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***Gyrinophilus porphyriticus* (Green)**
Spring salamander

- Salamandra porphyritica* Green, 1827:3. Type-locality, "French Creek, near Meadville, Crawford County, Pa. [Pennsylvania]." Holotype not extant; neotype (same locality), Mus. Comp. Zool. 35778, collected by J. D. Lazell, Jr., and L. M. Lazell, 15 April 1962, designated by Brandon (1966).
- Speleperes? porphyritica*: Gray, 1850:46. Apparently Gray was in doubt about the proper generic allocation of this specific name; the question mark is his.
- Gyrinophilus porphyriticus*: Cope, 1869:108-109. Transfer of *S. porphyritica* Green to *Gyrinophilus*.
- Geotriton porphyritica*: Garman, 1884:40. New combination.
- Pseudotriton porphyriticus*: Organ, 1961:53. New combination.
- Salamandra salmonea* Storer, in Holbrook, 1838:101-102. Type-locality, "among the mountains of Vermont." Holotype not extant.
- Pseudotriton salmoneus*: Baird, 1850:288.
- Speleperes? salmonea*: Gray, 1850:46. Apparently Gray was in doubt about the proper generic allocation of this specific name; the question mark is his.
- Ambystoma salmoneum*: Duméril, Bibron, & Duméril, 1854:110.
- Speleperes salmoneus*: Cope, 1866:98.

• CONTENT. Four subspecies are recognized: *porphyriticus*, *duryi*, *dunni*, and *danielsi* (see COMMENT).

• DIAGNOSIS. This is a naturally metamorphosing *Gyrinophilus*. Eyes of the larvae are larger than those of *G. pallucus* (see Brandon, 1967, key to species).

• DESCRIPTIONS. Descriptions of adults were provided by Bishop (1941, 1943), Conant (1958), and Brandon (1966). Larvae were described by Bishop (1941, 1943) and eggs by Organ (1961). Brandon (1966) described geographic variation.

• ILLUSTRATIONS. Conant (1958) illustrated *G. p. porphyriticus* and *G. p. danielsi*. See Bishop (1943) and Brandon (1966) for photographs of adults of the subspecies, and Bishop (1941) for photographs of adult and larval *G. p. porphyriticus*. Mittleman (1942) published photographs of *G. p. danielsi* (pls. 3, 4), larval *G. p. duryi* (pl. 5C), adult *G. p. duryi* (pl. 6D), and *G. p. porphyriticus* (pls. 5E, 6F). (Note that explanations of plates 5 and 6 are reversed in that paper.) Adequate figures of larvae of other subspecies are not available. A description and photograph of eggs were given by Organ (1961).

• DISTRIBUTION. The species occurs on the Appalachian uplift of the eastern United States and adjacent Canada, northward to western Maine and southern Quebec, westward into areas adjoining the Appalachian uplift from Cincinnati, Ohio, to northeastern Mississippi, and southward to the Fall Line in Alabama, but not quite to the Fall Line in South Carolina and Georgia. These salamanders are infrequently collected in most of their range, but may be locally abundant. Although little is known about their ecological requirements and subterranean distribution, they are most often encountered in or along small, clear, upland streams, in clear springs, and in caves.

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. The genus was monographed by Brandon (1966).

• REMARKS. *Ambystoma porphyriticum* of Hallowell (1856: 8-9) is clearly, by his description of specimens, not *S. porphyritica* Green, 1827. Boulenger (1882:50) placed *A. porphyriticum* (probably correctly) in the synonymy of *Ambystoma microstomum* (= *A. texanum*).

To judge by his description and figure *Triton porphyriticus* of DeKay (1842) is not *S. porphyritica* Green, 1827, but is probably referable to the synonymy of *Plethodon glutinosus* as indicated by Hallowell (1856:9).

• ETYMOLOGY. The name *porphyriticus* evidently refers to the similarity between the dorsal body coloration and porphyritic rock; the Greek *porphyros*, signifies "reddish brown" or "purple." The subspecific names are patronyms: *duryi* for Ralph Dury of the Cincinnati Society of Natural History, *dunni* for Emmett Reid Dunn of Haverford College, and *danielsi* for L. E. Daniels, collector of the syntypes.

