ALLAN R. PHILLIPS AND THE DEVELOPMENT OF ORNITHOLOGY AS A SCIENCE IN ARIZONA

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ABSTRACT. – Ornithological investigations in Arizona were begun in the 1850s by medical doctors attached to military posts. Studies in the Tucson region increased after establishment of several additional post-Civil War forts during the mid-1860s. From then into the early 1900s ornithologists used Tucson as a base from which to investigate the surrounding valleys and mountains. Allan R. Phillips was Arizona's first resident professional ornithologist and contributed more than any other single person to the establishment of ornithology as a viable science in Arizona. Earlier ornithologists had been either nonresidents or, like Herbert Brown, were amateurs. Phillips worked full-time as an ornithologist for 60 years. As "Dean of Southwestern Ornithologist" his position gave him unprecedented independence among contemporary workers. His contributions to avian systematics and distribution exceed that of any recent ornithologist in the North American Southwest (SW U.S. and NW Mexico) and the remainder of Mexico.

In 1931 Allan R. Phillips came to Tucson from New York at the age of 17. To this outstanding natural and cultural setting Phillips brought his genius—a nearly photographic memory, keen eyes and ears, endless patience, and a sense of humor. Although he did not realize it at this early age, his memory would allowed him to remember most of the information on thousands of specimen labels. His ears would combine with his memory to allow him to learn and remember hundreds of bird calls and songs (and also to remember and sing Gilbert and Sullivan operettas [among others] with great fidelity). His keen eyes permitted him to detect slight variations in tones between yellowish and greenish-olive, rufescent and grayer brown—variations that are crucial in subspecific determinations. These would allow him not only to discover and name undescribed subspecies but also to determine the origin of migrants passing through Arizona and the Southwest in general.

Herbert Brown had become Arizona's first resident ornithologist when he moved to Tucson in the early 1880s. Professionally, Brown was a businessman and editor of a Tucson newspaper. He made extensive avian collections and published papers on the birds of southern Arizona until shortly before his death in Tucson in 1913 (Huels et al., ms.). He also served as the first Curator (Director) of the Arizona State Museum (including bird collection) at the University of Arizona (U of A). Phillips' ornithological endeavors in the Tucson Region followed Brown by only 20 years.

Phillips had good reason to select Tucson as the ideal location for conducting avifaunal research, for Tucson had the state's longest history of avifaunal studies and publications. Much of this early interest in the region was due to the occurrence of approximately 35 Mexican species that reached their northernmost limits in SE Arizona. Some of the states earliest and most important museum specimens had been collected here during the latter part of the 1800s by early workers such as Bendire, Henshaw, Brown, and others. Phillips was fascinated by the natural attributes that had attracted these Mexican birds and the early workers that studied them. These included the region's proximity to Mexico and elevational gradients resulting in desert and riverine lowlands of 730 m (2,400 ft) at one extreme and montane highlands approaching 2,990 m (9,800 ft). In addition to having strong biotic elements of both the Madrean and Rocky mountains, the Tucson region has a mixture of Sonoran and Chihuahuan desert biotas (Lowe 1964, Benson and Darrow 1981). From an ornithological perspective, Tucson's location on the Santa Cruz River and proximity to the San Pedro River was fortuitous. These rivers provided

corridors for bird movement between southern Arizona and Mexico through two biotic regions—the San Pedro flowed from Mexico into the U.S. through the Chihuahuan Desert and the Santa Cruz flowed from Mexico into the U.S. through the Sonoran Desert. Thus, the Tucson lowlands were as diverse and avifaunally interesting as the montane highlands.

THE EARLY YEARS

Phillips soon began acquiring a reputation in the ornithological world. In August 1934, in the Santa Catalina Mts., he discovered the southernmost breeding population of the Orange-crowned Warbler (*Vermivora celata*) and in 1937 he collected specimens from a flock of San Blas Jays (*Cyanocorax sanblasianus*) near Tucson (Phillips et al. 1964). This species was new to the U.S., normally occurring no further north than Nayarit, Mexico, approximately 1,350 km (850 m) south of Tucson (Phillips 1986). Phillip's ornithological interests were particularly encouraged by such early Arizona workers as L. L. Hargrave with whom he studied birds part-time at the Museum of Northern Arizona (MNA) during the mid-1930s. Hargrave taught him the value and technique of collecting birds and preparing specimens. Phillips retained a part-time curatorial position at MNA from 1939-1957.

After graduating in 1936 from Cornell University, one of the nation's premier ornithological universities, Phillips returned to Arizona and finished work on his master's thesis in 1939. Entitled **The Faunal Areas of Arizona, Based on Bird Distribution**, his thesis was the most important contribution to the study of avian habitats in the state since C. Hart Merriam's noted Life Zone paper (Merriam 1890).

