The Early History and Recent Trends in Iowa Herpetology

Reeve M. Bailey
University of Michigan

James L. Christiansen
Drake University

Copyright © Copyright 1993 by the Iowa Academy of Science, Inc.
Follow this and additional works at: https://scholarworks.uni.edu/jias
Part of the Anthropology Commons, Life Sciences Commons, Physical Sciences and Mathematics Commons, and the Science and Mathematics Education Commons

Recommended Citation
Bailey, Reeve M. and Christiansen, James L. (1993) "The Early History and Recent Trends in Iowa Herpetology," Journal of the Iowa Academy of Science: JIAS, 100(3-4), 83-86. Available at: https://scholarworks.uni.edu/jias/vol100/iss3/6

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Journal of the Iowa Academy of Science: JIAS by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.
The Early History and Recent Trends in Iowa Herpetology

REEVE M. BAILEY

The University of Michigan, Museum of Zoology, Ann Arbor, Michigan 48109

JAMES L. CHRISTIANSEN

Department of Biology, Drake University, Des Moines, Iowa 50311

Herpetological exploration of Iowa began in 1823 with Long's expedition to the Rocky Mountains. From that time until an 1892 publication by Osborn based on Iowa specimens, herpetological research in the state was minor and incidental. Several significant reports appeared after that date involving analysis of Iowa specimens and from 1938 to 1944 a major base-line collection of the amphibians and reptiles of Iowa was established. Studies after that time have added a few species to Iowa's known herpetofauna but recently have concentrated not only on composition of the fauna and distribution, but also on population changes, ecological relationships, and better understanding of life histories.

INDEX DESCRIPTORS: History of Amphibians and Reptiles of Iowa, History of Herpetology of Iowa, History of Zoological Research in Iowa, History of Iowa's Natural History.

Exploratory expeditions and natural history surveys into the western parts of the United States during the nineteenth century began the building of our knowledge of the herpetology of the region. Most explorers gained access to the Great Plains area via the Missouri River valley and thus detoured Iowa, touching only its western border. Apparently the earliest reference to the herpetology of the state is by Thomas Say in 1825, reporting in Long's Expedition to the Rocky Mountains, Vol. I, in which he described four serpents, now known as Elaphe obsoleta, the black rat snake, Thamnophis proximus, the western ribbon snake, Thamnophis virdalis partitatus, the redside garter snake, and Coluber constrictor flaviventris, the eastern yellowbelly racer. The rat snake was taken between Isle du Vache and Council Bluffs and the other three were collected from a stone quarry on the west side of the Missouri River, actually in Nebraska across from Pottawatomie County, Iowa. The precise locality, known later as Engineer Cantonment, or Council Bluff, was adjacent to the site of a council of Lewis and Clark with the Ottow and Missouri Indians on 3 August 1804. It lies on the Nebraska shore above the mouth of the Boyer River (Iowa) at a distance of more than 20 miles north of the present Council Bluffs, Iowa. The history and documentation for this locality have been detailed by Shimel (1912). In the journals of Prince Maximilian von Weid recording observations made on a trip up the Missouri River in 1833 and republished by Orr and Porter, eds. (1983), observations were made of Cryptotis torquatus from the Iowa side of the Missouri River somewhere between Missouri and the locality then known as Council Bluffs. They also reported this snake near "Council Bluffs." It is probable that both of these refer to massasaugas, now a very rare snake in Iowa. Weid reported seeing blue racers and what was probably a bullsnake from this part of the river as well. Apparently, the first published amphibian record for the state was the original description of Ambystoma obscurum Baird (in Cope 1867: 192), since placed in the synonymy of Ambystoma tigrinum, the eastern tiger salamander.

As the settling of Iowa began, little attention was paid to the abundant amphibians and reptiles. The emphasis was on clearing forests, draining marshes, establishing farms and cities, and building roads. Edward Drinker Cope (1875), for whom the journal Copea is named, produced a checklist which included both amphibians and reptiles from the state. In 1889, his monograph on batrachians (amphibians) listing five species, and in 1900 on reptiles, exclusive of the turtles, including 10 species, reflected the relative dearth of herpetological activity prior to the twentieth century. No other significant reference appeared until after 1890.

The first attempt at a comprehensive work based on specimens in an Iowa research collection and concerned specifically with the amphibians and reptiles of Iowa, was prepared by Iowa State zoologist Herbert Osborn (1892). After elimination of a few obvious misidentifications and errors, Osborn's list includes 16 valid species of snakes, two lizards, six turtles, two salamanders, and six frogs, a total of 32, or nearly half the number now recognized for the state. The same year, C.C. Nutting (1892) added four species to the list. In 1891, Call described a purportedly new serpent from Iowa, Trigonodon lineatum Iowae, but it has since been placed in synonymy.

