A brief historical résumé of herpetological studies in the Great Basin of the western United States, Part I. The reptiles

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A BRIEF HISTORICAL RÉSUMÉ OF HERPETOLOGICAL STUDIES IN THE GREAT BASIN OF THE WESTERN UNITED STATES

PART I. THE REPTILES

Benjamin H. Banta and Wilmer W. Tanner

INTRODUCTION

Among the numerous accounts of the early travelers into the western United States are those reports which introduce to us the Great Basin and its natural history. In this presentation we will only briefly review the faunistic and systematic studies which are of historical importance to the herpetology of the Great Basin. Although many workers have referred in one way or another to this vast inland basin region, we will include only those accounts which have, in our opinion, made a contribution to a better understanding of our knowledge of the biology of its herpetofauna. We have, therefore, been arbitrary in selecting only those studies which have dealt with Great Basin material. This has eliminated many excellent studies dealing with areas adjoining the basin itself.

The Great Basin, consisting of a number of distinct and disjunct inland basins with its lakes and desert basins surrounded by usually north-south oriented mountains, is a most remarkable geographical region. Most Americans have heard of, and perhaps remember, some of the tales of pioneers who traversed the area a hundred years ago. However, few are aware of the contributions made by those naturalists who for over a hundred years have been slowly extracting bit by bit a more comprehensive knowledge of the natural history from this still relatively inhospitable region.

Both authors have not only lived for many years in the Great Basin, but have also done considerable herpetological field work in various portions of it. The senior author has lived a number of years in the western part (Lahontan Basin) and is familiar with the eastern part of the basin; the junior author has spent the greater part of his professional life in the eastern part of the Great Basin.

1. Part of this report was supported by a grant-in-aid from the Johnson Fund of the American Philosophical Society awarded to the senior author (Colorado College, Colorado Springs), other parts by the Brigham Young University sabbatical research program (Department of Zoology, B.Y.U., Provo, Utah), and publication was supported by a grant-in-aid from the Society of Sigma Xi and the Research Society of America. For aid and courtesies shown, we wish to especially thank Vasco M. Tanner and D Elden Beck.
ern California and western Nevada basins, whereas the junior author is acquainted with the eastern part (Bonneville Basin) and is familiar with the eastern Nevada and the western Utah basins. One or both of us have extended our field work into other basins, among which are Truckee Meadows, Lake Tahoe, Amargosa Desert, Sarcobatus Flat, Charleston Mountains, Inyo Mountains, Saline Valley, Railroad Valley, Death Valley and the valleys of the Nevada Test Site. Thus we are familiar with many of the valleys and mountains and particularly with the major ones included in figure 1.

The Great Basin is not only a fascinating area geographically, but is comparably challenging from the standpoint of its fauna. Although much of the region is desert or semi-desert, it contains many herpetological species, most of which are to this day poorly known. Although most of the segments of the herpetofauna inhabit the desert valleys and the low, usually barren mountain ranges, a few species have survived in the more mesic situations of the mountains on the east and west perimeters and the forested mountains of the interior. These montane forms probably enjoyed a much wider distribution during the moist pluvial periods of the Pleistocene.

The physical delimitation of the Great Basin in this account is based on the 1953 edition of the map “Water Resources Development of the United States” by the United States Geological Survey. The Great Basin thus comprises all the land area not presently being drained into the Pacific Ocean, and which occurs between the crest of the Wasatch uplift in central Utah and southwestern Wyoming and the summits of the Sierra Nevada in eastern California (see figure 1).

HISTORICAL

The observation, collection, and the first organized study of the reptiles inhabiting the Great Basin began during the westward expansion and settlement over a century ago. Some of the historical aspects of zoological reconnaissance in the Great Basin are discussed in the works of Cope (1893), Merriam (1895), Van Denburgh and Slevin (1915), V. M. Tanner (1929 and 1940), Linsdale (1936, 1938, and 1940), Hall (1946), Durrant (1952) and Tanner and Jorgensen (1963).