The same year Phillips received his master's degree, at the age of 24, he resolved an ornithological error that had persisted for half a century. He was particularly interested in *Empidonax* flycatchers, represented in Arizona by 7 or 8 regularly occurring species (depending on whose taxonomy you follow). Some of the species are cryptic enough that even the experienced Swarth (1914), mentioned confusion in the "*E. wrightii-E. griseus*" complex.

While examining specimens at the U.S. National Museum (USNM) Phillips found that the type of *E. wrightii* actually represented the species then known as *E. griseus* Brewster (A.O.U. 1931). Oberholser, taxonomist at the USNM, verified the identification and Phillips (1939) published the description for the new species, *E. oberholseri*. The next A.O.U. Check-list (1957) followed Phillips' change, dropping entirely the name *E. griseus*.

Phillips continued to use his uncanny ability for detecting the subtle morphological differences so vital in properly identifying birds to correctly identify two important early Tucson specimens. One of Phillips' tasks at the U of A in 1939 had been the consolidation of Herbert Brown's notes, records, and specimens which were scattered throughout the university. He questioned the identification of two Brown specimens he found in the Arizona State Museum at the U of A, one identified as Bullock's (Northern) Oriole and the other as a Summer Tanager. Phillips sent them both to Oberholser for positive determination. The tanager was returned with the identification corrected to *P. olivacea* (Scarlet Tanager) but the oriole was still labelled *Icterus bullockii*. Phillips was not satisfied, thus returned the oriole to Oberholser for a closer examination. This time it was returned with *Icterus pustulatus* (Streak-backed Oriole) on the label (Phillips, pers. comm. and specimens examined by Johnson). Both these specimens had been missed by Swarth in his 1914 **A Distributional List of the Birds of Arizona**. At this time Oberholser was 69 (Gruson 1972) and had published taxonomic papers for more than 40 years (Anderson 1972)—Phillips was 25.

Young Allan's reputation spread quickly. Even before he received his Ph.D. he became well known among established ornithologists who were often years, or even decades, his senior. Ornithological greats such as Harry Oberholser, George Sutton, and Adriaan van Rossem sought his assistance, whether working with Arizona museum specimens or conducting field work. Allan contacted almost everyone that expressed a serious interest in Arizona birds, either by letter or by visiting them in person, and often joined them on field trips. One of these field trips resulted in one of the earlier avian surveys for a U.S. Indian reservation (Sutton and Phillips 1942).

THE POST-WAR YEARS

In 1945 Phillips returned from active duty in World War II with several important specimens he had acquired in the South Pacific. At this time an unfortunate incident resulted in the careless and accidental discarding and burning of some of his most valuable and carefully packed Okinawa specimens by an MNA staff member. The remaining specimens allowed him to write several papers, some naming new taxa (see list of his publications in this volume). He received a Ph.D. in ornithology at Cornell University in 1946, writing as his dissertation **The Birds of Arizona.** This would later be published as Arizona's comprehensive avifauna after almost two decades of intensive field work and revision (Phillips et al. 1964). In 1947 Phillips also compiled and published a **Field Check list of Birds: Tucson Region, Arizona** that included birds of both the surrounding lowlands and mountains. During his work on these publications Phillips demonstrated that his keen senses and attention to detail made him an outstanding field-man in addition to his exceptional ability as a museum ornithologist. Among his numerous field discoveries for the state was the first nesting record of the Rose-throated Becard, a Mexican species that had been recorded only once in Arizona (Brandt 1951, Phillips et al. 1964)—and the first nesting colonies for the U.S. of the Tropical Kingbird (Phillips 1940) and Varied Bunting (Sutton et al. 1941).

Phillips' was always alert for a bird that did not look quite right or made an unusual sound. A "puzzling call note" in his Tucson back yard led him to collect a Yellow-bellied Flycatcher (*Empidonax flaviventris*), a first for Arizona and the SW U.S. Since his other guns were still packed because he was between Mexican collecting trips he took the flycatcher with a pistol bought earlier from Charles Vorhie's widow (Phillips, pers. comm.). The only reliable Arizona record of the Eastern Wood Pewee (*Contopus virens*) is also a Phillips specimen (Monson and Phillips 1981). Its collection was described thusly by Phillips (pers. comm.):

> The then-river below Indian Dam on the Papago Res. [now San Xavier Res. of the Tohono O'odam] was a great place. I especially recall what I took for a young Eastern Wood Pewee there. When I shot it, it fell up on the mesa; I had quite a fight to keep the spot in mind & get up to it. When I did, I saw it was just a Western, after all. But when I put it in my collection, it didn't fit, and sure enough, it WAS an Eastern, my only record in the west!

