

## HISTORY OF THE AUTHORSHIP OF THE NAME OF THE FENCE LIZARD, *SCELOPORUS UNDULATUS* (BOSC AND DAUDIN IN SONNINI AND LATREILLE)

Edwin L. Bell

The name and correct authorship of the Eastern fence lizard is *Sceloporus undulatus* (Bosc and Daudin in Sonnini and Latreille). Cope (1900) gave sole authorship to Latreille, and most authors followed him. Harper (1940) was the first to correct authorship from Latreille to Bosc and Daudin. A number of reasons for incorrect authorship are given.

The subspecies of the Fence Lizard, *Sceloporus undulatus*, range from the Atlantic coast westward to Utah and Arizona and southward into Florida, Texas, and northern Mexico, and are one of the commonest lizards in the United States (Smith et al., 1992). Unfortunately the authorship has been incorrectly cited in many herpetofaunal books and papers for at least ninety years. This paper affirms the authorship, first corrected by Harper (1940), and reviews its history. Reasons for the error are suggested.

Confusion of authorship of this species is due to lack of any Code in 1801 and 1802; the rarity and difficulty in dating publications of Daudin, and of Sonnini and Latreille, who used the Republican calendar following the French Revolution; and the Cope (1900: 368) dating of Daudin (An X [1802], 3: 384) as "1805". Harper (1940) meticulously studied and translated portions of Sonnini and Latreille (An X, [1801]), Daudin (An X [1802a] vol. 3), and Daudin (An XI [1802b]). Harper (1940) stated that Latreille was not the sole author of this species, but that L. A. G. Bosc and F. M. Daudin were the authors, the first description of which appeared in Sonnini and Latreille (An X, [1801], 2: 40), as *Stellio undulatus*. Banta (1961) drew attention to Harper's conclusion, and also dated Daudin's Vol. 3 as "1805". However few authors paid attention to or agreed with these corrections, and Latreille continued to be cited as sole author in most papers for more than ninety years after Cope (1900).

The beginning date of the French Republic, Sept. 22, 1792, is "An I". "An X" means "ten years following the beginning of the French

Republic", and corresponds to Sept. 23, 1801 to Sept. 22, 1802. All four volumes of Sonnini and Latreille are dated "An X" [1801]. Daudin's volumes 1-4 are dated "An X" [1801-1802], and volumes 5-8 "An XI" [1803]. Determination of more precise datings is critical here. Since Daudin's Volumes 1 and 2 refer to "methode de Latreille" and have page references to Sonnini and Latreille (1801), Harper (1940:701), with other cross referencing, concluded that the Sonnini and Latreille work antedated Daudin's first two volumes. He also suggested that Sonnini and Latreille (An X [1801]) was published in September or October, 1801, and that volumes 1 and 2 of Daudin (An X [1801]) were published in December, 1801 and volumes 3 and 4 of Daudin (An X [1802]) in August, 1802. He stated that these should be accepted as bona fide dates. These Gregorian calendar dates are presumably when Daudin presented these volumes to the French Academy of Sciences (Harper, 1940: 715). These publication dates are followed here.

Daudin (An X [1802], 3:384) placed Bosc's *Lacerta undulata* in the genus *Agama*, and indicated in a footnote "*Lacerta undulata*. Bosc, Description manuscrite communiquee - *Le stellion ondule*, Daudin, Hist. Naturelle des reptiles, par Latreille, in -18, tom II, pag. 40." The status of this footnote, where Daudin claims authorship of the species, is critical. Bosc's manuscript to this date has not been located and may be presumed lost. Inquiries to several French museums and academies have not located it. Brygoo (1989: 100) correctly considered *Lacerta undulata* a *nomen nudum*, since it is a name without a description. This status does not invalidate partial authorship by Bosc, since his species name (*undulata*) and description were used by Daudin. The citation by Daudin of himself as author of this species in Latreille's portion of Sonnini and Latreille is the most convincing assertion that Daudin shared the original description of this lizard. The description begins with "*Le stellion ondule, stellio undulatus*" (Sonnini and Latreille, An X [1801], II:40). In addition the first sentence is translated "M. Daudin owes the knowledge and description of this new species to the naturalist Bosc." The final paragraph of the description ends with "It lives in the great forests of Carolina, and hides itself under dry bark; one cannot easily be caught because it is very agile." Bosc (1803: 225) states "It [*Le stellion ondule*] is found in Carolina, where I have observed, described, and drawn it . . . . Its description is given in l'Histoire des Reptiles by Latreille."