The region was visited by white men as early as 1776 when Escalante and his party of Franciscan missionaries from New Mexico crossed the southern and eastern portions en route to California (Tanner, 1929, 1940; Woodbury, 1931). The northern and central portions of the territory were crossed by Jedediah Smith in 1826 and by Bonneville and Walker in 1833-1834. Captain John Charles Fremont was the first to apply the name “Great Basin” to this vast interior drainage region of Western North America. Although some of these earlier exploratory expeditions did record observations of reptiles in their journals, and published reports, few specimens, if any, were collected and adequately preserved prior to 1850, or at least such specimens are to our knowledge not currently available for examination.
Many of the members of the early surveys were too busy mapping new routes, sketching and drawing new topographic features for the first time, and struggling with means of transportation to be vitally concerned with faunistic samples. Combine these factors with their fear for hostile Indians and renegades, and the accomplishments of these early surveyors were indeed impressive.

Following the conquest of the large western area of the North American continent from Mexico in 1848, which made the area including most of the Great Basin an integral part of the United States of America, there were, according to Nolan (1943) "numerous explorations by United States Army Engineers to determine the available railroad routes to the Pacific Coast. The most thorough
of the explorations were made across the north part of the Basin by Stansbury (1849), Beckwith (1854), Steptoe (1855), and Simpson (1858-9), and made across the southern portion by Whipple (1853) and Williamson (1854)." These surveys, known collectively as the Pacific Railroad Surveys, were sponsored by the Office of Explorations and Surveys, United States War Department, and most of the various tasks were performed by military personnel.

Spencer Fullerton Baird, at that time Assistant Secretary of the Smithsonian Institution of Washington, D. C., was responsible for the preparation of a series of preliminary and more detailed illustrated accounts of the reptiles collected on these surveys. Baird and Charles Girard (1852) published several accounts, with original descriptions of new species collected in the Great Basin, which were deposited in the National Museum.

James Graham Cooper (1870) reviewed for the first time some of the aspects of the geographical distribution of the fauna of California, and although he dealt mainly with the mammals and birds, reptiles were occasionally mentioned. Cooper noted, perhaps for the first time, the distinct character of the desert fauna of the Western Great Basin.

After the Civil War the United States government continued to sponsor expeditions to western North America to obtain more definitive information on the region. Surveys of the geology of the United States along the 40th parallel were organized under the leadership of Clarence King. Actual field operations were begun in 1867 and continued to 1873. Although primarily concerned with geological reconnaissance, a young zoologist, Robert Ridgway, was assigned to the expedition to collect mammals, birds and reptiles in the western Great Basin from July 4, 1867, until late September 1868. Ridgway’s route of travel, according to a report by Harry Harris (1928), extended from California across Nevada to Utah and included among others such well known collecting sights as Truckee Meadows, Reno, Pyramid Lake, Ruby Mountains, Parley’s Park (Wasatch Mts.) and Pack’s Canyon (Uintah Mts.). In May, 1869, he returned to the Wasatch and Uintah Mountains to complete the survey in these areas. Specimens collected by Ridgway were deposited in the United States National Museum and are included in the report by Yarrow (1882).

In the tradition of the War Department, who sponsored the Railroad Surveys prior to the Civil War, the geographical surveys west of the 100th Meridian were organized by the War Department under the command of Lieutenant George Montague Wheeler in 1869. Teams of this survey (commonly referred to as the "Wheeler Survey") were active in part of the Great Basin from 1869 to 1878. Henry Wetherbee Henshaw worked as a zoologist on the Wheeler survey beginning in July, 1872, at Salt Lake City where he met Lt. Wheeler and became associated with the survey for the next eight years. On July 22, Henshaw and H. C. Yarrow left for Provo and the environs of Utah Lake. Thus was launched one of the more successful natural history surveys of the west. The western Great Basin was not visited for several years; however, their itinerary brought the
survey in the area of Carson City, Nevada, from August until September 15, 1876. From September 15 until November 7, Henshaw collected in the vicinity of Lake Tahoe (California-Nevada). Linstead (1936:9) asserted that “In 1877 his field work began at Carson City, Nevada, where he worked from May 12 to June 6, and then started northward to end the season on October 1, in southern Oregon.” During July 1878, Henshaw again started from Carson City and worked northward, collecting specimens of birds, reptiles, and amphibians, which were deposited in the United States National Museum. Dr. Harry Crécy Yarrow accompanied Henshaw during one field season in eastern Nevada. The herpetological results of all their field work were published by Yarrow and Henshaw (1878).