Phillips often worked alone until 1949, when Joe T. Marshall, Jr. joined the faculty of the U of A as the first full-time ornithologist for any Arizona university. Phillips and Marshall had much in common. Marshall had received a Ph.D. at the University of California at Berkeley (UC), the West's equivalent to Cornell (Phillip's alma mater) as a superior ornithological school. Marshall's analytical abilities, keen eyes and ears, and superior field ability put him in Phillips league, well above most ornithologists. In particular, Marshall shared Phillips hearing ability, as well as an aptitude for and apprecia-

tion of music—involving Marshall's ability as a concert pianist, hobby of constructing harpsichords, and perfect pitch. His musical abilities played a key role in his pioneer work on the rugged mountains of the North American Southwest (SW U.S. and NW Mexico), resulting in his much acclaimed **Birds of the Pine-Oak Woodlands** (Marshall 1957). Phillips' aforementioned exceptional musical ability was partially cultural—his step-father, William X. Foerster, directed the Tucson Symphony Orchestra in the mid-1940s and mother, Alma J. Foerster, was a pianist. Allan and Joe were the most accomplished avian acoustical team that ever worked in Arizona and probably in the U.S. In naming *Vireo griseus marshalli*, Phillips (1991:177) aptly wrote, "to Dr. Joe T. Marshall, not only expert *par excellence* on nocturnal birds but also expert on other phases of ornithology, including vireos."

THE BIRDS OF ARIZONA

The culmination of Marshall's Arizona work was realized when he coauthored **The Birds of Arizona** with Phillips and Gale Monson (Phillips et al. 1964). Phillips and Marshall worked so well together that the review of the book in **The Auk** stated "A fortunate combination of circumstances and persuasion . . . resulted in an arrangement whereby Joe Marshall, then of the University of Arizona, undertook most of the actual writing . . . using Phillips notes . . . Much revision of the text was then based on conferences between Phillips and Marshall . . . the latter has characterized the book (p. ix) as being 'Phillips' Birds of Arizona 'as told to' Marshall and Monson" (Parkes 1966:484). Parkes (1966:487) also said it "is a landmark among state ornithologies and the authoritativeness of its distributional information will seldom, if ever, be exceeded." Such glowing reviews succinctly summarized the outstanding contributions of Phillips' and Marshall's ornithological teamwork. This also belies the too oft repeated rumor that Phillips would not work with ornithologists from U.C. Berkeley, since Marshall is one of Berkeley's (and Alden Miller's) most successful Ph.D.s.

Phillips, like Hargrave before him, was a born teacher. Though both Hargrave and Phillips taught only occasional college courses they continuously carried on a level of informal education. In a 6 April 1995 letter from Phillips to Johnson ARP mentions no fewer than 33 birds in which RRJ had an interest, several species more than once. Johnson's attempts to use a yellow highlighter for the most important parts of the letter were abandoned when it became apparent that there would be more highlighted text than non-highlighted. Phillips' informal instruction ranges from kind and gentle to stern and even scathing in admonition.

Phillips has worked alone so much of his career that he is often considered a "loner." He was often unsalaried and financed most of his own research, referring to himself as "independently poor." However, his solitary work has often been from necessity and he has taken every opportunity to encourage others, often showing them subjects for research that have resulted in important findings. Thus, even though his name has not been on several papers that solved many an ornithological puzzle much of the credit goes to him. Such an example is the recognition of Couch's Kingbird (*Tyrannus couchii*), long considered by Phillips as a separate species from the Tropical Kingbird. Although *T. couchii* was described in 1858 it was subsequently lumped with *T. melancholicus* by the A.O.U. Check-list Committee until a definitive study demonstrated they were two distinct species. In the paper presenting the results of this study Traylor (1979:233) stated, "I would particularly like to thank Allan R. Phillips for constantly prodding me to undertake the study and for suggesting certain key characters to distinguish the species; without his conviction that they were distinct, I might have accepted the old classification."

