[It is intended that this appendix will be part of the Santa Clara County Breeding Bird Atlas when that atlas is published. However, the material in this appendix may be of interest in its own right, and justify limited distribution prior to publication. Any comments on this material should be provided the author. In writing this appendix, I have benefited from the assistance of curators at a number of museums and I gratefully acknowledge their support: René Corado (Western Foundation of Vertebrate Zoology, Camarillo, CA), Douglas Long (California Academy of Sciences, San Francisco, CA), Carla Cicero (Museum of Vertebrate Zoology, Berkeley, CA), and Craig Ludwig (U. S. National Museum, Washington, D.C.).]

Local Ornithology in the 19th and early 20th Centuries

Introduction

The earliest local ornithologists, before there was even a state or a county, were the Indians that lived in the Santa Clara Valley, and later, the Spanish that settled there. Excavation of middens show that the local Indians hunted a number of bird species and ethnographers have determined that others were important in ceremonies, particularly the Acorn Woodpecker. The beginning of European settlement followed the Spanish journeys of exploration in the 1760s. The Fathers who accompanied these overland parties often kept detailed diaries and provided extensive accounts about the country including descriptions of the hills, rivers, and bays and the kind of trees and plants that they saw. But to a large degree, their focus was on the essentials required for settlement: water, forage for horses and cattle, and wood. Almost none of these journals mention birds. Few of the early Spanish settlers kept diaries and although they must have known many of the birds that were around them, there is no record of their observations.

California ornithology, by necessity, starts with the written accounts of those who visited or came to explore California. The earliest of these accounts were written by naturalists or ship's captains who traveled along the coast of California in the late 1700s and the 1800s. These visits were often brief and natural history observations were generally limited to collecting plant and animal specimens. Only a few of these early observers came inland as far as the southern San Francisco Bay or visited the Santa Clara Mission or the Pueblo of San Jose.

These visits of exploration were followed by the early overland expeditions by collectors such as Thomas Nuttall and William Gambel. Then, with the American settlement of California, these early explorers were followed by other naturalists, such as James Cooper and Thomas Bridges. Once the era of initial exploration and collecting was over, there was a transition to locally based ornithology and that is the primary subject of this appendix. This transition is best understood using the comprehensive bibliographies of California ornithological references that Joseph Grinnell put together in the early 20th century (Grinnell 1909, Grinnell 1923, Grinnell 1939). Figure 1 shows the number of publications by year from 1797 to 1938 based on Grinnell's bibliographies. These include books, museum proceedings, reports, journal articles, and other ornithological publications. What is most obvious in this figure is the intense interest shown in California ornithology starting in the 1870s, when there was almost an exponential increase in the number of publications each year. To a substantial degree, this increased publication of information on birds in California provides the majority of what is known about local ornithologists at the end of the 19th and the beginning of the 20th centuries.

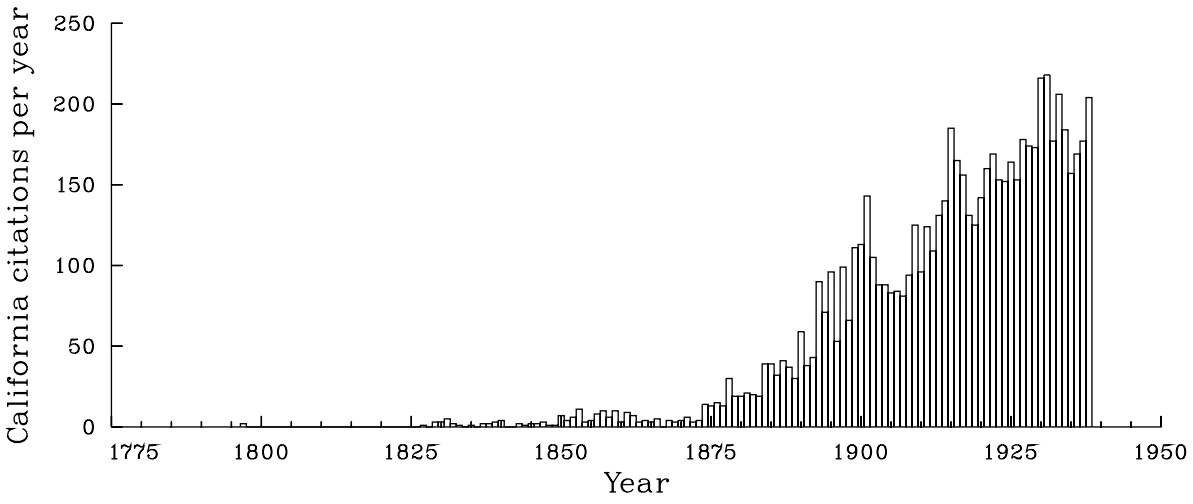

Figure 1. Papers per year published on California ornithology (Grinnell 1909, Grinnell 1923, Grinnell 1939).

Pacific Voyages of Exploration.

Jean François de Galaup, Compte de la Pérouse, commanded a French expedition to explore the Pacific Ocean from 1785 to 1788 and his ships visited Monterey in 1786. It was here that the first specimens of California Quail and California Thrasher were collected. From 1792 to 1794 George Vancouver commanded an expedition that explored the Pacific Coast of North America. He made a number of visits to Monterey and San Francisco during this period and on one of these visits the ship's surgeon, Archibald Menzies, collected the first specimen of the California Condor. Descriptions of these specimens were published in 1797 (Grinnell 1909) and represent the first publications on California ornithology.

Vancouver wrote a detailed account of his expedition, which included a visit to the Santa Clara Mission (Vancouver 1798). His ships were anchored at San Francisco and the Spanish at the garrison provided him horses and a complement of soldiers for a journey down the peninsula to the Santa Clara Mission. Vancouver wrote extensively about this journey, providing many interesting details, but made no mention of vertebrate life beyond the Spanish cattle he saw grazing along the route. Menzies, an accomplished naturalist, was ill at the time and did not accompany Vancouver.

In the 1820s there were two visits to the California coast that included substantial collections and explorations. Captain Duhaut-Cilly left Le Harve in 1826 on the vessel 'Les Heros' for explorations along the Pacific Coast of North America and visited California ports over the period from January 1827 to July 1828. During one of his stays in the San Francisco Bay he journeyed by boat into the southern part of the Bay. Duhaut-Cilly's ship's surgeon and naturalist was Dr. Paolo E. Botta, who made limited collections while traveling widely, including a visit to the Santa Clara Mission in July 1927 (Palmer 1917, Palmer 1928). It is not known if Botta made any collections while in the Santa Clara Valley.

Captain Frederick W. Beechey, commanding the HMS 'Blossom,' explored along the Pacific Coast from 1825 to 1828 and also made extended visits to San Francisco Bay (Beechey 1831). Dr. Alexander Collie, a surgeon and naturalist like Botta, accompanied Beechey and made extensive natural history collections. Beechey's account has only a limited discussion of California's natural history (Grinnell 1924), the reporting of which was left to Vigors (1839).

The natural history collections made on the early voyages were often poorly labeled. Place descriptions were sometimes vague, listing the collection location as 'California,' which included both upper and lower California. Some place names were difficult to interpret for the specialists in European museums, who often ascribed specimens to the wrong location. In particular, many Mexican specimens were erroneously ascribed to California, as described in the appendices in Grinnell and Miller (1944). The most extreme example, perhaps, is the description of the Red-shafted Flicker by the German zoologist Johann Gmelin (Terres 1980). The specimen he examined was from the Bay of Good Hope in Nootka Sound on Vancouver Island, Canada. Gmelin mistook this as the Cape of Good Hope in Africa and described the species as *cafer*, that is, from the land of the Kaffirs in South Africa. Today, the Red-shafted Flicker is only a subspecies of the Northern Flicker, but its scientific name still indicates that it comes from the land of the Kaffirs.