According to Henry Fairfield Osborn (1931), Edward Drinker Cope traversed the Great Basin, traveling from Salt Lake City, Utah, to Reno, Nevada, during 1879. In 1882 Cope returned to the Great Basin, traveling to Reno, then to Silver Lake, Oregon, back again to Reno, then to southern Idaho, and back again to Salt Lake City. Various aspects of the zoogeographic data obtained were subsequently published by Cope (1883a, b, c; 1889, 1896a, b; 1900).

Before actually visiting the Great Basin Cope published (1875) in the first Bulletin of the United States National Museum his Checklist of North American Batrachia and Reptilia including a listing of the higher groups and an essay on geographical distribution. Yarrow (1883) published a check list of North American reptiles and amphibians deposited in the United States National Museum, providing a list and a classification of all specimens of amphibians and reptiles collected by military and government personnel during the various surveys before 1882. This report included not only Great Basin records but records from other portions of the United States as well.

Little was added to the zoological literature from the western United States until the appearance of Clinton Hart Merriam’s treatise on the biota of the San Francisco Mountains of Arizona (1890). Shortly after this, the Death Valley Expedition was organized under the direction of Merriam. This was the last of the major government-sponsored exploratory expeditions in the western United States in the 19th century. Informative accounts of this survey, which entered many parts of the southwestern Great Basin, are furnished by Cope (1893), Merriam (1895), and by Stejneger (1893).

Since the Death Valley Expedition, the United States National Museum has received specimens of reptiles collected in various parts of the Great Basin from several field representatives of government agencies, such as the Bureau of Biological Survey, and its successor, the Fish and Wildlife Service. Agencies created during the years of the depression (e.g., the Civilian Conservation Corps and Works Progress Administration), were responsible for the addition of specimens to the National Museum as well as to other institutions maintaining scientific collections. Several interested persons have sporadically contributed small samplings of the Great Basin herpetofauna to
the National Museum collections (e.g., Charles E. Burt, Paul Bartsch, Julius Hurter, J. O. Snyder and Adrian Vanderhorst).

John Van Denburgh (1897) presented the first account of the reptiles of the Pacific Coast and Great Basin, as his doctoral dissertation at Stanford University. Robert Baird McLain (1899), in a privately published pamphlet, was sharply critical of Van Denburgh’s work. Several groups were critically reviewed (e.g., *Sceloporus occidentalis*), but generally speaking, McLain merely provided specimen documentation for the information included by Van Denburgh. Both Van Denburgh’s and McLain’s papers were based upon preserved specimens in the collection at Stanford University.

From May 23 to July 17, 1911, Professor John Otterbein Snyder, Stanford University, and Charles Howard Richardson, Jr., who in 1909 had assisted Walter Penn Taylor in Humboldt County, Nevada, collected a large sample of reptiles in the Lahontan Basin of west central Nevada and east central California. This work was done in conjunction with the ichthyological investigations of Snyder (1917) partly under the auspices of the United States Bureau of Fisheries. The herpetological results of this work were published by Richardson (1915). In this study, it was first pointed out that certain meristic and morphometric variations existed between the lizard populations of the Lahontan Basin and those of the more extensive and warmer deserts to the south. Richardson was also the first author to discern the difference between the sagebrush steppe and the cold desert areas. He noted that, “The flora of the desert immediately south of Pyramid and Walker Lakes is of a different character [than the sagebrush, *Artemisia tridentata*, predominating over the greater part of Nevada] *Sarcobatus* and other shrubs replacing, ‘sagebrush.’ This difference in the flora is correlated with a greater diversity in the reptilian fauna, and we find such southern forms as *Callisaurus* and *Sceloporus magister*.” Most of the specimens obtained by Richardson and Snyder are now deposited in the Division of Systematic Biology (formerly the Natural History Museum), Stanford University, and in the United States National Museum. Around the area of Currant in northeastern Nye County, Nevada, Georgia M. Bentley collected reptiles for the Natural History Museum, Stanford University, during the spring of 1916. Some of Bentley’s observations were published (1918, 1919). The growth of the herpetological collection at Stanford University has continued, owing largely to the encouragement of field activities by Professor George Sprague Myers and the late Margaret Hamilton Storey. A brief historical review of the Stanford collections has been published by Leviton (1953). Banta (1957) has reported on some aspects of material obtained by him in the Great Basin and deposited in the Stanford collections.

Witmer Stone (1911) published a list of the amphibians and reptiles collected in the western Great Basin, and portions of several western states as well, which were deposited in the collections of the Academy of Natural Sciences of Philadelphia. This study was based
on material obtained by Mr. Morgan Hebard and Mr. James A. G. Rehn during the summers of 1909 and 1910.