Phillips could be very patient, informative, and even humorous when providing information to a student new to the field of ornithology. In the senior author's first years of ornithological study he mentioned "Coos"(=Coues') Flycatcher (bracketed phonetic pronunciations) to Phillips and the following conversation followed. **"Phillips: You mean [Cows] Flycatcher."** Johnson: "Is that the way you say his name?" **Phillips: "That's the way Dr. [Cows] said it!"** However, Phillips could scarcely be outdone in his verbal retort if he determined that scientific evidence had been overlooked. This especially pertained to situations when information had been disregarded by the "ornithological establishment" or subjugated to politics. An outstanding example of this occurs in his comprehensive **The Known Birds of North and Middle America: Part II** (1991; p. li):

> "4) The case of *Pipilo crissalis,* of the coastal Californias, was quite parallel [to three previous examples] until a paper of sorts by an approved author appeared. Rea 1983, Once A River: 234, had added to and reinterpreted work by Marshall (1960, Condor 62:49-64, 1964, Condor 66:345-356). He pointed out differences from the (inland) Brown Towhee, *P. fuscus* (in which A.O.U. Check-lists from 1931 on included it) in voice, ecology, shape of wing, relative length of tail, eggs, and in various skeletal elements (and we authors would add, behavior and appearance). [Finally]...it was recognized as distinct (Auk 106:536) on the basis of 'allozyme and morphometric studies' by Zink, 1988 (Condor 90:72-82), adding only that it also differs in vocalization. . . ."

In addition to being a consummate teacher, Phillips was concerned about Arizona's dwindling natural resources. Herbert Brown (1900) had been one of the first to warn of impacts on birds from environmental degradation in a paper discussing overgrazing and drought. Phillips joined Marshall in following the earlier lead of Brown and Brandt (1951), both lay ornithologists, in pointing out the need for better resource management to conserve Arizona and the Southwest's natural resources. Phillips and Monson (*in* Phillips *et al.* 1964) discussed factors that have effected severe changes in the lowland avifauna, such as dams and associated water diversion projects. Phillips had also taken several steps to permit comparison of changes through time in the Arizona avifauna. In addition to examining Herbert Brown specimens, Phillips also typed up some of Brown's more important activities, e.g. itinerary of Brown's collecting trips, list of specimens, and notes from an assortment of various sized notebooks, and left them with the U of A bird collection. Also, when Phillips and Marshall left Arizona they both left records of their field trips and species lists with the U of A bird collection. With this information we can now evaluate changes in the avifauna from 1884 to 1995 for certain localities in SE Arizona. Phillips was also the last of a series of SE Arizona collectors to systematically secure important specimens from many areas that are now basically closed to collecting, e.g. lower Sabino Canyon and Indian Dam near San Xavier Mission.

CHRISTMAS BIRD COUNTS AND BLUE POINT COTTONWOODS

Phillips' well rounded approach to ornithology and penchant for teaching both amateurs and professionals has resulted in an important legacy for amateur ornithologists and birdwatchers as well as professional ornithologists, despite complaints from anti-collectors. Phillips' interest in all types of ornithological activities was typified by his participation in Christmas Bird Counts (CBCs). These important counts interest both amateur and professional ornithologists, the latter by serving as an index to fluctuations in winter population numbers throughout the U.S. Herbert Brown conducted the first count for Arizona at Tucson, during the tenth annual national CBC, in 1909. The first CBC for

the Phoenix region was 6 years later in Mesa (Anderson 1972). CBCs were held sporadically in both the Tucson and Phoenix regions until the mid-1930s. In 1931 Phillips conducted his first Arizona CBC, alone, at the Baboquivari Mts. and from 1936 to 1939 he was the compiler for the CBC in the Sta. Catalina Mts. While Allan was at war (1940-1945) his mother and step-father, Alma J. and William X. Foerster, were active in Tucson area CBCs, with Will taking Allan's post as compiler. On Phillips' return he continued as a compiler with CBCs in Tucson and other parts of Arizona. In 1950 Phillips and L. D. Yaeger made the first CBC for Blue Point Cottonwoods the first CBC that had been conducted in the Phoenix area in several years.