The year 1908 marked the start of an upwelling of interest in the herpetofauna of Iowa. Probably the first and most celebrated Iowa herpetologist was Alexander Grant Ruthven. Appropriately a native of Ruthven, Iowa, Dr. Ruthven spent most of his student days and professional career at the University of Michigan where he was largely instrumental in the development and growth of the University Museums and subsequently served from 1929 to 1951 as president of the university. Early in this century he was interested in the interplay of the fauna of the eastern woodlands and western prairies and plains. He was impressed with the importance of comprehensive lists of local faunas, and was responsible for such contributions for Clay, Dickinson, Palo Alto, Poweshiek, and Woodbury counties (Ruthven, 1910, 1912a, 1919). Ruthven's (1908) classic study of garter snakes included material for three Iowa serpents. He described a new salamander, Ambystoma stagneri from Iowa (Ruthven 1912b) that was later determined to be A. macrodactylum, a species of the northwestern states and Canada. It seems likely that the Davis County specimens on which it was based were introduced with logs shipped by rail from the west. In 1911 M.P. Sones published "Notes on Some Iowa Reptiles," an uncritical compiled list with a partial key.

One of the country's most conscientious workers in herpetology was a student of Ruthven's, Frank N. Blanchard, who later became a distinguished professor at the University of Michigan. Blanchard (1921, 1942) published revisions of the kingsnakes (Lampropeltis) and ringneck snakes (Diadophis) which made reference to Iowa specimens. In addition, Blanchard (1923) also summarized the herpetofauna of Iowa's "great lakes region."

During the twenties and early thirties J.E. Guthrie, a professor at Iowa State College, produced several works dealing with the herpetofauna of Iowa. "The Snakes of Iowa" (Guthrie, 1926) was a landmark contribution to the knowledge of the herpetofauna of the state and compiled most of the information known at the time about 26 of Iowa's

---

1Originally presented in part in 1991 at the Iowa Natural History Association Symposium on "History of Iowa Natural History"
snake species. It included some information on the natural history of the species, was well illustrated, and contained the first useful key to the snakes of Iowa, but it provided scanty information about where in Iowa the snakes existed. Guthrie's collection emphasized central Iowa and included a few additional forms living in the eastern and southern parts of the state. Later, Guthrie (1929) added the earth snake (Virginia valeriae elegans) from Lee County to the faunal list and recorded color dimorphism in the crayfish snake (Regina grahami) (1930).

Other early contributions were made to the herpetology of Iowa between 1929 and 1944. Charles E. Burt published several papers on species or regions overlapping Iowa (Burt 1931, 1932, 1935, and Burt et al., 1934). Edward H. Taylor (1935) examined skinks from Iowa in preparation of his monograph of the genus Sceloporus. Lawrence Klauber (1936, 1938) began generating information for a foreunner to his monumental work on rattlesnakes as did Howard K. Gloyd (1946). Archie Carr (1938), a leading scholar dedicated to the study of turtles, examined turtles from Iowa. Stull (1940) studied Pitohiines (bullsnakes). One local worker, Hendrickson (1930), mentioned several herps in his "Notes on Vertebrates of Iowa Prairies," and Scott (1938) called attention to amphibians and reptiles killed on Iowa highways. The brown snakes (Storeria) were reviewed by Tapido (1944). The above studies included Iowa specimens.

In 1938, one of us (RMB) joined the staff of the Department of Zoology and Entomology at Iowa State College and initiated a survey of the amphibians and reptiles of Iowa that continued until he left the state in 1944. Collecting activities were pursued with greater or lesser intensity in all 99 counties. In addition to traditional collecting procedures, careful attention was paid to highway mortality of amphibians and reptiles. This effort was enhanced by cooperation of several staff colleagues at Iowa State who, in their travels about the state collected specimens and recorded locality data. In comparing our records, we are impressed by a dramatic reduction in frequency of road kills from the early 1940s to the 1970-1992 period studied by Christiansen (unpublished data). It seems evident that the ongoing mortality of some species, especially large snakes that commonly cross major highways, has reduced populations adjacent to these roads. How important this has been in overall population reduction is unknown but the continuing toll to traffic is clearly one of many causes of decline in Iowa's populations of amphibians and reptiles.

About two dozen species were added to the state herpetofaunal list from 1938 to the present. See Bailey (1939, 1941a, 1941b, 1943); Bailey and Bailey (1941), who also discovered a probable intergeneric hybrid rattlesnake (Bailey 1942), made observations on winter mortality of brown snakes (Bailey 1948), and studied winter temperature tolerance of garter snakes (Bailey 1949). Other contributions came from Klimstra (1948, 1950a, 1950b); Dodge (1950); Miller (1951); Dodge and Miller (1955); Timkhen (1968); Huggins (1971); Meacham et al (1975); and Menzel and Goettler (1976). Alligator snapping turtles have been reported from Illinois near Iowa by Schroeder (1957) and Blanchard and Princen (1976).