Early Naturalists in California

A number of naturalists came to California in the early 1800s with the purpose of collecting plants and animals. The Scotsman David Douglas (1798-1834), a medical doctor, traveled widely in the Americas and collected plants in California from 1830 to 1832 (Palmer 1928). He described a number of species of quail from North America, but is best known for his discovery of the Douglas fir.

Thomas Nuttall (1786-1859) was born in England and came to the United States in 1808 where he became a professor of natural history at Harvard. He crossed the continent with John K. Townsend in 1834 and visited Oregon and California. Near Santa Barbara he collected the first specimens of the Yellow-billed Magpie and Tricolored Blackbird, which were later described by John J. Audubon.

William Gambel (*circa* 1819-1849) was a protégé of Thomas Nuttall and came overland to California in 1841 (Palmer 1928). He was the first ornithologist to spend an extensive period of time in the state and described a number of new species including the Elegant Tern, Nuttall's Woodpecker, Plain Titmouse, Wren-tit, Cassin's Auklet, and Mountain Chickadee. He died of typhoid fever on the Feather River while trying to make a winter crossing of the Sierra Nevada.

The Pacific Railroad Reports

In the 1840s, the selection of the route for a transcontinental railroad was highly politicized (Coan 1982). The northern and southern states both wanted the railroad to start from their own spheres of influence and not support their rivals. Congress passed the Pacific Railroad Survey legislation in early 1853 to obtain information that could be used to determine a

practicable route. The primary emphasis of the surveys was to obtain topographical data that could be used to show the relative merits of the various routes. For the most part, the surveys were performed by the Army Corps of Engineers. However, the legislation provided for the collection of other kinds of information, including specimens of plants and animals, ethnography, and meteorology. Medical doctors with scientific interests were attached to the various survey parties for these purposes.

The initial railroad surveys were carried out in four geographic areas (Coan 1982). The northernmost survey covered areas between the 47th and 49th parallels, from St. Paul, Minnesota to the Washington Territory. The second followed a line between the 38th and 39th parallels from the headwaters of the Arkansas River to the Great Salt Lake. The third followed a more southerly route along the 35th parallel and the fourth explored the Central Valley of California to find passes eastward over the Sierra Nevada.

The results of the railroad surveys were published between 1855 and 1860 in 12 volumes entitled *Reports of Explorations and Surveys to Ascertain the Most Practicable and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean* (Fischer 2001). Zoological accounts are found in a number of volumes and in some cases include sections written by the physician-naturalists that accompanied the survey parties, such as J. S. Newberry who was in northern California and Oregon (Newberry 1857), Adolphus L. Heermann who surveyed in southern and central California (Heermann 1859), C. B. R. Kennerly who participated in the surveys near the 35th parallel, and James G. Cooper and George Suckley who worked on the northern route (Cooper and Suckley 1860). Accounts were also prepared by museum scientists in the east, who described the collections that had been made by the field parties (Baird et al. 1858). The 12 volumes of the Pacific Railroad reports were the first detailed descriptions of the geography and zoology of the American West since the expedition of Lewis and Clark. However, the railroad reports covered a much greater area and represent a remarkable documentation of the zoology of the western frontier.

Early Ornithologists in the San Francisco Bay Area

James G. Cooper (1830–1902) was born in New York City, the son of William Cooper, for whom Charles L. Bonaparte named the Cooper's Hawk. His father was a founder of the New York Lyceum of Natural History and James was exposed to many of the famous zoologists and naturalists of the day. He obtained his medical degree in 1851 and practiced in New York City for the next two years. Spencer F. Baird, who was the Assistant Secretary of the Smithsonian Institution at that time, was able to help Cooper obtain an assignment to the Pacific railroad survey parties working in the Washington Territory. He joined a survey party there under Captain George McClellan and worked as a surgeon with the party until April 1854. He was responsible not only for the party's health, but also for natural history collections and meteorological observations.

Cooper was a dedicated naturalist, but did not care much for his nominal field of medicine (Coan 1982). After leaving the railroad survey party he continued to collect specimens on the Washington coast, sometimes supporting his activities with a bit of medical practice. Baird was

also able to provide some limited support. In 1855 he returned to the East via San Francisco and the Panama Isthmus. It was during this journey that he first visited Santa Clara County, staying from 19 Oct to 1 Dec 1855 in Mountain View (Coan 1982). From Mountain View he traveled in the nearby Santa Cruz Mountains and parts of the Santa Clara Valley. Based on specimens in the United States National Museum, he collected such typical birds as Common Poorwill (USNM #A05912), Acorn Woodpecker (USNM #A05957), Nuttall's Woodpecker (USNM #A05964), Bushtit (USNM #A05922), and House Finch (USNM #A04487). Less expected, he shot a 'Harlan's' Red-tailed Hawk in Mountain View on 11 Nov 1855 (USNM #A08525), the first time this form had been collected.

Back in the East, Cooper worked on his portion of the Pacific Railroad Reports (Cooper and Suckley 1860), spending much of his time in Washington, D.C. He returned to the West in 1860, joining the Blake Expedition that went from St. Louis up the Missouri River and overland into Idaho and Washington. He again traveled south to San Francisco and, intermittently worked as a contract surgeon for the U.S. Army as well as for Josiah Whitney, head of the California Geological Survey. In between these expeditions he practiced medicine to meet his expenses. Much of his collecting work was based on promises of payment that were never fulfilled (Coan 1982).

While working for Whitney and the California Geological Survey, Cooper had the opportunity to gather together much of his material on birds in the west, and with the help of Baird, this effort was published as "Ornithology, Volume I, Land Birds" by the California Geological Survey (Cooper 1870). This book was the first significant work on California ornithology.

Cooper married in 1866 and continued to struggle to find a balance between his passion for natural history and the necessity of supporting his family through his practice of medicine. He attempted to set up a practice in a number of cities, including San Francisco, Santa Cruz, San Mateo, and Oakland. Often in poor health, it seemed that places where he could establish a good practice, such as San Francisco, were bad for his health, whereas a city like Santa Cruz, while good for his health, the medical work was not sufficient to support his family. In 1875, he settled in Hayward (then known as Haywards) and remained there for the rest of his life.

In his letters to Baird, Cooper often seemed despondent, wanting nothing more than to work on science, but instead having to practice medicine. In a letter written in 1870 (Coan 1982), he wrote

> "In this country, like most others, the pursuit of science as a private business is a losing game. . . Almost all the 'enlightened' people of this city know me as a 'naturalist,' which is the title of all the taxidermists also, and . . . they avoid employing me professionally as they would a bird-stuffer. The consequence is that . . . my patients are among the poor and ignorant, who don't know much about me and don't pay either. . . My time is much taken up now in running about trying to raise money enough to pay expenses. . . As I am not worse off than most other naturalists, I ought not to complain, I suppose, . . . Hoping you may not get down to my condition (the best of wishes), I remain, . . ."

But in other letters, he expresses the simple joy of being out in the field. In a letter to his sister Fan written in 1863 (Coan 1982), Cooper wrote

> "I have been two weeks visiting my old hunting grounds at Mountain View, and hunting along the Coast Range west of there along Arroyo Quito [Saratoga Creek]. There I found the most lovely scenery I have yet met with in California or anywhere else, and am only sorry that I could not afford to stay longer. It is not as magnificent as that of Yosemite Valley. . . but the details are more beautiful. I should think—groves of tropical looking *Arbutus* with orange-like leaves and red berries, mingled with firs eight feet in diameter and 300 high, redwoods like gigantic yew trees, and many beautiful flowers beneath—altogether make it a most charming picture. Birds were swarming, rich in song and plumage."

Already in 1863 the lumber mills were starting to move up Saratoga Creek. The massive Douglas firs and coast redwoods of that primeval forest that so entranced Cooper were soon gone.

