A Statistical Study of *Thamnophis brachystoma* (Cope) with Comments on the Kinship of *T. butleri* (Cope)[5]

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The short-headed gartersnake has had a stormy taxonomic history. Originally described by Cope in 1892 from Franklin, Venago County, Pennsylvania, the name *brachystoma* was suppressed by Ruthven (1908), who, while noting that he lacked sufficient specimens to reach any position of certainty, considered it to be a synonym for *Thamnophis butleri* (Cope) 1889. Albert G. Smith reviewed the *butleri* complex in 1945 and decided that two distinct species were recognizable. For the more eastern of these he resurrected Cope's name *brachystoma*.

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Conclusions

Application of Fisher's "t" test to comparable sets of data from *butleri* and *brachystoma* demonstrates conclusively that the two constitute separate populations. The question as to whether they be two discrete species, or merely two races of a single species having discontinuous ranges is a moot point. It is clear that two races of one single species can exist with definite gaps separating their geographical ranges. Indeed, if our present concept of the mechanics of speciation is correct, it is inescapable that such a

[5] Extracted from Barton (1956. *Proceedings of the Biological Society of Washington* 69: 71–82).

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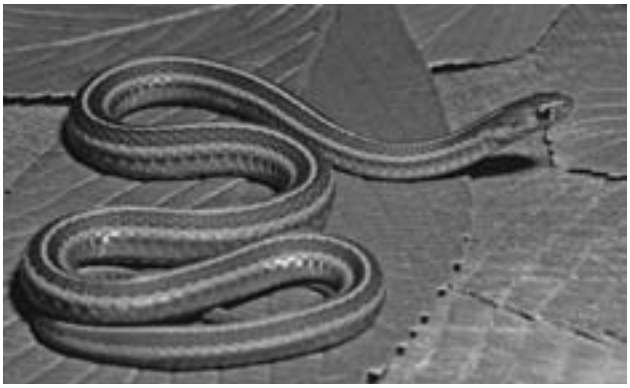
The Northwestern Garter Snake (*Thamnophis ordinoides*; top) and the Western Terrestrial Garter Snake (*Thamnophis elegans*; bottom) are two species of garter snakes that share the relatively small eyes of Butler's Garter Snake. However, their distribution and a suite of other dissenting characters preclude any assumptions of close relationships, suggesting that small eyes evolved independently in these lineages.

condition must sometimes exist. During the long period of time following the isolation of one segment of a population from others of its kind, while the gradual accumulation of changes in its genetic pattern is developing to the point where they are great enough to render it a recognizably distinct species, that population must of necessity belong to the species from which it has been isolated. The position of the final point of departure in such a situation, that point where the isolated population ceases to be conspecific with the parent stock, depends ultimately upon a subjective evaluation by the reviewer, colored by his own species concept. While caution must be exercised in the erection and continued recognition of species, it seem advisable in the absence of concrete contrary evidence to allow the present practice of regarding *butleri* and *brachystoma* as distinct species to continue unchanged.



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The Shorthead Garter Snake (*Thamnophis brachystoma*) is another species that was historically confused with Butler's Garter Snake. A. J. Barton's short note clearly showed them to be distinct at the species level.

Editor's Remarks

These two perspectives illustrate nicely the ongoing uncertainty and evolving definition of what constitutes a species (for non-technical reviews, see Powell. 2004. Species and subspecies: What do they mean and why should we care? *Iguana* 11: 108–113 and 2002. Understanding animal classification. *Iguana Times* 9: 18–26). At the time of Stejneger's article (1895), the scientific community was still adjusting to a classification based on relationships rather than mere similarities in appearance, although today's taxonomists still rely extensively on anatomical features. By the time of Barton's study (1956), the transition in philosophy had been completed, only to be replaced by disputes over varying applications of different species concepts. Our understanding of evolution and the role of DNA was still tentative (the structure of the molecule had been described only in 1953), and this remains an ongoing issue. However, the disagreements regarding the utility and relevance of different concepts of what a species is, which occasionally descend into lively debates, mean nothing to the organisms themselves. Still, the labels serve science and humanity by allowing us to identify groups of organisms in order to facilitate communication and to better understand evolutionary relationships and the complexities of nature.

That the subject of the selected pieces is Butler's Garter Snake (*Thamnophis butleri*) is no accident. This small snake (maximum known total length = 737 mm) not only serves as an effective illustration of the ever-changing nature of classification, but, in addition, has recently been the focus of a political controversy regarding the protected status of disjunct populations in Wisconsin (see Aprill. 2007. *Iguana* 14: 94–99). Using modern tools, studies of the Wisconsin populations may yet reveal them to represent a species distinct from *T. butleri* in the rest of the species' currently defined range, which extends from central Ohio and Indiana north through eastern Michigan and the extreme southern tip of Ontario. From a biological perspective, genetically unique populations deserve the same consideration by conservationists as recognized species. However, protection of the latter is certainly easier to justify to politicians, who may know little and care less about biology, but do understand the popular appeal of organisms — even snakes — found nowhere else but in their state.