Daudin (An X [1802] 3:384) acknowledged use of specimens supplied by Palisot Beauvois, and to the aid by Bosc a "naturaliste egalemant recommandable par ses nombreuses observations". To what



extent Daudin modified the manuscript description of Bosc in preparing the description published in Sonnini and Latreille, with some specimens from Beauvois in hand, is not known. Louis Augustin Guillaume Bosc fled the French Revolution, and sailed for Charleston, S. C. on 8 July, 1796, arriving there on 14 Oct., 1796 (Beale, 1978). Although he made Charleston his headquarters, he made at least two journeys, one to Wilmington, Del., and one to Tennessee, where he collected many specimens (Leroy, 1970). He left America on 5 August, 1798, landed in Spain, and proceeded overland to France. The common Bosc pear was named for him (Hedrick, 1921).

Since the author is preparing the account of this lizard for the Catalogue of American Amphibians and Reptiles, and since the problem of species authorship needed firm resolution, photocopies of pertinent documents relating to the authorship were sent to Mr. Philip Tubbs, of the International Commission on Zoological Nomenclature. He was asked if he could give an informal opinion on the authorship, or whether the question had to be settled by a formal appeal to the Commission.

Mr. Tubbs graciously replied (1 April, 1992): "I have looked at all the photocopies you kindly sent, and also Sonnini and Latreille (S. & L.) [1801]. It is evident that Bosc saw and (in manuscript to Daudin) named the lizard '*Lacerta undulata*'. The name was first published in S. and L., as *Stellio undulatus*, by October 1801. In the preamble to S. and L., Latreille acknowledges that the description of many 'lizards' was by Daudin, who in turn acknowledged Bosc in the case of *undulatus*. There is evidently no neat way of summarizing the history, but I consider the species should be described [cited] as: *Stellio undulatus* (Bosc and Daudin in Sonnini and Latreille) [1801]. This pragmatic solution is in accord with the Code, and is, as it happens, the same conclusion as reached by Harper (1941, p. 712). The authorship is not part of the name (Article 51a of the Code), and I don't think further consideration is necessary.

The name *undulata*, as published by Daudin shortly after in *Agama*, is not a homonym of the above but just another use of the same name, in a different generic combination. It has no nomenclatural significance. The valid name is *Sceloporus undulatus* (Bosc and Daudin in Sonnini and Latreille [1801])."

The translation of the Sonnini and Latreille preamble (1801: 215), referred to by Mr. Tubbs, which introduces the lizard section, follows. "M. Daudin, known favorably for his Ornithology, and for several

publications on mollusks, has had the goodness to communicate to me excerpts of the descriptions that he has made of several reptiles of the family of lizards, as well as another abridgment of work which has just been done and of the one he is preparing on the toads, frogs, tree frogs, etc. Several figures have been copied from his sketches. It will please me, in citing him to pay him both the tribute of my esteem and that of his friendship." Latreille evidently wrote this paragraph.

Harper (1940: 701) translates another important passage from Daudin's (An XI [1802]) "Rainettes" paper: "All the batrachians of which I have already given an abridged description in the *Histoire Naturelle des Reptiles*, by Latreille, will be indicated in this new work by an asterisk following the specific Latin name. I ought to observe, however, that the following descriptions include numerous additions and some corrections.

"Some of the drawings which are used in the present work, and which were made by Barraband, have been utilized by M. Deseve, who has merely reduced them and published them by error *under his name* [*italics by Daudin*], in the little edition of the *Histoire Naturelle des Reptiles*, on which I have worked with my friend Latreille, for the Deterville publishing firm." "Paris 20 Feb., 1802." A major point here is that Daudin clearly states he "worked" on the reptile portion of Sonnini and Latreille, *Histoire naturelle des Reptiles*, and is additional evidence that Daudin wrote some sections.

Daudin used asterisks in the "Rainettes" paper to clearly claim his authorship to species. Clarification of which person described a species, if it was claimed by a different author, was evidently made in those times by these types of notations. No International Commission for Zoological Nomenclature existed then as a clearing house for such disputes. The Fifth International Zoological Congress established such a commission in 1901, and a genesis of the Code was published in 1905 as "Regles internationales de la Nomenclature Zoologique". The first edition of the International Code of Zoological Nomenclature was published in 1961.

Many authors previous to 1907 named Bosc, Daudin, or both as authors of the species and ignored Latreille. In most of these the species authorships cited are quite clear. In a few of these early works it is difficult to determine whether the name following the species name is intended as the author of the species, or the author of the paper. Such citations where the name following the species refers clearly to a



PAPER'S authorship, and not to the species authorship are indicated by an asterisk (\*) in the following partial synonymy and abbreviated chresonymy (latter term by Smith and Smith, 1973). Chresonymy refers to a summary of "usages" of any given set of scientific names. Synonymy refers to either different names for the same thing (usually synonyms), or in reference to all "occurrences" of a name or set of names. Citations without asterisks refer to authorships of the species.

