerged sticks. The outer diameter of the egg mass is the diameter of the jellies of *A. platineum* (Clanton, 1934). The freshly dissected ovarian eggs average less in diameter (1.54 to 1.68 mm, mean 1.65) than eggs of *A. tremblayi* (Clanton, 1934).

- **DISTRIBUTION.** Except for records from the “driftless” area of Wisconsin and from the Great Swamp of New Jersey (Anderson & Giacocis, 1967), all records for this species are from north of the Wisconsin glacial border; all are from the eastern deciduous forest formation. *A. laterale* is found from northwestern Illinois north to Favourable Lake in the Kenora District of Ontario, east of northwestern Ohio, the northern half of New York (down the Hudson River Valley to Long Island and eastern New Jersey) to the coastal plain of Massachusetts and possibly Rhode Island, and north to Cape Breton (Cook & Rick, 1963) and Prince Edward islands, and southern Quebec along the north shore of the St. Lawrence River. A population, possibly isolated, has been reported (Bleckney, 1954) near Goose Bay, Labrador. At many localities in the south of its range, *A. laterale* occurs with the very similar triploid species *Ambystoma tremblayi*.

- **REMARKS.** Erythrocytes and erythrocyte nuclei probably have about two-thirds the volume of erythrocytes and erythrocyte nuclei of the two triploid species of the complex, *A. tremblayi* and *A. platineum*, and approximate the volume of those of *A. jeffersonianum* (Uzzell, 1964). Ova have about half the volume of ova of *A. tremblayi* (Clanton, 1934). Cells of gastrulae of this species have 2n = 28 chromosomes; a count on liver tissue also had 2n = 28 (Uzzell, 1963). In early diplophase of the first meiotic division, the lambrush chromosomes of the oocytes have about half the number of chiasmata per bivalent for each bivalent as the corresponding bivalents of *A. tremblayi* (Macgregor & Uzzell, 1964). Erythrocyte nuclei of adults have about two-thirds the volume of those of *A. tremblayi* (Clanton, 1934). Juveniles were described by Edgren (1949). Larvae have not been described. Adults were described by Brockenridge (1944), Clanton (1934), Minton (1964), and Uzzell (1964). Courtship was described by Kumpf and Yeaton (1932).

- **ILLUSTRATIONS.** Breckenridge (1944), Clanton (1934), Minton (1964), Conant (1958), and Uzzell (1964) all figured adults. Eggs, egg masses, larvae, and juveniles have not been illustrated.

- **FOSSIL RECORD.** None. *Ambystoma minshalli* Then and Chantell (1963) from the Valentine formation (lowermost Pliocene) of north-central Nebraska, is a very small member of the Ambystoma maculatum group to which the Ambystoma jeffersonianum complex has been referred (Then, 1958); the small size of *A. minshalli* is reminiscent of *A. laterale*.

- **PERTINENT LITERATURE.** Few papers deal explicitly with this species, although many referring to *Ambystoma jeffersonianum* probably were partly based on this species (see Remarks). Most of the recent information on the biology of this group is included in the following: Bleckney (1952) reported that the larvae occasionally overwinter. Clanton (1934) provided morphological data distinguishing this species from the triploid *A. tremblayi*; Clanton also noted the sex ratio among progeny. Edgren (1949) described an autumnal aggregation in this species. Kumpf & Yeaton (1932) described the courtship. Minton (1954) distinguished this species from *A. jeffersonianum*. Uzzell (1965) noted the chromosome number. Uzzell (1964) discussed morphological features, sex ratios in populations, migration dates of sexes, sex ratio of progeny, triploid hybrids between this species and *A. jeffersonianum* (*A. platineum, A. tremblayi*), courtship, cell size, and spermatophore production. Uzzell & Goldblatt (1967) discussed certain serum proteins, the origin of the triploid hybrids between this species and *A. jeffersonianum*, and the role of mating preferences in the *Ambystoma jeffersonianum* complex. Other references are cited in the remainder of the text.

- **MAP.** The solid circle marks the type-locality. Hollow symbols indicate other localities.
In breeding migrations, the males arrive at the pond relatively sooner than the females, although there is some overlap (Uzzell, 1964). In populations that include only A. laterale, the males outnumber the females (Cook County, Illinois; unpublished). In this population, the success of egg development is quite high, in contrast to populations that contain females of A. tremblayi.

Courtship of A. laterale has been described by Kumpf & Yeaton (1932) and by Uzzell (1964). The most striking features are clasping of the female in the axillary region by the male using his forelimbs. The period of clasping varies in length. As courtship approaches a climax, the male relaxes his grasp slightly and moves forward, moving his head to the right and left, thus rubbing the top of the head and the snout of the female with his chin. At the climax of these activities, the male moves ahead of the female and deposits one or two spermatophores usually relatively close to her snout. Outside the A. jeffersonianum complex, clasping by the male as part of courtship is also known in Ambystoma gracile and Ambystoma macrodactylum (Knudsen, 1960; Anderson, 1961), but is unknown in other species of the genus.

Stable triploid hybrids of this species and Ambystoma jeffersonianum have been described. See accounts of A. tremblayi and A. platineum for details.

The defense display reported by Rand (1954), undulation of the cloacal tail, has possibly been observed in this species; certainly the species shows this behavior, as do all members of the Ambystoma jeffersonianum complex.

**Etymology.** The name is derived from the Latin *lateralis*, of the side, in reference to the blue spotting along the sides.

**Comment**

The application of the name *Ambystoma laterale* is largely a matter of convenience. An earlier suggestion (Uzzell, 1964) that the triploid species that resembles this species, *Ambystoma tremblayi*, was not found at the type locality of *A. laterale* seems less convincing, since a specimen of *A. tremblayi* has been collected at Washburn Point, Bayfield County, Wisconsin. The holotype of *Ambystoma laterale* Hallowell consists of soft pieces. It cannot be identified as the species for which the name is used here.

Among preserved specimens that resemble *A. laterale*, males can almost certainly be assigned to *A. laterale* rather than *A. tremblayi*. Some females can tentatively be identified because they come from localities probably outside the range of *A. tremblayi*. In the range of *A. tremblayi*, egg number relative to body length offers a possible means of identification (cf. Uzzell, 1964, Fig. 23).

Living individuals are more readily identified. The ployd can be determined by examination of the erythrocytes. Erythrocytes of *A. laterale*, suspended in isotonic saline, are two-thirds the area, in optical section through the two longer axes, of erythrocytes of *A. tremblayi*.

Many specimens of *A. laterale* identified by cell size are preserved in the University of Michigan Museum of Zoology, Ann Arbor.

**Literature Cited**


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Published 20 November 1967 by the American Society of Ichthyologists and Herpetologists. Publication is supported by National Science Foundation grant G24231.

Primary editor for this account, James D. Anderson.