During the summer of 1912, the University of Michigan Museum of Zoology sponsored a zoological expedition composed of Frederic M. Gage, Helen Thompson and Alexander Grant Ruthven, to northeastern Nevada. In addition to the herpetofauna, samples of molluscs, crustaceans and ants were obtained and studied. The exact area sampled was near the environs of the railroad town of Carlin in the western part of Elko County, and the northern part of Eureka County. Most of the specimens collected by the Michigan expedition were deposited in the Museum of Zoology at the University of Michigan. Ruthven and Helen Thompson Gage (1915) published the herpetological results of these field studies. This expedition, and the numerous published results which were to follow, inaugurated several studies on the herpetofauna of the Great Basin by members of the University of Michigan group. Ruthven (1926, 1932) and Lawrence Cooper Stuart (1935) continued to work in the eastern Great Basin for the Museum of Zoology. In 1936, Frank N. Blanchard visited the collections at Brigham Young University, University of Utah, California Academy of Sciences and other western collections. He completed the data needed for the study of the genus Tantilla (1939: posthumously) which included several new descriptions.

During the 1930's Carl Leavitt Hubbs and his family obtained a large series of amphibians (mostly) and reptiles from widely scattered localities in the Great Basin. In the early forties Hubbs was assisted by Robert Rush Miller, and together they gathered extensive samples of zoological material from the Great Basin. Most of the material obtained during their field trips was found near streams and springs and was obtained in conjunction with their intensive ichthyological sampling, and was deposited in the collections of the Museum of Zoology at Michigan University. Out of these activities Hubbs and Miller (1948) were to develop the first comprehensive synthesis of zoological and geological knowledge to solve some of the zoogeographic problems of the Great Basin. However, the very nature of this historic work was restricted because these authors dealt exclusively with the fresh water fishes, a very specialized and geographically restricted faunal group. Banta (1963a, b, c) has made a preliminary attempt to synthesize geological and zoological knowledge pertaining to the zoogeography of a terrestrial group, the lizards.

Joseph Grinnell and Hilda Wood Grinnell (1907) made a study of reptiles of Los Angeles County, California, which was the first study of the herpetofauna of a given political subdivision, part of which was within the confines of the Great Basin. They recognized the distinctions between faunas of the north and south slopes of the San Gabriel Mountains (i.e., the Great Basin and Pacific drainage faunas).

Walter Penn Taylor (1912) presented the first faunistic survey of a section of Nevada (northern Humboldt County, vicinity of the
Pine Forest Mountains) which included a study of reptiles and amphibians, as well as the avifauna, inhabiting the area at that time. This treatise was done during the summer of 1909, under the direction of Joseph Grinnell. Taylor was assisted in the field by Mr. C. H. Richardson, Jr. This was the first of the prolonged and extensive zoological collecting and studies in the western Great Basin by students and staff of the University of California Museum of Vertebrate Zoology at Berkeley.

Charles Lewis Camp (1916) critically commented on the status of several western North American lizards, including species inhabiting the Great Basin, based upon samples in the herpetological collections of the Museum of Vertebrate Zoology at Berkeley, and was the first to suggest the extent of variation of several species. A more complete systematic and geographic account of California reptile samples at Berkeley was authored by Grinnell and Camp (1917), in which trinomial names were assigned to most of the species considered in conformity to the growing nominal recognition of geographic variation.

The Museum of Vertebrate Zoology sponsored numerous extensive collecting expeditions to Nevada during the thirties and early forties under the financial assistance of Miss Annie Montague Alexander. An early result of these efforts was compiled by Jean Myron Linsdale (1938) which included all terrestrial vertebrates of Big Smoky Valley region, in northwestern Nye County, with emphasis on birds and mammals. Linsdale later (1940) provided the most inclusive account of the amphibians and reptiles in the state of Nevada, based primarily upon material obtained by the extensive activities of staff and graduate students of the Museum of Vertebrate Zoology. Since Linsdale's paper was completed (early 1938) collectors for the Museum of Vertebrate Zoology have added several thousand more specimens of reptiles from the Great Basin to their collections, and much of this newer material has not yet been reported. Regarding the Museum of Vertebrate Zoology field activities, Linsdale (1940: 197) stated, "On each expedition the collectors have been on the lookout for specimens of amphibians and reptiles in addition to their main objectives which usually were concerned with mammals or birds." (our italics). Robert C. Stebbins' studies (1954, 1958) on western North American herpetology has included much information of import to the Great Basin. Ira John La Rivers (1942) made some additions to Linsdale's work on Nevada, based upon material which was to form the nucleus for the herpetological collection of the Museum of Biology at the University of Nevada, established largely through the interest of La Rivers. Banta (1950, 1953) has reported on some aspects of the growing University of Nevada collections.