Merrem, B. 1820: 57. "*Stellio undulatus*. Latr.", "*Agama undulata*. Daud." [Merrem placed these names as junior synonyms in another generic taxon as *Uromastix undulata* (Merrem). These are three of the five genera in which the species was placed previous to Wiegmann, 1834.]

Kuhl, H. 1820: 113. "*A. undulata* Daud."

Harlan, R. 1827. Proc. Acad. Nat. Sci. Phila. 6(pt. 1):1-38. On p. 13 is listed "*Agama undulata*. Synonyma. *Lacerta undulata*, Bosc. *Le stellion ondule*, Daudin, Hist. Nat. des Rept. par Latreille, Tom. II, p. 40. *L'agame ondule*, or *Agama undulata*, Daudin, Hist. Nat. des Rept. suite de Buffon." Quoted portion is repeated in Harlan, R. 1835, p. 140.

Cuvier, G. 1829, 2:38. "(1) *Ag. undulata*, Daud.," [A footnote places *Ag. undulata* in *Tropidolepis*, a new genus, a one year junior synonym to *Sceloporus* Wiegmann, 1828.]

Wiegmann, A. F. A. 1828. Beitrage zur Amphibienkunde. Isis von Oken, 21(3/4): 364-383. (The original definition of the genus *Sceloporus* is on p. 369.)

\_\_\_\_\_. 1834. "1. *Sc. undulatus*. m. (*Agama undulata*. Daud., *Uromastix und.*, \*Merr., *Tropidolepis und.* \*Cuv. \*Gray. *Lacerta fasciata et hyacinthina* Green.) *Americae septentrionalis incola*." (This is the first placement of *undulatus* in the genus *Sceloporus* Wiegmann.)

Dumeril, A. M. C. and G. Bibron. 1837, 4: 298. "Le tropidolepide ondule. \**Tropidolepis undulatus*. Cuvier." (Nine entries are in a synonymy following the above name.)

Holbrook, J. E. 1842. II: 73. "*Tropidolepis undulatus*.--Bosc"

Gray, J. E. 1845: 208. \*"Tropidolepis undulatus, Cuv. R. A. ii. 38." "*Lacerta undulata*, Bosc MSS. Latr. R. ii.40 Daud. R. iii. 884" (sic). ["884" should be "384"].

- Hallowell, E. 1853: 144. In Sitgreaves . . . "*Sceloporus undulatus*, Bosc." [from Red Fork of the Arkansas, Creek boundary; New Mexico, west of the Rio Grande].
- Wied [Neuwied], Maximilian Prinz. 1865:61. "1. T. [*Tropidolepis undulatus* Bosc. \*Cuv." p. 61.
- Bocourt, M. F. 1870. [date from Smith, H. M. and R. B Smith, 1973b, p. x]. Fig. 11 on Planche 18 is titled: "*Sceloporus undulatus* (Bosc)".
- Garman, S. 1884. "*Stellio undulatus* (Bosc) Latr., Rept., II,40."
- Boulenger, G. A. 1885: 227; 1897: 503. "*Agama undulata* (Bosc), Daudin."
- Gunther, A. C. L. G. 1890: 67. "7. *Sceloporus undulatus*. [Gunther's bold type]. *Agama undulata*, Daud. Rept. iii. p. 384." [in synonymy].
- Nelson, J. 1890: 778. "*S. undulatus* Daudin (*tropidolepis*)".
- Hay, O. P. 1892: 540 "*Sceloporus undulatus*, (Bosc)."
- Stone, W. 1906: 168 "*Sceloporus undulatus* (Daudin)".

Fitzinger (1843) and Gravenhorst (1837) list synonymies with some of the above authors, but make no particular effort to indicate authorships of *Sceloporus undulatus*. Their works are bibliographic (*sensu stricto*) rather than attempts to list species' authorships.

Subsequent to 1900, Gambino (1958) and Gambino and Heyneman (1960) credited Daudin with sole authorship. Stevenson (1976) credited Bosc with sole authorship, and referred to Banta (1961) in a footnote. Cole (1983: 12) stated the authors should be "(Bosc and Daudin, in Sonnini and Latreille, 1801)". Collins (1990) cited "(Bosc and Daudin, 1801)" as authors in the most recent list of common and scientific names. The above titles indicate that a number of prominent authors recognized Bosc, Daudin, or both as authors of this species.

Cope (1900: 368), after the title "*Sceloporus undulatus* Latreille", cited in the synonymy of *Sceloporus undulatus* combinations with three other genera: "*Lacerta undulata* Bosc, manuscript. *Stellio undulatus* Latreille, Hist. Rept., II, 1802, p. 40. *Agama undulata* Daudin, Hist., Rept., III, 1805, p. 384." Cope's dating of Latreille's publication has the 1802 date, and this is understandable, since "An X" is equivalent to Sept.