We are remote from James Cooper and the world he lived in. We read the words from his books and papers and try to imagine an earlier time, but only with difficulty. Shortly before Cooper's death, W. Otto Emerson wrote of him (Emerson 1899)

> ". . .in memory he is again giving his first field lesson, taking the Rock Wren for an object study as it sits on a huge blue-gray rock singing to us its song of welcome. Here he talked to us of Nature in all of her varied forms; told of the birds, their songs, their flights, plumage and their homelife; of their loves and hates, joys and sorrows! All of this was told in common language, without scientific nomenclature, and thus we saw Nature and her works through the eyes of one who loved and had long questioned and learned many of her secrets, until the setting sun found us yet worshipping in Nature's temple, and the student gaining his first glimpse into that grand arcana. This was our teacher's manner; thus he gathered around him the young ornithologists and in the field taught them the lessons of bird-life"

The only significant tie of Thomas Bridges (1828-1865) to Santa Clara County ornithology is his collection of 33 species of birds in the "Valley of San José," probably made in 1856 or 1857 (Sclater 1857). The geologist William H. Brewer met Bridges near Volcano in August 1863 (Brewer 1966) and described him as

> "an old rambler and botanical collector, well known to all botanists. For twenty years he rambled in South America and explored the Andes for plants for the gardens and herbariums of Europe. He first sent seeds of the great Amazon water lily to Europe. He spent three months on the island of Juan Fernandez, came to California, and has been supplying the gardens of England and Scotland with seeds, and the herbariums with plants, from this coast, for the last few years."

In a footnote to Brewer's account, Francis P. Farquhar, states "Thomas Bridges came to California in 1856, and for the next nine years collected on the coast, much of the time in this State, his collections going mostly to Europe."

A few more details on the life of Thomas Bridges are from the zoologist Thomas S. Palmer, who has been the source of much historical information regarding the early naturalists (Palmer 1917, Palmer 1928). In a talk to the Audubon Association of the Pacific in August 1927 he gave a short history of ornithology in California (Werner 1927). He stated that Thomas Bridges lived in San Jose while making his collections in the Santa Clara Valley, and refers to him as the "first resident ornithologist of the State." He also noted that Bridges was buried in an unmarked grave in Laurel Hill Cemetery in San Francisco. Subsequently, the Association helped to raise funds for a stone that was placed on Bridges's grave on 21 Oct 1927 (Anonymous 1927).

Curiously, at the same time that Cooper and Bridges were making their first visits to the Santa Clara Valley, a self-taught naturalist was living in San Jose and developing his painting skills. Andrew Jackson Grayson (1818-1869) was born in Louisiana and in 1846 traveled

overland to California with his wife and young son (Stone 1986). Grayson worked at a number of businesses in the early 1850s, encountering both failure and success. In 1853, his wife Frances told him of a recent purchase of Audubon's *Birds of America* by the Mercantile Library Association in San Francisco. Audubon's magnificent book had a transformative effect on Grayson's life. Long interested in natural history, Grayson determined that he would publish a book on all the birds of the Pacific slope that were not in the *Birds of America*. He would both paint these missing species and provide an account of their life histories. The Graysons decided to move to San Jose where he could study birds and develop his skills as an artist. They bought a four-acre site at Fourth and Julian streets where they built a house and started a garden. They remained at the Fourth and Julian site, named "Bird's Nest Cottage," until 1857.

Only one of Grayson's paintings is known from this period, a partially leucistic Green-winged Teal that was shot in the Santa Clara Valley in 1853. During the time he lived in San Jose, he sent drawings and accounts of birds to James Mason Hutchings, the publisher of *Hutchings' California Magazine*, and 18 of these appeared in the magazine in 1857 and 1858 (Stone 1986). His observations of Greater Roadrunners, both in the wild and captivity were eventually published (Bryant 1891, Stone 1986). Otherwise, little is known of his observations during the years he lived in the Santa Clara Valley.

In 1856 Grayson wrote to the Smithsonian Institution, offering specimens for the new museum, and also looking for assistance in identifying birds that he collected. Spencer F. Baird, the Assistant Secretary of the Smithsonian, entered a long correspondence with Grayson and encouraged him in his collections. Although Baird was enthusiastic about the writing of biographies of western species, of which almost nothing was known, he was less supportive of Grayson's attempt to publish a book of paintings to finish Audubon's work. In a letter dated 15 Dec 1856 (Stone 1986), he wrote

> "I like very much your idea of writing up the birds of the Pacific Slope, and cheerfully promise all the aid in my power. It is of the greatest importance to have biographies of our birds by persons intimately acquainted with their habits. I cannot tell what support such an undertaking would meet with in California. It would doubtless obtain some subscribers here, and abroad. I will with the greatest pleasure furnish the nomenclature and scientific history of all specimens you may forward to us. Even though you could not afford to publish colored figures of all the species, a contribution to science of little less importance would be this series of biographies, by which you could readily become known in the scientific worlds as the Audubon of the West; the true merit of this man was not in his drawings, but in his masterly delineations of the habits and peculiarities—the life of American birds. Such articles there will be no difficulty in having published; the Institution will see it done, so as to give you the greatest possible credit."

The Grayson's moved to Tehuantepec, Mexico in 1857 and returned to San Francisco the next year. In November 1859 they moved permanently to Mazatán, Mexico. He painted Mexican birds, made additional collecting trips for the Smithsonian, and continued to correspond with Baird. He also strove to have his book published but without success. In 1869, just short of his 51st birthday, he died of yellow fever. Francis Grayson moved back to California and continued to seek a publisher for her husband's work. In 1879 she finally abandoned these efforts and donated the 163 paintings and species accounts to the University of California. Here, this body of work remained until the late 1940s when Lois C. Stone and Frank Pitelka rediscovered the paintings and struggled to find a publisher who could finally complete this work.

In 1986, 117 years after his death, 154 of Grayson's paintings (seven had been lost), the species descriptions, and a biography by Lois C. Stone were published in *Andrew Jackson Grayson, Birds of the Pacific Slope* (Stone 1986).

Early Publications and the American Ornithologists' Union

The first epoch of ornithological discovery in California was by explorers and naturalists who made collections that they sent to museums in Europe or the eastern United States. Cooper, Bridges, and Grayson were in many respects part of this first epoch—Cooper and Grayson often collecting for the Smithsonian and Bridges sending his specimens to Europe.

The second epoch was defined by the native naturalist, someone who lived locally and communicated with fellow workers, sometimes through publications of local museums and academies or by letters. Where the first generation of naturalists were tied directly to the eastern or foreign museums, the new generation lived in California and they studied natural history near where they lived or within a reasonable traveling distance.

Academies, clubs, and publications were central to the growth of ornithology and natural history in California. Tables 1 and 2, based on Grinnell's bibliography (Grinnell 1909), list publications that included information on California ornithology. It was these publications that were largely responsible for the rapid growth of information in the 1870s that is shown in Fig. 1. The publications in the tables below are grouped into the permanent publications that have lasted

Table 1. Permanent publications in early ornithology.

JOURNAL	DATES
American Naturalist	1868–present
Bulletin of the Nuttall Ornithological Club[a]	1876–1883
Auk	1884–present
Wilson Bulletin	1889–present
Condor[b]	1899–present
Bird-Lore/Audubon[c]	1899–present

[a] Predecessor to the *Auk*.
[b] Vol. 1 named *Bull. Cooper Ornithological Club*.
[c] Renamed *Audubon* in 1941.

to the present time and transitory publications. The permanent publications are mostly affiliated with professional organizations, such as the American Ornithologists' Union (*Auk*) or conservation organizations, such as the National Audubon Society (*Audubon*). Most of the transitory publications were published by individuals who hoped to sustain publication with a subscription list, although some of the longer lasting oology magazines were also affiliated with dealers in natural history curios and birds eggs.