In 1922 there appeared the two volume study of The Reptiles of Western North America by Dr. John Van Denburgh of the California Academy of Sciences. Considerable efforts had been expended in the compilation of this major report. During its many years of preparation, Van Denburgh dispatched Joseph Richard Slevin at
Various times to many areas of the western United States, including some Great Basin localities, to obtain specimen material. The various lists published by Van Denburgh and Slevin prior to 1922 (1912a, b, 1915, 1921a, 1921b) were simply progress reports of this major effort. Van Denburgh included material on the habits and life histories as well as systematic notes and distribution records, the latter based chiefly on material in the California Academy of Sciences and Stanford University collections. The black and white photographs illustrating many of the species treated in this work remain some of the best yet available. An account reviewing the herpetological activities of the California Academy of Sciences is provided by Slevin and Leviton (1956). Material obtained in the Saline Valley hydrographic basin by Banta (1963b) is deposited in the collections of the California Academy of Sciences.

During the summer of 1928 Charles Earle Burt and May Danheim Burt collected herpetological specimens in the Great Basin incidental to traveling through the region en route to the Pacific Coast. The material collected was deposited in the Museum of Zoology, University of Michigan and the United States National Museum (Burt and Burt, 1929). The Burts repeated their journey across the Great Basin during August of 1932 and further elaborated on their experiences similar to those of 1928 (Burt, 1933). Most of the specimens obtained in 1932 were deposited in the United States National Museum.

As noted above most of the references have referred to the western Great Basin in Nevada and California. However, the eastern part in Utah and eastern Nevada was being worked by various herpetologists, particularly since 1918.

An active period of herpetological research began in 1922 and 1925 when Herbert J. Pack at Utah State College and Vasco M. Tanner at Brigham Young University initiated their studies at Logan and Provo, Utah. V. M. Tanner was one of the more active of the recent workers to carry out extensive studies on the fishes, amphibians and reptiles of the Great Basin.

The first important collections from this area (Bonneville Basin) were made by the Stansbury Expedition in 1849-50 and reported by Baird and Girard in 1852a and 1852b and by Girard in 1858. In these early reports are the original descriptions of eight Great Basin reptiles. Some have been reduced to subspecific status, but all still appear in the current check lists (Schmidt, 1953).

After these early reports few collections were made and reported until Herbert J. Pack began his herpetological activities at Utah State Agricultural College at Logan, Utah. His first reports appeared in 1918 and extended to 1930. Although Pack was interested in systematics, most of his reports were studies of food habits. His major systematic report was the "Snakes of Utah," published posthumously and edited by George Franklin Knowlton in 1930. Knowlton and his co-workers continued the studies of Pack (1935-1950), publishing a long series of papers mostly on lizard food habits. Some of the animals collected by Pack and Knowlton are deposited
in the collections at Brigham Young University and the California Academy of Sciences.

Members of the staff and various graduate students of Brigham Young University since 1925 have amassed a large collection of herpetological specimens from the eastern Great Basin. Vasco Myron Tanner initiated the assemblage of the collections and published a series of accounts dealing with the herpetofauna of the eastern Great Basin and the rest of the state of Utah (1927a, 1927b, 1928, 1929, 1930, 1933). Field groups under his direction were so organized as to provide for sampling of all of the vertebrate and arthropod animal groups. Through the combined efforts of both staff and students the herpetological collection at Brigham Young University has become one of the larger assemblages of Great Basin reptiles. After 1940 this collection began to receive exotic materials and has since become much more than an assemblage of local specimens. The influence of V. M. Tanner in the eastern Great Basin has been comparable to that of Van Denburgh, Grinnell and Klauber in the western and southern sections of the region. It has been these men, their students and co-workers, who have during this century extended the knowledge of Great Basin herpetology. Since 1950 Wilmer W. Tanner has assumed the general supervision of and has conducted research on the North American segments of the herpetological collections at Brigham Young University. His first paper appeared in 1939 followed by numerous other studies concerned with aspects of the Great Basin herpetofauna. The large series of herpetological samples obtained at the Atomic Energy Commission Nuclear Testing Site in southern Nye County, Nevada, was published by Tanner and Jorgensen (1963).