Several popular works have contributed to knowledge of the Iowa herpetofauna. Iowa's frogs and toads were discussed in volumes 3 and 4 of the Iowa Conservationist and a reprint of these articles was issued of decline in Iowa's populations of amphibians and reptiles.

The emphasis in Iowa herpetology since the arrival of the other author of this paper (JLC) at Drake University in 1969, has been filling in gaps in the distributional knowledge of the state's less known species, especially the turtles and the more subterranean snakes. This has involved extensive aquatic trapping and hand collecting concentrated in the remnants of Iowa's undamaged habitats. By 1991, the work had generated 26 publications concerning the distribution, reproduction, and parasitology of Iowa's amphibians and reptiles. Among these are several studies of reproduction of turtles in Iowa, for example, Christiansen and Burken (1979), Williams and Christiansen (1981), Christiansen and Gallaway (1984), examination of population trends, Christiansen (1981), and studies of distribution within the state, Christiansen and Mabry (1985) and Christiansen, Gallaway, and Bickham (1990).

As a result of the preceding studies, the composition of the Iowa herpetofauna is probably almost if not completely known, and our still only partially published distributional data give a good estimate of geographical patterns for most species. Meanwhile, an increasing number of workers are adding in-depth information about the life activities, behavioral patterns, population dynamics, physiology, growth, and economic role of herps in the overall scheme of life. Such in-depth studies promise to expand our general understanding of Iowa amphibians and reptiles. Among these efforts, we mention Goldsmith (1945), Bovbjerg and Bovbjerg (1964), Platt (1975), Roosa (1977), Lannoo and Bachmann (1984), McWilliams and Bachmann (1984, 1988), Camper (1988, 1990), Lannoo et al (1990), and Mabry and Christiansen (1991).

The broadening interest in Iowa wildlife including amphibians and reptiles is reflected in the listing of threatened and endangered species by the Iowa Department of Natural Resources (DNR), their continual updating of the list, their funding of research on these animals, and their maintenance of a computerized file of locality records for protected species. In addition, the Iowa DNR has initiated an annual spring frog census in which recordings of frog calls are sent to interested parties who then report calls they have heard on their surveys. The increased concern of the general public with Iowa's amphibians and reptiles is further shown by the addition of courses in herpetology at several institutions, and by the formation of the Iowa Herpetological Society, an organization composed primarily of people interested in promoting education, conservation, and propagation of amphibians and reptiles.

Today, the herpetofauna of Iowa consists of at least 66 species, four of which include two well-defined subspecies within the state. These have recently been listed, illustrated, briefly described, and discussed in a series of publications by the Iowa Department of Natural Resources (Christiansen and Bailey, 1988, 1990, 1991). Included are five species of salamanders, 16 species (17 races) of frogs and toads, 15 lizards, 13 turtles, and 27 species (30 races) of snakes, four of which are venomous.

With the approach of the last seven years of the century, the focus will be on comparing Bailey's base line data with recent collections to illuminate trends in distribution that have developed in the last 55 years. Much of this will appear in a comprehensive account of Iowa's amphibians and reptiles now in preparation by the authors of this paper. It is hoped that by the year 2,000 this will contribute to a much larger work, now being initiated, that will provide succeeding generations a fairly complete report on the status of all the vertebrates and higher plants in the state.

REFERENCES


RUTHVEN, A.G. 1908. Variations and genetic relationships of the garter

--------, 1910. Contributions to the herpetology of Iowa, Proc. Iowa
Acad. Sci. 17:198-209.

--------, 1912a. Contributions to the herpetology of Iowa, II. Proc.
Iowa Acad. Sci. 19:207.

--------, 1912b. Description of a new salamander from Iowa, Proc.

--------, 1919. Contributions to the herpetology of Iowa, III. Occ.

SCHRODER, R.C. 1957. Range extension of Macroche/ys templecki [sic].
Copeia (3):234.

20(3):527-539.

19:253-257.

18:149-154.

STULL, O.G. 1940. Variations and relationships in the snakes of the genus

TAYLOR, E.H. 1935. A taxonomic study of the cosmopolitan scincoid lizards
of the genus Eumeces with an account of the distribution and relationships

TIMKEN, R.L. 1968. Graptemys pseudographica in the upper Missouri

31:1-84.

sympatric softshell turtles, Trionyx muticus and T. spiniferus, in Iowa. Jour.