One of the publications in Table 1 was the *Bulletin of the Nuttall Ornithological Club*. Then and now, the Nuttall Ornithological Club was based at the Museum of Comparative Zoology at Harvard University. In the late 1870s the *Bulletin* was the de facto publication for

Table 2. Transitory publications in early ornithology.

JOURNAL	DATES
Forest and Stream	1873–1930
Oologist/Ornithologist and Oologist[a]	1875–1893
Young Oologist/Oologist[b]	1884–1941
Ridgway Ornithological Club Bulletin	1886–?
Sunny South Oologist	1886
Bay State Oologist	1888
Zoe	1890–1908
Bittern	1890–1891
California Traveller and Naturalist	1892–1893?
Nidiologist/Nidologist[c]	1893–1897
American Magazine of Natural Science	1893-1894
Museum	1894-1900
Oregon Naturalist	1894–1898
Naturalist	1894
Western American Scientist	1885?–1902?
Avifauna	1895–1897
Osprey	1896–1902
Three Kingdoms	1898
Petrel	1901
Warbler	1905–1907

[a]Renamed *Ornithologist & Oologist* in 1881.
[b]Renamed *Oologist* in 1887.
[c]Renamed *Nidologist* in 1896.

ornithology. With the formation of the American Ornithologists' Union in 1883, the *Bulletin* became the *Auk*, the quarterly of the new national association of ornithologists.

One of the founding members of the new American Ornithologists' Union (AOU) was Lyman Belding (1829–1917) of Stockton, California. Belding came to California in 1856 and moved to Marysville in 1862 (Fisher 1918). He retired from business in 1875, which gave him more time to engage in fishing and hunting, which were his favorite activities. In the spring of 1876 he obtained a copy of James G. Cooper's *Ornithology, Volume I, Land Birds* and this was as transformative for him as Audubon's *Birds of America* had been for Grayson. Whereas before, as an active outdoorsman, he believed he knew all of the birds in central California, he could now see that there were many that he had never even heard of. He became an avid collector of birds and eggs and supplied these to the Smithsonian. By 1878 he had published his first paper in the *Bulletin of the Nuttall Ornithological Club*. He extended his collecting work to Baja California and southern California and worked with the Smithsonian in the description of several new species or subspecies of birds.

An initial project of the new AOU was to set up a system of record keeping where information on bird distribution or migration, obtained by AOU members or like-minded individuals, could be gathered and disseminated. In many respects this effort was similar to the gathering of information that is presently published in the quarterly *North American Birds*.

Belding agreed to take on the task of gathering this information for California, Oregon, Washington, and British Columbia. The details he assembled were published as the *Land Birds of the Pacific District* (Belding 1890).

Belding continued to work actively through the 1890s in the Central Valley and the Sierra Nevada. He was a Life Member of the California Academy of Sciences and assisted Walter E. Bryant (1861–1905) in building the ornithological collections at the academy where Bryant was curator from 1886 to 1896. The Cooper Ornithological Club made Belding an Honorary Member of the club in 1896. Fisher (1940) describes with delight one of Belding's few visits to the San Francisco Bay area, where he stopped by to see Chester Barlow:

> "On the occasion of one of our visits to Barlow's, Mr. Lyman Belding, the veteran ornithologist, came from his home in Stockton and regaled us with accounts of early days in California, and of his hunting and fishing trips in the Sierras. He was a shy, sensitive, lovable man, patterned for a poet, but fated for rough usage by life. . ."

The Era of Oology

The eastern oologist F. A. Lucas, in a letter to the editor of the *Ornithologist and Oologist* (Lucas 1885) describe the typical case of young boys of that era who collected eggs:

> "In my own class at school were at least eight boys who had pretty good sized collections of eggs. Not one of these boys ever developed into a naturalist, and the eggs—representing many hundreds of birds—eventually 'went to smash.' "

The era of oology or the study of eggs ran from about 1880 to 1940 (Kiff 1991). For young boys, the collecting of eggs was a rite of passage, although many of these youthful collections, as noted by Lucas, wound up smashed to pieces and were thrown out with the trash. But some of the young men maintained their interest and were serious about collecting as many sets of eggs of as many species as they could. With the popularity of egg collecting there were also opportunities to trade or sell eggs, particularly of less common species or those that had a limited nesting range. Dealers printed and sent out catalogs and a number of publications were started that supported the interests of the egg collectors as well as the dealers. As shown in Table 2, many of these publications had a short lifetime. Nationally, the most important were the *Oologist* and the *Ornithologist & Oologist*, and both of these journals had occasional articles written by local ornithologists.

The ornithologists who collected egg sets for museums were careful to document each egg set with a "data slip" that recorded the date, the specific location, the condition of the eggs (fresh or partly incubated), details of the nest site, and the collector. Serious amateur oologists also kept careful records and the egg sets and data slips that have been retained in museum collections provide a wealth of information about birds breeding in California more than a century ago, as well as some information on the ornithologists who made these collections.

With the expansion of ornithological publications and the popularity of egg collecting in the 1880s, records of local ornithologists started to appear in publications. Most notable from this period is probably William Otto Emerson (1856-1940), who came by wagon train from Illinois in 1870 and eventually settled near Hayward, Alameda County. Emerson became an

artist after reaching California, but for ornithologists his extensive writing and large collections of specimens and eggs are of most interest. Grinnell (1909) lists 63 papers or notes written by Emerson from 1881 to 1907. Most of these papers deal with Alameda County and his observations near his farm, but he also reported from San Francisco, the Farallons, Santa Cruz, Monterey Bay, and further afield. He collected the first California specimens of the American Redstart at Hayward on 20 Jun 1881; a Black-throated Blue Warbler (with Walter E. Bryant) on the Farallon Islands on 17 Nov 1886; and a Black-and-White Warbler, also on the Farallons, on 28 May 1887 (Grinnell and Wythe 1927). A White-throated Sparrow collected at Hayward on 20 Nov 1889 is the second record for California (Emerson 1890). As discussed below, he was active in the formation of the Cooper Ornithological Club.

Also active in Alameda County, was Henry Reed Taylor of Alameda who was an egg collector who went on in the 1890s to publish the *Nidiologist*. Taylor made many collecting trips to southern Santa Clara County, particularly in the vicinity of Sargent, at that time a small town on the railroad. Most notable of his collections was a set of Swainson's Hawk's eggs taken in "Ferguson's Swamp" on 30 Apr 1889 (WFVZ #98178), one of only two nesting records from Santa Clara County. Ferguson's Swamp was likely the name used by Taylor for a swamp on Llagas Creek near land owned by the Ferguson brothers. As prolific as Emerson, Taylor wrote 68 articles or notes on California ornithology between 1884 and 1907 (Grinnell 1909).

Active egg collectors in Santa Clara County in the 1880s include A. L. Parkhurst, A. D. Butterfield, Will A. Burres, and F. L. Corless. A. L. Parkhurst lived in San Jose and made collections and observations from 1882 to 1885. He was one of Belding's correspondents in the preparation of *Land Birds of the Pacific District* (1890) and he also wrote a few short articles for the *Ornithologist and Oologist* (Parkhurst 1883, Parkhurst 1884, Parkhurst 1885). He collected an egg set of Yellow-breasted Chat in the Santa Clara Valley on 6 Jun 1882, which is now in the U.S. National Museum (USNM #B26910). His observation of a flock of eight Vaux's Swifts near San Jose on 29 Apr 1883 (Parkhurst 1883) is the earliest mention of this species in the county. A. D. Butterfield of San Jose wrote an article for the *Ornithologist and Oologist* (Butterfield 1883) about collecting Marsh Wren eggs at San Felipe Lake and his name was sometimes listed in advertisements in the "O & O" for egg exchanges, but otherwise nothing is known of him. Eggs collected by F. L (or F. H.) Corless from Los Gatos and Saratoga between 1884 and 1890 are in both the U. S. National Museum and the Western Foundation of Vertebrate Zoology, but as with Butterfield, nothing is known of Corless. Also a mystery is Will A. Burres, who collected eggs in the vicinity of Sargent in 1888 and 1889. Particularly notable, he collected two sets of four eggs of the Great Egret (CAS #6697 and #6699) near Sargent on 4 Apr 1889. One data slip notes that the nest was in a cottonwood 60 feet from the ground. This is the only nest record known from the San Francisco Bay area prior to the era of plume hunting and the near extirpation of this species.