23, 1801 to Sept. 22, 1802. Daudin's original edition, with colored plates, of volumes 1-4 of "Histoire naturelle des Reptiles" has the date "An X" [1801-1802]. Harper (1940: 715) stated that a second set of volumes 1 and 2, with uncolored plates are reprints and bear the date "An XIII" [1805]. Both have been seen by me at the Academy of Natural Sciences of Philadelphia. This three year difference between the original (1801-1802) and a reprint (1805) volume may have been the reason that Cope (1900: 368) cited Daudin's vol. 3 as published in 1805 instead of 1802. The presumption that Cope cited the reprint date for Daudin's work would clarify why the incorrect authorship has been cited for more than ninety years. If this 1805 date were valid, and if Daudin's description of this lizard in Sonnini and Latreille (An X [1801]) were disregarded, this would have given Latreille a clear priority over Daudin as author. Cope's authoritative volume was followed by almost all authors subsequent to 1900. Current dating (Harper 1940: 693, 701) of these works indicates Sonnini and Latreille (Vol. II) was published in 1801 and Daudin (Vol. III) in 1802.

Harper (1940: 712) concluded that the species should be cited as "*Sceloporus undulatus* Bosc and Daudin, in Sonnini and Latreille". Harper's placement of a comma after "Daudin", and his omission of parentheses around the authors, do not follow present rules of the Code: Art. 51, Recommendation 51B; Art. 51 (c). Harper's recommended change in authorship went largely unnoticed until Banta (1961: 136) drew attention to the matter, and stated the correct authorship should be "*Sceloporus undulatus* Bosc in Latreille". Banta's short paper was also ignored by almost all authors of area herpetofaunal studies. In complex authorship citations, the current Code places the authors of the taxon being described preceding the "in", and the authors of the actual work in which the description appeared following the "in", *with no comma* (Code, Recommendation 51B). However, Art. 87, (b) of the Code states that recommendations do not form part of the legislative text of the Code, hence punctuation and publication (as opposed to description) of authorship citation are not mandatory, but are recommended. The date of the publication is a helpful concluding addition. In Sonnini and Latreille (An X [1801]), Sonnini was the author of the "discours preliminaire" [vol. 1, pp. iii-xxii] and the salamander portion [vol. 2, pp. 188-264], and Latreille is credited with most of the rest of the account, including most of the reptiles (Harper, 1940: 700).

Yarrow (1875: 569-572) gave descriptions for three species correctly ascribed to Cope. Were it not for the description there of *Sceloporus jarrovii* Cope, and *Sceloporus tristichus* Cope, the names might

be *nomina nuda*. Cope (1875) first listed one of these as "sp. nov." in his checklist as "*Sceloporus jarrovii*, Cope, MS., Zool. Wheeler's Expl. west of the 100th merid., 1875. Sonoran region (Southern Arizona)." Complete recommended citations of these three species follow, with dates of publication. "*Sceloporus jarrovii*, Cope, sp. nov." should be cited as *Sceloporus jarrovii* Cope in Yarrow 1875. "*Sceloporus tristichus*, Cope, sp. nov." should be cited as *Sceloporus undulatus tristichus* Cope in Yarrow 1875. "*Sceloporus smaragdinus*, Cope, sp. nov." is in the synonymy of *Sceloporus occidentalis longipes* Baird, and should be cited as *Sceloporus smaragdinus* Cope in Yarrow 1875. The type localities of the latter species were: "Beaver, Utah. . . Nevada . . . Dome Canyon, Utah"). It is in the synonymy of *Sceloporus occidentalis longipes* Baird (Bell, 1954), and all three localities are within its range. The author has seen the four syntypes of *S. smaragdinus* (USNM 8612).

The law of priority was not fully recognized nor followed at the beginning of the nineteenth century (Harper, 1940: 704). In summary, the lizard now known as *Sceloporus undulatus* was first described in 1801 in Sonnini and Latreille's second volume. Daudin evidently contributed much to that description. He claimed authorship and gave credit to Bosc's manuscript (Daudin, 1802a). A number of important herpetological authors cited Bosc, Daudin, or both as authors of the species previous to Cope (1900). The recommended citation and punctuation is *Sceloporus undulatus* (Bosc and Daudin in Sonnini and Latreille).

### Acknowledgments

I greatly appreciate the advice and review of the manuscript by Hobart M. Smith of the University of Colorado, and the unofficial opinion on authorship given by Philip K. Tubbs, Secretary of the International Commission on Zoological Nomenclature.

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*Albright College, Dept. of Biology, Reading, PA 19612-5234*

Received: 30 March 1994

Accepted: 8 May 1994