1. *Gyrinophilus porphyriticus porphyriticus* (Green)

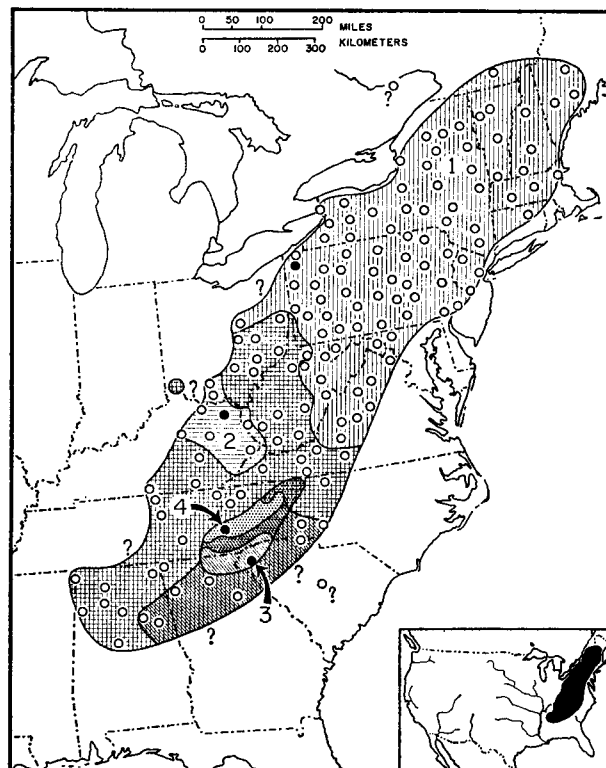
Salamandra porphyritica Green. See species account.
Gyrinophilus porphyriticus porphyriticus: Stejneger & Barbour, 1933:15.

Gyrinophilus porphyriticus inagnoscus Mittleman, 1942:27-30. Type-locality, "Salt Creek, four miles southwest of Bloomingville, Good Hope Township, Hocking County, Ohio," corrected to "Salt Creek, 4 miles southwest of South Bloomingville, Salt Creek Township, Hocking County, Ohio," by Condit (1958). Holotype, U.S. Natl. Mus. 115520, collected by M. B. Mittleman, 25 September 1940. Relegated to synonymy of *G. p. porphyriticus* by Brandon (1966).

• DIAGNOSIS. This form is darkly mottled or reticulated dorsally; it differs from other subspecies in lacking black dots and flecks dorsally and laterally. Some New England and Canadian specimens have scattered black dots and flecks dorsally, but they are mottled as well.

• REMARKS. Dorsal pigmentation varies considerably ontogenetically and geographically. Considerable intergradation between this and other subspecies seems to occur (e.g., with *G. p. duryi* in Ohio, western West Virginia, southeastern Kentucky, Tennessee, northwestern North Carolina, and Alabama; with *G. p. dunni* in central North Carolina, eastern Alabama, and apparently in northeastern Georgia; and with *G. p. danielsi* in extreme northwestern North Carolina) and is in part responsible for pattern variation (Brandon 1966).

The records for this salamander in Ottawa, Ontario, and Columbia, South Carolina, are questionable.



MAP. Solid symbols mark type-localities. Hollow symbols show other selected localities. The question marks indicate doubtful localities and uncertain boundaries.

2. *Gyrinophilus porphyriticus duryi* (Weller)

Triturus lutescens Rafinesque, 1832:121. Type-locality, "In west Kentucky." Type not extant. Considered by Brandon to be a senior synonym of *G. p. duryi*. A petition to the International Commission to suppress *lutescens* (Brandon, 1963) was approved (International Commission . . . , 1965).

Gyrinophilus lutescens: Mittleman, 1942:33-35.

Pseudotriton duryi Weller, 1930:6-9. Type-locality, "Cascade Caves, about ten miles from Grayson, Carter County, Ky. [Kentucky]." Original syntypes, Cincinnati Soc. Nat. Hist. 499a-g. Lectotype, U.S. Natl. Mus. 84300 (formerly CSNH 499d), collected 6 April 1930 by R. Dury and W. H. Weller, designated by Walker & Weller (1932).

Gyrinophilus duryi: Weller, 1931:8.

Gyrinophilus porphyriticus duryi: Stejneger & Barbour, 1933:15.

Gyrinophilus danielsi duryi: King, 1939:556.

• **DIAGNOSIS.** The dorsum is unicolorated, without mottling or reticulations of darker pigment. A variable number of small black dots and flecks is present on the back and upper sides and these are usually more concentrated dorsolaterally. This form is never profusely flecked dorsally as in *G. p. dunnii*. The canthus rostralis is usually indistinct and not bordered by black. The paravomerine tooth series (parasphenoid of some authors) are distinctly convergent anteriorly.