Oologists, the Cooper Ornithological Club, and Stanford University

As the number of people interested in ornithology in the San Francisco Bay area increased in the late 1880s there were efforts to organize clubs where interested amateurs could meet and

together advance the study of ornithology on the Pacific coast. An early attempt was the California Ornithological Club, organized at the California Academy of Science in early 1889 ([Webster] 1889, Anonymous 1889). Walter E. Bryant, then curator of birds at the Academy, was the first president, Henry R. Taylor was the vice-president, and W. Otto Emerson was the secretary and treasurer. In 1890, Bryant started the journal *Zoe* to provide a less formal media for scientific reports from the California Academy of Sciences and other investigators (the *Pacific Discovery* of its day). In the first volume, it is mentioned that the California Ornithological Club was being reorganized (Anonymous 1890) and Henry Taylor was now president, F. O. Johnson was vice-president, and Charles A. Keeler was secretary and treasurer.

At the same time, in the fall of 1890, four students at the University of the Pacific in San Jose, each of them eager egg collectors, formed the Cooper Club for the study of birds, their nests, and eggs (Evermann 1925, Jennings 1997). These first four members of the Cooper Club included John Van Denburgh and Wilfred H. Osgood, both to achieve later prominence in their chosen fields in zoology. When the Leland Stanford Junior University opened in 1891, Van Denburgh, Osgood, and the others transferred to the new university, in part because of the reputation of its president, the prominent ichthyologist Dr. David Starr Jordan (1851-1931). With their transfer and new studies, the club was apparently abandoned.

On 22 Jun 1893, the Cooper Ornithological Club was organized in San Jose by Osgood, Harry R. Painton, Chester Barlow, and Fred A. Schneider, Jr. (Barlow 1893a). Osgood (in Grinnell 1938) has written of this early period:

> "Up to that time our small numbers and our consciousness that we were only juvenile egg-collectors gave us a feeling of uncertainty and modesty. We all knew what we wanted to do, but we didn't know how to do it."

Richard C. McGregor entered Stanford in 1893 and quickly became a friend of Osgood. Osgood goes on to say:

> "This was at the time the Cooper Ornithological Club was in its infancy, and within a week McGregor was staying the night with me at my home in San José to attend his first meeting. He was slightly older than the rest of us and much more experienced, so he was looked upon as a great acquisition. Largely through him, Walter Bryant, A. W. Anthony, and other still older men became interested in the Club and we began to feel established and confident. . . McGregor, then, at just the right time, supplied a good deal which none of the rest of us had. Already he was an accomplished bird-skinner and had a considerable private collection of skins, including many species from Colorado and Florida which were unfamiliar to us. Both he and Bryant gave us instruction in making skins and, thereafter, a number of us definitely graduated from the egg-collecting stage of our careers."

Henry R. Taylor had just started publication of the *Nidiologist*, which was an oology magazine focused on the west coast, and he agreed that a section of the *Nidiologist* would report the club activities (Barlow 1893b). The fall of 1893 saw the formation of the Southern California Natural History Society in the Los Angeles area and this soon merged to become the Southern Division of the Cooper Ornithological Club (Cogswell 1986, von Bloeker 1993). Membership in the new club increased rapidly with 25 in the first year, 67 by 1896, and 107 by 1900 (Kaeding 1908, [Barlow] 1900a).

The young men that came to Stanford in the 1890s, most of whom had started out as egg collectors, were later referred to by Joseph Grinnell as the "birding boys" (Grinnell 1937). These included not only Van Denburgh, Osgood, and McGregor, but also such students as William W. Price, Walter K. Fisher, and Theodore J. Hoover.

Of the student ornithologists in the early 1890s, Van Denburgh, Osgood, and Fisher are best known for their substantial accomplishments in other areas of zoology. John Van Denburgh (1872-1924) was born in San Francisco in 1872 (Jennings 1997). His father, a dentist with a practice in San Francisco, bought a 20-acre farm in Los Gatos in 1880. There Van Denburgh was free to ramble and his first interests were birds and their eggs. He started keeping detailed notes in 1886 at the age of 13 (Van Denburgh 1899). In 1890 he entered the University of the Pacific in San Jose and then transferred to Stanford the next year. He obtained his A.B. from Stanford with the first graduating class in 1894 and then an M.A. in 1895. As an undergraduate Van Denburgh was drawn to herpetology and this became his consuming passion. As he was finishing his M.A., the California Academy of Sciences formed a Department of Herpetology and Van Denburgh was appointed curator. He continued his graduate education and obtained a Ph.D. in Zoology from Stanford in 1897, the first Ph.D. granted by the department.

Van Denburgh's chief desire was to continue his scholarly work on reptiles of western North America, but he recognized that he could not afford to live on the small stipend available at the Academy. He entered Johns Hopkins University in the fall of 1898 and graduated with an M.D. in 1900. It was during this period that he published two regional papers on California birds (Van Denburgh 1898, Van Denburgh 1899). The latter paper, *Notes on some birds of Santa Clara County, California*, was meant to be a comprehensive paper of the land birds of Santa Clara County. Although most of the information was limited to Van Denburgh's observations at either Los Gatos where he grew up, or Palo Alto during his Stanford years, the paper nonetheless provides useful details of the 110 species discussed. Barlow (1900b) added 32 more species, based on his own observations as well as those of other members of the Cooper Club. These two papers provide a baseline of what was known of the land birds of Santa Clara County at the end of the 19th century.

Van Denburgh established a medical practice in San Francisco (Jennings 1997). He spent his mornings curating the herpetology collection at the California Academy of Sciences and his afternoons with his medical practice. He aggressively worked to build up the Academy's collections, particularly following the losses after the 1906 earthquake and fire. Although he retained his early interest in birds, he did no scientific work in this area as Leverett M. Loomis, the Director of the Academy, was also the curator of ornithology and was jealous of his prerogatives. Eventually, Loomis was replaced by Barton W. Evermann as Director and Van Denburgh again included birds in his field of study.

Van Denburgh was an intensely private individual who appears to have repressed his feelings (Jennings 1997). By 1924, he must have been despondent and depressed, but his friends or acquaintances were not aware of the depth of these problems. He left for Hawaii for a vacation in October and all of his colleagues were glad to see him take a well-earned rest. In

Honolulu, on the morning of 24 October, John Van Denburgh slit his carotid arteries with a razor and died. In biographical notes, Jennings (1997) writes

> "in the first quarter of the 20th century, John Van Denburgh not only helped build the third largest museum collection of amphibians and reptiles in the New World, but he also found enough spare time away from his medical practice to become an accomplished nature photographer, an authority on reptile poison, and expert on the herpetofauna of the Galápagos Islands and the Far East, as well as a skilled ornithologist and oologist."

Above all, his monumental work on the amphibians and reptiles of western North America (Van Denburgh 1922) remains his legacy.