The first and, to date, only account dealing with the reptiles of Utah and the eastern Great Basin was compiled by Angus Munn Woodbury (1931). This account was based primarily on material at Brigham Young University and collections at the University of Utah, acquired primarily by various faculty members and to a limited extent from high school teachers in central Utah. Woodbury and a number of his students have continued studies on the herpetology of the eastern Great Basin, most notable being the studies on snake dens (1940-1951). The final reporting of the den studies was done at a symposium in June, 1950. The published reports appeared in 1951 and were authored by Woodbury, Vetas, Julian, Glissmeyer, Heyrend and Call, Smart and Sanders. John M. Legler is continuing herpetological studies at the University of Utah, Salt Lake City.

Richard Patton Erwin, a professional musician with an intense avocational interest in herpetology, provided some worthy collections and reports (1925-1928) from Great Basin portions of Idaho. Much of Erwin’s material is deposited at Brigham Young University and the California Academy of Sciences. His field notes and journals are also at Brigham Young University.

The herpetofauna of the Great Basin portion of the state of Oregon requires much more study. Kenneth Gordon (1939), Robert
Macleod Storm and Richard A. Pimental (1949) provided the most recent information on this area.

In the spring of 1931 and 1932, the southern portions of the Great Basin were visited and collected by Laurence Monroe Klauber. These activities were made in his spare time in association with business activities for hydroelectric power from Hoover Dam for use in San Diego, California. Klauber was one of the first discoverers and advocates of collecting reptiles on paved highways, traveling by automobile at slow speeds. This method has yielded specimens of reptiles once thought to be rare, now known to be quite common, especially nocturnal snakes. Klauber’s comprehensive investigations of reptiles, especially rattlesnakes, since the late twenties (1929-1956) have usually included species inhabiting the Great Basin. His numerous studies on reptile systematics has been enhanced by the introduction and use of statistics in evaluating data.

Charles Mitchell Bogert (1930) compiled the second list of the Los Angeles County herpetofauna based on his extensive field work within the county borders during months of July and August. In 1935 he sampled amphibians and reptiles in the vicinity of Hoover (Boulder) Dam and the then newly-formed reservoir, Lake Mead. A report on these activities was coauthored by Raymond Bridgeman Cowles (1936). The specimens obtained were deposited in the collections of the University of California at Los Angeles to form the nucleus for a now quite extensive collection. Although most of Bogert's collecting activities were within the Colorado River Basin, a small sampling of the isolated Spring (Charleston) Mountains, located on the border of the southwestern Great Basin area and the Colorado River Basin, was obtained. Kenneth Stafford Norris (1953, 1958) in his work on the ecology of desert dwelling lizards is continuing studies in the Mojave Desert as well as other areas at the University of California at Los Angeles.

Recently a report by Frederick B. Turner and Roland H. Wauer (1963) listed the reptiles occurring in Death Valley and provided ecological notes for the species.

Jay Mathers Savage (1960) in a herpetozoozoogeographical review of Baja California, Mexico, extended portions of this effort to include all of continental North America. Savage eliminated the existence of the Great Basin as a faunal area and included it with adjacent areas under the ambiguous term “Desert and Plains.” Under this category were also included most of central Baja California, Arizona (exclusive of the central portion), and the state of Sonora, Mexico. It is interesting to note that to construct his hypothesis on the origin of the herpetofauna of Baja California, Savage relied on the paleobotanical works of Axelrod (1940-1958) in the Great Basin, studies which so far have excluded Baja California. Yet Savage did not consider the Great Basin worthy of recognition in his overall classification of herpetofaunal areas.

We believe that the large number of species and subspecies largely restricted to the Great Basin justifies its recognition as a faunal area. A careful examination of both vertebrates and arthro-
pods indicates that this general area has been isolated for a long enough period of time to provide for the development of a distinct fauna. In all respects it is faunistically distinct as are other adjacent areas. In the vertebrate groups adequate evidence is seemingly available in the many works dealing with the vertebrates of this area, but particularly in those of E. R. Hall, and S. D. Durant (mammals), E. D. Cope, L. M. Klauber, R. C. Stebbins, J. M. Linsdale, and the authors (reptiles) and J. O. Snyder, C. L. Hubbs, R. R. Miller, and V. M. Tanner (fishes).