• **REMARKS.** This subspecies intergrades with *G. p. porphyriticus* over a large geographic area; populations in this zone of intergradation are rather variable.

3. *Gyrinophilus porphyriticus dunnii* Mittleman & Jopson

Gyrinophilus dunnii Mittleman & Jopson, 1941:1-5 (partim). Type-locality, "campus of Clemson College, Clemson, Pickens County, S. C. [South Carolina], 700 feet altitude." Holotype, U.S. Natl. Mus. 113230, collected 8 April 1941 by Arnold B. Grobman.

Gyrinophilus danielsi dunnii: Bishop, 1943:365.

Gyrinophilus porphyriticus dunnii: Brandon, 1966:50.

• **DIAGNOSIS.** The dorsal surface and upper sides are profusely flecked with dark pigment. The canthus rostralis is pronounced and is bordered by black. The belly is unpigmented, except that a few scattered dark flecks are present in the pectoral region of some individuals.

• **REMARKS.** The original description of this subspecies was based in part on misidentified paratypes, and confusion resulted because many specimens resembling the misidentified paratypes were called *dunnii* in the literature. Reese (1950) showed that some of the paratypes are actually *G. p. porphyriticus*; others are *G. p. danielsi* (Brandon, 1966).

4. *Gyrinophilus porphyriticus danielsi* (Blatchley)

Spelerpes danielsi Blatchley, 1901:760-762. Type-locality, "side of Mt. Collins and at Indian Pass [Sevier County, Tennessee], at an altitude of 3,000 to 5,000 feet." Syntypes, Mus. Comp. Zool. 6638 and 6639, collected "summer of 1900" by L. E. Daniels; MCZ 6638 designated lectotype by Brandon (1966).

Gyrinophilus danielsi: Fowler & Dunn, 1917:19.

Gyrinophilus porphyriticus danielsi: Stejneger & Barbour, 1933:15.

Gyrinophilus danielsi danielsi: Bishop, 1943:361-365.

Pseudotriton danielsi: Organ, 1961:53. New combination.

Gyrinophilus danielsi polystictus Reese, 1950:1-7. Type-locality, "Mt. Mitchell, Yancey County, North Carolina at 6000 feet." Holotype, female, Field Mus. Nat. Hist. 91108, collected 22 October 1926, by S. C. Bishop. The name *polystictus* is a junior synonym of *danielsi* (Brandon, 1966).

• **DIAGNOSIS.** Black dots are present on the back and upper sides; the dorsum usually is not profusely flecked with black. The canthus rostralis is pronounced and is bordered by black. The paravomerine tooth series are slightly or not at all convergent anteriorly.

• **REMARKS.** Ontogenetic and altitudinal variations in ventral pigmentation are marked. Specimens from low elevations (below 3000 feet) have few or no black dots or reticulations on the throat; those from above 3000 feet show an ontogenetic increase in dotting or reticulation of black on the throat, which becomes progressively more pronounced with increasing size and elevation. See Brandon (1966) for a detailed discussion.

COMMENT

The taxonomic arrangement used in this account differs from others currently in use and follows changes suggested by Brandon (1966).

Although Stejneger & Barbour (1933) considered *G. p. danielsi* a subspecies of *G. porphyriticus*, most authors since then assigned it species rank with these subspecies recognized: *danielsi*, *dunnii*, and *polystictus*. However, intergradation between the forms known as *porphyriticus* and *danielsi*, and between *porphyriticus* and *dunnii* (see REMARKS under *G. p. porphyriticus*) indicates that only one widely ranging species is involved, *G. porphyriticus*.

G. danielsi polystictus is a pattern variant. Specimens with the *polystictus* pattern represent the end of an altitudinal cline and are found at the highest elevations throughout the range of *G. p. danielsi*. It is not a valid subspecies.

G. p. inagnoscus is a pattern variant found in most areas of intergradation between *G. p. duryi* and *G. p. porphyriticus*. It does not represent a valid subspecies.

The use of the name *dunnii* should be restricted to populations in which specimens resemble the holotype. Because some of the paratypes of this subspecies are actually identifiable as *G. p. porphyriticus* and *G. p. danielsi*, there has been considerable misuse in applying the name to populations other than *dunnii*, especially to *G. p. danielsi* from low elevations.

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