Wilfred H. Osgood (1875-1947) was a founder of the Cooper Ornithological Club and was its first president. He was born in Rochester, New Hampshire in 1875. In the 1880s, his family moved to a fruit farm in Santa Clara (Schmidt 1950). He entered the University of the Pacific in 1890 with Van Denburgh and both transferred to Stanford in 1891. Based on articles in the *Oologist* (Osgood 1892a, Osgood 1892b) and egg collection data slips, he was active as a collector in the Santa Clara Valley from 1892 to 1894. In 1897, while still an undergraduate at Stanford, he joined the U.S. Bureau of Economic Ornithology and Mammalogy, which later became the U.S. Biological Survey. He made significant collecting expeditions in northern California and off the coast of Alaska while working for the Survey from 1897 to 1909 and at this time made the first of his lasting contributions to mammalogy (Schmidt 1950). In 1899 he was awarded an A.B. from Stanford *in absentia*. In 1909, Osgood left the Survey and joined Chicago's Field Museum of Natural History. He was involved with numerous collecting trips to South America and in 1919 obtained a Ph.D. from the University of Chicago based on his studies of shrew opossums in South America (Schmidt 1950). In 1921, Osgood became the Curator of Zoology at the Field Museum, a job he held until his retirement in 1940.

Richard C. McGregor (1871-1936) entered Stanford in the 1893-1894 academic year and joined the new Cooper Ornithological Club almost immediately. During his early years at Stanford he had particularly close friendships with Van Denburgh, Osgood, and Hoover (Grinnell 1938). He graduated in 1898, not in zoology, but in philosophy, possibly because of friction with the zoological faculty (Grinnell 1938). Prior to going to Stanford, while living in Santa Cruz, McGregor had, with E. H. Fiske, prepared a list of the birds of Santa Cruz County for *The Natural History of Santa Cruz County*, published about 1892. Following his graduation, he put together more detailed information on the land birds of Santa Cruz County and this account was published as the second number in the new *Pacific Coast Avifauna* series of the Cooper Ornithological Club (McGregor 1901). Although McGregor's list deals with Santa Cruz County, many of the comment on birds at the higher elevations of the Santa Cruz Mountains apply to Santa Clara County as well.

In the summers of 1900 and 1901, McGregor was attached to the cutter *Pathfinder* where he was able to do some collecting along the coast of Alaska (McGregor 1902, McGregor 1906). After these trips he went on to the Philippines where he remained for the rest of his life. At first he worked as a collector and eventually was associated with the Philippine Bureau of Science where he was editor of the *Philippine Journal of Science* as well as editor of many department publications. At times he seemed nostalgic, as in a letter to Grinnell in 1907, "I would like to see

a Cactus Wren or a Road-runner. These birds here are mostly so wrong I feel uncomfortable." (Grinnell 1938). However, on being offered a job with the Brooklyn Museum in 1911, he wrote Grinnell, ". . . it would be fine to be near Washington, Philadelphia, etc.; but I am too long wild; I like to get into new places. Think of the unexplored parts of the Philippine Islands, and the ripe, juicy regions near-by! No. U. S. for me. . ." (Grinnell 1938).

Of all the students at Stanford in the 1890s, "Billy" Price was possibly the most interesting. William W. Price (1871-1922) was born in Milwaukee, Wisconsin on 20 Jan 1871 (Fisher 1923). His mother died when he was two, and Billy was raised by relatives, eventually moving to Riverside, California. His father died when he was 14 and soon after Price left for Arizona, where he explored the mountains and deserts in the southeast for a year and a half. He returned to California and completed his secondary education at Oakland High School and then entered Stanford, where he received an A.B. in Economics in 1897 and an M.A. in Zoology in 1899. During many of his Stanford years, Billy organized summer zoological collecting trips to California, Arizona, and Baja California. During his various Arizona expeditions, Price added the Rose-throated Becard to the list of U.S. birds and he also found the first nest of the Olive Warbler. At Stanford, Price is best known for a series of articles titled "Birds of the Campus" that were published in the campus magazine the *Sequoia*. Although in most cases, Price's comments are limited, his systematic accounts provide insight into the birds present near Stanford a century ago.

Walter K. Fisher (1878-1953) was another of Grinnell's "birding boys." He was the son of Albert K. Fisher (1856-1948), who was a founder of the American Ornithologists' Union. The elder Fisher had worked with C. Hart Merriam and was instrumental in the formation of the Biological Survey that eventually became part of the U.S. Fish and Wildlife Service. Walter Fisher grew up in the eastern United States and knew all of the famed ornithologists of the time. In describing his and Grinnell's visits to Barlow's house in Santa Clara, Fisher (1940) wrote:

> "Often the conversation turned to eastern ornithologists whom Barlow and Grinnell had never seen but whom I had fortunately known since early childhood—Robert Ridgway, Leonhard Stejneger, C. Hart Merriam, Joel Asaph Allen, Frank M. Chapman, Edgar A. Mearns, Edward W. Nelson, William Dutcher, H. W. Henshaw, John H. Sage, Witmer Stone, Charles W. Richmond, Frederick A. Lucas, and especially Charles E. Bendire, the patron saint of oologists. I had *seen* Elliott Coues—and even had *heard* him speak at an A. O. U. meeting; I certainly represented glamour to these avid young men."

Fisher obtained his A.B. from Stanford in 1901, his M.A. in 1903, and a Ph.D. in 1906 (Davis 1958). Fisher was an instructor at Stanford between 1907 and 1909, at which time he became an Assistant Professor. With the formation of the Hopkins Marine Station in 1917, Fisher became its first Director, a job he held until his retirement in 1943.

Even as Fisher's interests became focused on marine biology and invertebrate taxonomy, he maintained an interest in ornithology. Between 1900 and 1940 he published 43 papers or notes in the *Condor* and other journals on ornithology (Davis 1958). His first ornithological paper was a list of species found on Mt. St. Helena at the north end of the Napa Valley (Fisher 1900) and his last was a note on Clark's Nutcracker on the Monterey Peninsula (Fisher and Fisher 1923). His memoria for various ornithologists (Fisher 1918, Fisher 1923, Fisher 1940) provide a glimpse into the lives of these early workers in the field. In 1902, following Barlow's

death, he took over the editorship of the *Condor* and continued as editor until 1905, when he was replaced by Grinnell. He was a skilled artist as is seen in the cover design of the *Condor* that was used from 1902 to 1946 and his caricatures of famous ornithologists that were published in the *Condor* in 1901. Locally, Fisher is best known for his list of land birds of the Santa Clara Valley and the Santa Cruz Mountains that was published in Florence M. Bailey's *Handbook of Birds of the Western United States* (Fisher 1902).

Another student at Stanford at the start of the Grinnell era was Theodore J. Hoover (1871-1955), the older brother of Herbert C. Hoover. He entered Stanford in 1897 and joined the Cooper Club in 1898. He roomed in the same boarding house as McGregor and enjoyed collecting birds and preparing specimens (Hoover 1939). A series of Myrtle Warbler specimens collected by him in 1898 and 1899 were used by McGregor to describe a new subspecies named *Dendroica coronata hooveri* in his honor (McGregor 1899). Hoover collected an adult male Yellow-billed Cuckoo with eggs along San Francisquito Creek on 22 Jul 1901. At some point the specimen and the egg set were separated and only the location of the specimen is currently known (CAS #14306). This was the last breeding record of this species in Santa Clara County.

Hoover graduated in 1901 with an A.B. in Geology and soon became involved in mining ventures in various parts of the world. He returned to California in 1913 and took up a teaching position in mining and metallurgy at Stanford. He became the first Dean of Engineering at Stanford in 1925, a position he held until he retired in 1936. Hoover was a lifetime member of the Cooper Ornithological Club, but showed little interest in birds in later years. He donated his collection of warbler specimens to the California Academy of Sciences after the San Francisco earthquake and fire (Hoover 1939). Following his return to Palo Alto, he purchased a large portion of the Waddell Creek basin, an area he had first visited in 1898 with some of his Stanford classmates (Hoover 1939, Reese 1997). He named the property Rancho del Oso and the family often visited the ranch on the weekends. Well after Hoover's death, his children gave the land to the state for the creation of the park that is there today.

