**Catalogue of American Amphibians and Reptiles.**

UZZELL, THOMAS. 1967. *Ambystoma platineum.*

## *Ambystoma platineum* (Cope) Silvery salamander

*Amblystoma platineum* Cope, 1867: 198. Type-locality, "Cleveland, [Cuyahoga County,] Ohio" and "Unknown." Syntypes, U. S. Natl. Museum Nos. 3998 and 39444, recatalogued from 3998; Cope reported other specimens, but their number and present location if extant are unknown. Donors, "Dr. J. P. Kirtland" and "Prof. Agassiz." Dates of collection unknown.

*Amblystoma jeffersonianum* subsp. *platineum*: Cope, 1875: 26. Subspecific status proposed.

*Ambystoma platineum*: Uzzell, 1964.

• CONTENT. No subspecies are recognized.

• DEFINITION AND DIAGNOSIS. A triploid species (3n = 42) of the *Ambystoma jeffersonianum* complex that consists almost exclusively of females. These females, as members of the *A. jeffersonianum* complex, usually require axillary clasp in courtship. Individuals of *A. platineum* are generally similar to females of *A. jeffersonianum*. The digits are long. The plicae of the tongue radiate from the posterior margin of the tongue. The maxillary and premaxillary teeth are in a single row, and are bifid but not hooked. The vomerine teeth form a single row posterior to the internal nares, usually in three groups separated by breaks behind the nares.

The dorsum of adults is brownish-gray; the venter is lighter. In living individuals, there are small bluish flecks scattered on the dorsum and the upper sides, and larger spots on the venter and ventrolateral surfaces; these usually disappear in preservative. The area around the vent is usually gray. Adult females are 73 to 109 mm snout to vent, 129 to 199 mm total, and 4.6 to 6.0 mm between the external nares. One male was 83 mm snout to vent, 148 mm total, and 5.6 mm between the external nares. The enlarged ovarian eggs number 66 to 208.

• DESCRIPTIONS. Egg masses were described briefly by Uzzell (1964). The masses are usually attached to submerged sticks, and are 3 to 4 cm in diameter. Few single eggs are laid, and eggs are rarely if ever attached to debris on the bottom of ponds. Eggs have not been described.

Larvae and juveniles have not been described. Adults were described by Uzzell (1964).

• ILLUSTRATIONS. Photographs of adults were published by Uzzell (1964). Bishop (1943, fig. 41-3) probably illustrated this species. Eggs, egg masses, larvae, and juveniles have not been illustrated.

• DISTRIBUTION. This species is often associated with the similar *Ambystoma jeffersonianum* at localities usually north of the Wisconsin glacial border from central Indiana east to northern New Jersey and western Massachusetts. In Hamilton County, Ohio, near Cincinnati, two localities for *A. platineum* are known just south of the Wisconsin glacial border. In central Indiana, at least one locality is known at which this is the only species of the complex to occur. All localities are within the eastern deciduous forest formation.

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. Few papers deal explicitly with this species, but many referring to *Ambystoma jeffersonianum* probably were based in part on individuals of *A. platineum* (See REMARKS). The following four references contain all of the recent information on this species. Uzzell (1963) noted the triploidy of this species. Macgregor & Uzzell (1964) described the meiotic mechanism. Uzzell (1964) described morphology, distinctions from other members of the *A. jeffersonianum* complex (*A. jeffersonianum, A. tremblayi, A. laterale*), sex of progeny, and cell size. Uzzell & Goldblatt (1967) discussed certain serum proteins, the hybrid origin of this species, and the role of mating preference in the distribution of this species. Other references are cited in the remainder of the text.

• REMARKS. Erythrocytes and erythrocyte nuclei probably have about 1.5 times the volume of erythrocytes and erythrocyte nuclei of the two diploid species, *A. laterale* and *A. jeffersonianum*, and approximate the volume of those of *A. tremblayi* (Uzzell, 1964).

Epidermal cells of larvae of this species have 3n = 42 chromosomes (Uzzell, 1963).

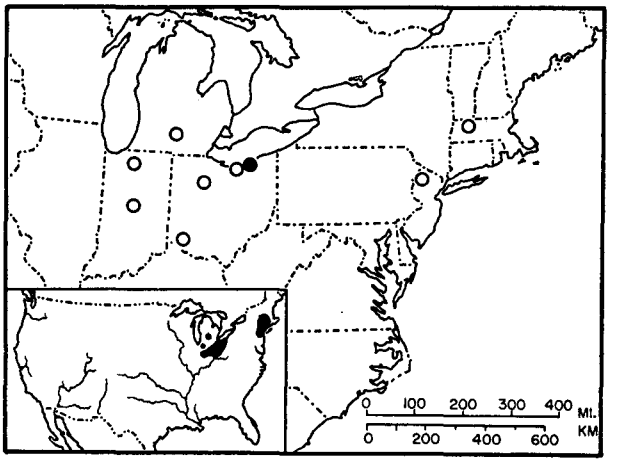
In the laboratory, progeny of this species are exclusively female (Uzzell, 1964).

Females of *A. platineum* from some populations, confined with males of *A. jeffersonianum*, deposited eggs that developed if the male with them produced spermatophores; when the males did not deposit spermatophores, the eggs of *A. platineum* from these populations, if spawned, did not develop. Activation of the ova by sperm entry appears to be necessary to development in these populations (Uzzell, 1964). In a single population in central Indiana, no males of this complex are known, although *A. texanum* is abundant. Females from this population spawn spontaneously, and reasonable percentages of the ova develop without sperm activation (unpublished).