Phillips had by then discovered that central Arizona, the state's most densely populated region, was one of the most poorly known avifaunally. With Yaeger's help, Phillips began studies in the Phoenix region. His interest was focused on Blue Point Cottonwoods and nearby Coon's Bluff, 48 km (30 mi) upstream from Phoenix on the Salt River. Hargrave and Yaeger had made some interesting earlier collections here, e.g. a Ferruginous Pygmy-Owl (8 Mar 1933, MNA) and was so impressed with the avifaunal assemblage that they suggested to Phillips that it needed further investigation. Allan conducted 9 field trips to Blue Point Cottonwoods from 24 February 1949 through 7 October 1951, 7 with Yaeger and two alone. During the three year period he collected some very rare birds for the region, including the second Arizona record of the Stilt Sandpiper (*Calidris himantopus*) and 2 Pectoral Sandpipers (*C. melanotos*) (all three with one shot without killing any of the common birds feeding with them (Phillips, pers. comm.)! Here Phillips also collected one of the state's earlier White-throated Sparrows (*Zonotrichia albicollis*), the only Salt River Valley specimen of American Crow (*Corvus brachyrhynchos*), and the last two known Salt River Valley specimens of the Ferruginous Pygmy-Owl, and possibly the last for Arizona (24 Sep 1949 & 30 Jun 1951, DEL?). Hargrave had suggested to Phillips in the 1940s that the rich avifauna at Blue Point Cottonwoods warranted further investigations. Likewise, after Phillips earlier work there he suggested to the authors in the mid-1950s that we continue with the studies he and Hargrave had begun. We have done so, including Blue Point Cottonwoods in "Occurrence and ecology of birds of the Salt River Valley, Maricopa Co., Arizona" (Johnson and Simpson, ms). In addition, we have gathered a large amount of information in the "Occurrence and ecology of birds of Blue Point Cottonwoods, Maricopa Co., Arizona," (Simpson and Johnson, ms) and published some of this information (Johnson and Simpson 1971). Blue Point Cottonwoods is now the only relatively unchanged riparian area along the lower Salt River and, because of Phillips' and Hargrave's foresight, the only area in central Arizona with 60 years of avian records.

BIRDS OF THE PHOENIX REGION

In 1951 Abraham S. Margolin, Phoenix College, offered the first ornithology class for the Salt River Valley, a course he taught annually until the mid-1950s. Margolin was a recent arrival from West Virginia and although a microbiologist by training, wished to know more about birds of the area. Since he was unable to find a published avifauna for the Salt River Valley, Margolin began compiling the first comprehensive annotated checklist for the area with three of his former ornithology students, James M. Simpson, R. Roy Johnson, and James R. Werner. These former students and Margolin began communications with Phillips about establishing an avifaunal list for the Salt River Valley. The five of them made several trips back and forth between Tucson and Phoenix as Phillips assisted in conducting field work, and teaching these neophytes techniques for specimen and manuscript preparation. Werner and Johnson also accompanied Marshall on several

field trips and learned additional techniques for use in preparation of the Phoenix regional avifauna. Margolin founded the Maricopa Audubon Society (MAS) and the beginnings of a systematic filing system for avian sightings in the Phoenix area. In 1954 Margolin began a regular annual series of CBCs for the Phoenix area, one of them at Blue Point Cottonwoods, following Phillips' and Yaeger's 1950 CBC there.

On 28 January 1956 Phillips was involved in another important event in the growth of science in Arizona when he attended the founding meeting of the Arizona Academy of Science (now the Arizona-Nevada Academy of Science) at Phoenix College. He was joined by Hargrave (then living in Benson, Arizona), Margolin, Simpson, and Werner. Phillips also contributed a paper, "The Nature of Avian Species," to the first issue of the new **Journal of the Arizona Academy of Science** (Phillips 1959).

Another person who played a key role in assisting Phillips in furthering ornithological studies in the Phoenix region was Robert W. Dickerman. Dickerman, also a Cornell graduate, worked with Phillips in Tucson as he was completing studies for his master's degree at the U of A. Like Phillips, Dickerman was an outstanding field-man, always alert for a bird that seemed "different," a trait that enabled him to collect a Nutting's Flycatcher (*Myiarchus nuttingi*) in central Arizona, the only specimen record for the U.S. (Dickerman 1953). Such abilities allowed Dickerman to add several important records to the expanding SRV (Salt River Valley) checklist when he moved to Phoenix in 1953. Dickerman, with Phillips' assistance, prepared the first guide of SRV records and collection needs for Margolin and associates and before Dickerman left Arizona he and Phillips gave Hargrave's manuscript on birds of the SRV to the Phoenix group. In addition to the growing SRV manuscript and Johnson-Simpson-Werner bird collection, the Hargrave-Phillips-Dickerman records assisted in preparation of a series of SRV field checklists. One of the earlier SRV field checklists was patterned after Phillips 1947 field checklist for the Tucson Region, containing symbols regarding each species' status and habitat preference. Information published in the first Annotated Field List: Birds of Maricopa County, Arizona (Demaree et al. 1972), resulted largely from MAS records begun by Margolin, pioneer work done by the forenamed SRV workers, and another of Phillips' proteges, Amadeo M. Rea, who began working in the Phoenix area in 1963 (Rea 1983). Thus, Allan R. Phillips was not only largely responsible for the establishment of ornithology as a viable science in Arizona and publication of **The Birds of Arizona**, but he also was the driving force, playing a pivotal role in the gathering of information for the birds of the Tucson and Phoenix regions.

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