The other founders of the Cooper Ornithological Club were local amateurs who had started out as egg collectors, but saw the need for a more broad-based scientific approach to bird study. Foremost of these was Chester Barlow (1874-1902), who was born in San Jose on 9 May 1874. His earliest articles on birds and egg collecting were written in 1892 and over the next ten years he published 73 articles or notes (Grinnell 1909). He worked at the Santa Clara Valley Bank and in his spare time he was able to acquire a large collection of eggs and specimens. Much of this collecting was done in the Santa Clara Valley, but he also made several trips to the Farallon Islands and to the Sierra Nevada. Barlow became ill with tuberculosis in the summer of 1902, but always optimistic, he was certain he would recover (Taylor 1903). He died on 6 Nov 1902 at the age of 28.

Barlow was the Secretary of the Cooper Ornithological Club for its first nine years. Initially, Henry Taylor's new publication, the *Nidiologist,* was used to report on meetings of the club and to discuss business (Taylor 1903). However, when Taylor's magazine failed in 1897, it was necessary for the club to find other means to facilitate communication among the members. Barlow promoted the publishing of a club journal, and over the objections of the 'graybeards,' the

Bulletin of the Cooper Ornithological Club was first published in 1899 with Chester Barlow as editor (Kaeding 1908). The next year, the club renamed their journal the *Condor*, the name that it holds today. Chester Barlow's work as Secretary of the Cooper Ornithological Club and his new job as Editor of the *Condor* were at the center of this new organization in its early years. Yet it was not so much his considerable efforts that held the club together as his spirit and good humor (Taylor 1903). Years later, Fisher (1940) was to write,

> "At this time Chester Barlow was secretary of the club, its editor, and psychological center. He had a positive genius for friendship and we were all greatly devoted to him. His untimely death in 1902 brought to a sudden close the pioneer period of the club. . . We were young, impressionable. I have often wondered what life would have been like if Barlow had lived his normal span. I think Grinnell felt the same way."

Somewhat less is known of the other founding members of the Cooper Ornithological Club: Harry R. Painton and Fred A. Schneider, Jr. Data slips from egg collections show that Harry R Painton was active locally as a collector from 1892 to 1895. Painton graduated from Stanford and then entered medical school there, where he obtained his degree (von Bloeker 1993). Painton became less active in the Cooper Club as he focused on his medical studies and later with an active medical practice. However, on his retirement in 1936, Dr. Painton once again became involved with the Cooper Club, serving as the President of Northern Division in 1940–1941 and President of the Board of Governors from 1941 to 1946. He was made an Honorary Member of the club in 1947 (von Bloeker 1993). Upon his death in 1955, Painton provided an endowment to the Cooper Club. Based on this endowment, the club's Board of Governors established the Harry R. Painton Award, which is granted for the best scientific paper published in *The Condor* in a two-year period (von Bloeker 1993).

As with a number of the oologists, Painton often did not include the locations where he collected eggs, which is much to our loss today in trying to understand the distribution of breeding birds a century ago. Within Santa Clara County he collected a number of unusual egg sets, including Common Moorhen (28 Apr 1894, WFVZ #163759; 28 May 1894, CAS #5560; 28 Jun 1894, CAS #5559 and 5561), Willow Flycatcher (College Park, 28 Jun 1892, WFVZ #17816; 16 Jun 1893, CAS #5597), and Yellow-headed Blackbird (5 Jun 1894, CAS #5606). The Yellow-headed Blackbird egg set is the only one known from the county.

Fred A. Schneider, Jr. wrote articles for both the *Oologist* and the *Nidiologist* during the period he was an active egg collector. His description of a freshwater marsh on flatlands where Reid-Hillview Airport and Lake Cunningham are today is one of the few descriptions of a historic wetland in the Santa Clara Valley and is of particular interest (Schneider 1893). Egg set data slips indicate he collected locally from 1890 to 1893. It appears that Schneider entered Stanford University about the same time as Van Denburgh and Osgood. A brief notice of his marriage in 1899 indicates that he had become less active as an ornithologist, "Mr. Schneider was formerly among the most active of Californian ornithologists, but for several years past a course at Stanford University has precluded active work in ornithology" (Anonymous 1899). Like Painton, he collected a number of unusual eggs sets in Santa Clara County including those of Sora (1 May 1892, CAS #10729) and Willow Flycatcher (9 Jun 1890, San Jose, CAS #4842).

Although ornithology was not their primary field, two of the zoology faculty in the early days at Stanford University, John O. Snyder and Harold H. Heath, had broad interests that included birds. John Otterbein Snyder (1867-1943) came to Stanford in 1892 from Indiana University because of David Starr Jordan, Stanford's new President, and Charles H. Gilbert, who was the chairman of the zoology department (Jennings 1997). Snyder was a classmate of Van Denburgh's and just as herpetology had taken hold of Van Denburgh, ichthyology became Snyder's course of study. He also curated the herpetology collection at Stanford after Van Denburgh graduated. He obtained an M.A. from Stanford in 1899 and was hired as an instructor in the department, eventually becoming a full professor. He became head of the department after Gilbert's retirement in 1925 and he in turn retired from Stanford in 1938 (Brittain 1997, Jennings 1997). Data slips from various egg collections show that Snyder was active as a collector in the Stanford area from 1893 to 1924. When the Santa Clara Valley Audubon Society was formed in 1925, Snyder was on the organization's first Executive Committee, i.e., the present Board of Directors (Turner 1962).

Harold Heath (1868-1951) was a professor at Stanford in the late 1890s with a focus on invertebrate zoology (Fisher 1940). As with Snyder, he also maintained an interested in ornithology and collected eggs in the vicinity of Stanford and sometimes nearby in the Diablo Range from 1899 to 1921. Notable is a set of Sharp-shinned Hawk eggs he found near Stanford on 22 Apr 1889 (MVZ #2699).

Many of the local ornithologists at the end of the 19th century started out by collecting eggs and skins, but as they grew older they moved into other aspects of zoology, such as Van Denburgh, Osgood, and Fisher, or sold their collections and went into other lines of work. In this respect, Rollo H. Beck (1870-1850) was unique in that he started out by collecting birds and eggs to satisfy his own curiosity, and then went on to become a professional collector, working for a series of museums (Murphy 1936). Beck was born in Los Gatos on 26 Aug 1870 and the family moved across the valley to Berryessa when he was six. A neighbor, Frank H. Holmes, had his own extensive collection of bird specimens and he taught Beck how to prepare a specimen and how to use the Coues' "key" to identify birds that they collected on their excursions in the field. Although Beck did not graduate from the eighth grade, he appears to have been an apt pupil of Frank Holmes as there is a specimen at the Smithsonian of an adult female Common Nighthawk that Beck collected at Berryessa on 30 Jun 1885, a few weeks shy of his 15th birthday (USNM #125326). This is one of only a handful of records for this species in Santa Clara County.

Beck collected actively in Santa Clara County through the mid-1890s, mostly in the vicinity of Berryessa, but also in the marshes at Alviso. Beck collected two specimens of Nelson's Sharp-tailed Sparrow at Alviso, the first on 6 May 1891 (USNM #120310) and the second on 21 Jan 1896 (Grinnell 1902). These were the first records for California. Also in Alviso, Beck collected two Black Rails on a high tide on 1 Dec 1891 and on a subsequent high tide, on 29 Feb 1892 he took another Black Rail and a Yellow Rail (Beck 1893). A set of Swainson's Hawk eggs were collected near Berryessa on 21 Apr 1894 and represents one of only two nest records from the county. By this time, Beck had engaged in correspondence with Dr. Robert Ridgway and Captain Charles Bendire at the Smithsonian. In 1894, Beck joined the American Ornithologists' Union and the newly formed Cooper Ornithological Club.