Males of *A. jeffersonianum* produce small numbers of spermatophores (Uzzell, 1964). In mixed populations in which females of *A. platineum* greatly outnumber the males of *A. jeffersonianum*, many eggs of *A. platineum* probably do not get activated by sperm; if such activation is necessary, low percentages of spontaneously spawned eggs would develop.

Mixed breeding populations of *A. platineum* and *A. jeffersonianum* contain as many or more females than males (Uzzell, 1964). The population of *A. platineum* occurring near Lansing, Ingham County, Michigan, that J. W. Wacasey studied included vastly more females than males; at least one of these males was a triploid (Uzzell, 1964). The highly unbalanced sex ratios reported near Toronto, York County, Ontario, by Smith (1911) and near South Bend, St. Joseph County, Indiana, by Peckham and Dineen (1955) possibly were based on this species but may have been based on *A. tremblayi*. Associated with the highly unbalanced sex ratio near Lansing, Michigan, is a very low percentage of egg development. A similar low percentage of egg development associated with a highly unbalanced sex ratio near Toronto, York County, Ontario, is partly due to polyspermy, but mainly associated with failure of the eggs to cleave, probably due to absence of sperm penetration (Piersol, 1929).

The meiotic mechanism by which this triploid species maintains itself involves a mitotic chromosomal duplication without cytokinesis prior to meiosis; meiosis produces triploid ova; activation by sperm occurs, at least in some populations, but syngamy apparently does not (Macgregor & Uzzell, 1964). The premeiotic duplication of chromosomes without cytokinesis and the subsequent formation of bivalents from the daughter chromosomes of this division probably vitiate the effects of crossing over and random assortment, producing genetically identical ova (Macgregor & Uzzell, 1964); it may also account for the reduced fecundity of *A. platineum* compared to *A. jeffersonianum* (Uzzell & Goldblatt, 1967).




MAP. The solid symbol marks the type-locality. Hollow circles indicate other localities.

That *Ambystoma platineum* (see also *A. tremblayi*) is intermediate in color, relative snout width, and size between females of *A. jeffersonianum* and *A. laterale* suggests that *A. platineum* arose by hybridization of *A. jeffersonianum* and *A. laterale*. The localization of *A. platineum* (see also *A. tremblayi*) in those areas in which the ranges of *A. jeffersonianum* and *A. laterale* are close together also suggests hybrid origin of the triploid species (Uzzell, 1964). A serum protein characteristic of *A. laterale* (electrophoretic mobility 0.77 compared to bovine serum albumin) and another characteristic of *A. jeffersonianum* (relative electrophoretic mobility 0.67) both occur in *A. platineum*; the relative quantities of these two proteins suggest that *A. platineum* has two sets of *A. jeffersonianum* chromosomes, one set of *A. laterale* chromosomes; this interpretation is consistent with the morphological data (Uzzell & Goldblatt, 1967).

Mating preference has been tested by confining, as bisexual pairs, various combinations of the two kinds of males and four kinds of females of the *Ambystoma jeffersonianum* complex in breeding cages; measured by frequency of deposition of eggs that develop, females of *A. platineum* from most populations are closely tied in mating preference to *A. jeffersonianum*. This biological association is probably reflected in the geographical association of the two species (Uzzell & Goldblatt, 1967).

The distribution of the four species of the *Ambystoma jeffersonianum* complex suggests that the hybridization between *A. jeffersonianum* and *A. laterale* that produced *A. platineum* probably occurred in early post-Wisconsin times (Uzzell, 1964).

Undulation of the elevated tail, reported by Rand (1954) as a defense display for some member of the *A. jeffersonianum* complex, occurs in this species (unpublished).

• Etymology. The name is derived from the Latin *platinum*, silver, and *-eum*, having the quality of, in reference to the light gray coloration.

## Comment

The application of the name *platineum* to this form is largely a matter of convenience. According to Cope (1867), *A. platineum* resembles *A. jeffersonianum*, but has a relatively narrower snout; the form for which the name is here used has that morphological relation to *A. jeffersonianum*, and is found near Cleveland, Ohio, the type locality of *A. platineum*. It is not possible to determine at present whether either of the syntypes (U.S. Natl. Mus. Nos. 3998, 39444) belongs to the form to which the name is applied.

Fowler & Dunn (1917) listed Acad. Nat. Sci. Philadelphia No. 1299 as the holotype of *A. platineum*. Dunn apparently changed his mind later, and considered the U. S. National Museum specimens to be the types (Uzzell, 1964).

Among preserved specimens that resemble *A. platineum*, males can almost certainly be assigned to *A. jeffersonianum* rather than *A. platineum*. Relative snout width or egg number may provide a clue to the identity of preserved females from within the range of *A. platineum* (cf. Uzzell, 1964, Figs. 9 and 10).

Living material is more readily identified. The ploidy can be determined by means of erythrocyte area. When suspended in isotonic saline, the erythrocytes of *A. platineum* are about 1.5 times larger in optical section through the two longer axes than those of *A. jeffersonianum*.

Many specimens identified by cell size are preserved at the University of Michigan Museum of Zoology, Ann Arbor.

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