To us the Great Basin represents not only a distinct physiographic region but also an area with many faunal segments restricted to it. The full impact of its physiographic isolation on the reptile fauna is not yet clear. We are well aware that there is yet much to be learned about the systematics of this fauna and anticipate that considerable information will come from the many systematic and ecological studies now being carried forward in the Great Basin.

Bibliography


El Dorado County, California. 2) Eutainia [=Thamnophis elegans] vagrans; California. 3) Ophibolus [=Lampropeltis getulus] boylii; El Dorado County, California. 4) Diadophis regalis; Sonora, Mexico. 5) Sonora semiannulata; Sonora, Mexico. 6) Rhinocelus lecontei; San Diego, California. 7) Rena [=Leptotyphlops] humilis; Valliecitas, California.


[Resurrected the name Sceloporus occidentalis longipes for Great Basin populations.]


———. 1919. Reptiles collected in the vicinity of Currant, Nye County, Nevada, Copeia (75):87-91.


[Original description of Salvadoria hexalepis mojavensis; California: San Bernardino County, south end of Granite Mountains, 11.5 miles southeast of Victorville.]


[Restoration of the name Cnemidophorus tigris Baird and Girard for Great Basin populations.]


[Elaboration of the name *Thamnophis sirtalis fitchi* for both western and eastern Great Basin populations.]


[Original descriptions - (1) *Crotalus confluentus* [=viridis] lutosus; Utah: Millard County, 10 miles northwest of Abraham - (2) *Crotalus confluentus* [=mitchelli] stephensi; California: Inyo County, Panamint Mountains. 2 miles west of Jackass Springs. 6200 feet.]


[Supported recognition of *Charina bottae utahensis* Van Denburgh.]


[Original description - *Chionactis occipitalis talpina*; Nevada: Nye County, 50 miles south of Goldfield, on the highway to Beatty.]
—. 1942b. Reptiles eaten by birds, Copeia 1942(3):186.
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Knowlton, G. F., and A. C. Valcarce. 1950. Insect food of the sagebrush swift in Box Elder County of Utah. Herpetologica 6(2):33-34.


[Original descriptions - (1) Sceloporus magister transversus; California: Inyo County, Keough’s Hot Springs, 7 miles south of Bishop; (2) Sceloporus magister uniformis; California: Los Angeles County, Valyermo.]


[Original description - Callisaurus ventralis [=draconoides] myurus; Nevada: Washoe County, Pyramid Lake Indian Agency (=Nixon).]


[Original description - Uta stansburiana nevadensis; Nevada: Eureka County, Cortez Range west of Carlin.]


[Original description - Gerrhonotus panamintinus; California: Inyo County, Panamint Mountains, Surprise Canyon, 4500 feet.]

[Original description of Crotaphytus [collarlis] baileyi; Painted Desert, Little Colorado River, Arizona.]

[Original descriptions of (1) Gerrhonotus scincicuda [=coeruleus] palmeri; California: Fresno County, South Fork of King's River. (2) Pituophis catenifer deserticola; Utah: Washington County, Beaver Dam Mountains.]

[Ressurrection of the name Phrynosoma douglasi ornatum Girard 1858 for eastern Great Basin populations.]


[Original description - Hypsiglena o. [ochorrhynchus] (= torquata deserticola; Utah: Utah County, west side of Cedar Valley, between 3-4 miles northwest of Chimney Rock.]


[Original description - Lampropeltis pyromelana infralabialis; Utah: Beaver County.]

[Original description - Eumeces skiltonianus utahensis; Utah: Utah County, southeastern edge of Cedar Valley, approximately one half mile directly west of Chimney Rock.]


[Original description - Crotaphytus wislizeni punctatus; Utah: Grand County; Yellow Cat mining district, ± 10 miles south of U. S. Highway 50-6.]


[Original description - Lampropeltis doliata taylori; Utah: Utah County, approximately 2 miles north of Alpine.]

[Original description - Eumeces gilberti rubricaudatus; California: Kern County, Tehachapi Mountains.]


[Original description - Charina bottae utahensis; Utah: Wasatch County, Wasatch Mountains, Little Cottonwood Canyon.]


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