Beck began to travel more extensively in California with trips to the Sierra Nevada in 1894 and 1896. On the later trip he and Wilfred Osgood found the first known eggs and nest of Hermit Warbler and Evening Grosbeak, both within an hour of each other (B[arlow] 1899, Murphy 1936). The next spring he traveled to Santa Barbara and collected in the Channel Islands. Over the next three decades, Beck collected professionally for the California Academy of Sciences, the Museum of Vertebrate Zoology at Berkeley, and the American Museum of Natural History. His collecting trips for the latter institution ranged over much of the coasts of South America and the islands of the Southern Pacific Ocean. Robert Cushman Murphy (1936) of the American Museum of Natural History wrote of Beck:

> [In 1912] "Mr. Beck had not only had an extended experience in collecting petrels in the northern Pacific Ocean, at the Galápagos Islands, and elsewhere, but had established a record for field work among sea birds in general which had placed him in a class by himself. Subsequent activities during the Brewster-Sanford Expedition, a later voyage to Alaska, and, finally, the ten years' campaign of the Whitney South Sea Expeditions, have served only to enhance his effectiveness and his reputation. He stands today as the most successful worker in this branch of ornithology that the world has known."

Beck continued to collect specimens to the end of his life. He was 79 when he collected a Yellow-headed Blackbird in Merced on 27 Apr 1950 (MVZ #121680), the last of the many specimens in the Museum of Vertebrate Zoology for which he is responsible.

There were a number of young men who were active oologists in the 1890s, but little is known of their lives. Some joined the Cooper Ornithological Club and occasionally published short notes or were mentioned in its rosters. But others are known only from the brief notations on egg set data slips.

Ernest Adams was collecting eggs in the South Bay area from 1893 to 1897. He joined the Cooper Ornithological Club in 1896 and, based on their roster, was living in San Jose through 1899 (*Bull. Cooper Ornith. Club 1*:120). By 1903, he had moved to Placer County (*Condor 5*:29). In 1899 and 1900 he accompanied Rollo Beck on a seven-month collecting expedition to the Galapagos Islands. He was the first of the local ornithologists to find an Evening Grosbeak in Santa Clara County (Adams 1899).

Egg set data slips indicate that William L. Atkinson collected in the South Bay from 1893 to 1899. He was a prolific contributor to the *Oologist* and also provided some notable records to the *Bulletin of the Cooper Ornithological Club* concerning nesting by Band-tailed Pigeons (Atkinson 1899a) and Yellow-billed Cuckoos (Atkinson 1899b). He is pictured with other members of the Cooper Ornithological Club in a photograph taken in 1901 (Fisher 1940). As of 1904, his mail address was listed as San Francisco (*Condor 6*:26–28).

All of H. C. Benson's collected egg sets, as far as is known, were obtained near Gilroy in the years from 1892 and 1894, and these are presently in the U.S. National Museum. Otherwise, nothing is known of Benson.

Corydon and George Chamberlin (presumably brothers) were active egg collectors in the early 1890s. Both wrote articles for the *Oologist* and the *Nidiologist* and both joined the nascent Cooper Ornithological Club in 1893. As of 1904, Corydon was located in Shasta and George in San Francisco (*Condor 6*:26–28).

Frank H. Holmes (1865-1924), a resident of Berryessa, has been mentioned previously as a mentor to Rollo Beck. He is shown as a member on the 1899 roster of the Cooper Ornithological Club (*Bull. Cooper Ornithol. Club 1*:120) and in that year published a short note on acquiring the first specimens of Fulvous Whistling-Duck and Long-tailed Duck in Santa Clara County (Holmes 1899). However, by 1904, Holmes was no longer listed as a member of the Cooper Club (*Condor 6*:26–28).

During the 1890s and early 1900s, a number of ornithologists from elsewhere visited the South Bay area. Notable among these were two women: Florence Merriam Bailey and Irene Grosvenor Wheelock. Florence Merriam Bailey (1863–1948) was the sister of C. Hart Merriam, whose name today is most often associated with the Life Zone concept. Prior to her marriage to Vernon Bailey in 1899, she had written a number of books that popularized birding and brought the study of nature to a wide audience. Her book, the "Handbook of Birds of the Western United States" (Bailey 1902) was the first systematic publication on western birds. This book is of interest locally as she included appendices by Walter K. Fisher on land birds occurring in the Santa Clara Valley and the Santa Cruz Mountains, and by William H. Kobbé on water birds in the San Francisco Bay area. Florence Merriam attended Stanford for a brief period in 1894 (Oehser 1952), but there is no indication that she participated in any of the meetings of the newly-formed Cooper Club. The only legacy of her brief stay at Stanford is a minor allusion in her account of the Acorn Woodpecker (Bailey 1902):

> "They always have a great deal to say, whether it be in a canyon of the Guadalupe Mountains in New Mexico, where their chatter interrupts the solemn hooting of the band-tailed pigeon, or on the campus of a California university, where much is to be learned by silent listeners."

Her most significant accomplishment relative to western birds (Fischer 2001) was the publication of the *Birds of New Mexico* (Bailey 1928).

Irene Grosvenor Wheelock (1867-1927), a midwesterner, lived in San Jose and made detailed observations in the Santa Clara Valley from October 1894 to July 1902 (Wheelock 1905). Her book, "Birds of California" (Wheelock 1904), summarized the biology and status of California birds as of the turn of the century. From a local perspective, it contains interesting information on the breeding of Black Rails and Yellow-billed Cuckoos in the South Bay. However, Wheelock did not generally include the locations of her observations and, when she did provide dates, they did not include the year. This lack of documentation of records is frustrating for modern readers. Errors in the text were frustrating for readers at the time of publication as well. Grinnell (*Condor 6*:81) was highly critical of Wheelock's book and suggested that "an occasional resort to the gun would have resulted in a less sweeping generalization in regard to 'regurgitation' than is hurled at the reader in the preface!" Grinnell went on to say that the extent of the errors was such that "detailed criticism seems hardly worth while." However, J. A. Allen, the editor of the *Auk*, was more complimentary in his review (*Auk 21*:299–300 1904). He suggested that her claims regarding regurgitative feeding of young birds provided an area of interesting research. The next year, Allen published a paper in the *Auk* that detailed Wheelock's studies of regurgitative feeding (Wheelock 1905). Although Wheelock was clearly an active field observer in the six years she lived in the Santa Clara Valley, there is no evidence that she was ever involved with the Cooper Ornithological Club or that she interacted with local ornithologists.

Joseph Grinnell and a New Era

Walter Fisher (1940) wrote "On a day early in 1900 a red-cheeked, serious young man walked into the zoological laboratory of Stanford University." Fisher goes on to describe Joseph Grinnell's early years in the Bay area. At this time, Grinnell was already an experienced ornithologist; he had 22 publications to his credit including papers in the *Auk* and the *Condor* (Grinnell 1940). At 17, in 1894, he had joined both the American Ornithologists' Union and the Cooper Ornithological Club. As Fisher describes this period, Grinnell had a major impact on all around him:

> "We all became intensely bird-conscious. When Grinnell arrived at Stanford there were only five local members of the Cooper Club, but by the end of that year there were sixteen, and Palo Alto became a center for meetings, although we met also at Chester Barlow's in Santa Clara, at W. Otto Emerson's, Haywards, and occasionally elsewhere. In January, 1901, Grinnell became president of the club and there is no question that his enthusiasm and talent for leadership did much to promote its rapid growth."

Grinnell, who had graduated from the Throop Polytechnic Institute in Pasadena (now the California Institute of Technology), came to Stanford to obtain a doctorate in zoology. President Jordan and Professor C. H. Gilbert, both ichthyologists of renown, sought to steer the best students to their own field (Fisher 1940), but Grinnell was already fixed in his interests in birds and mammals. Nonetheless, Gilbert was a remarkable teacher and Jordan's continual encouragement were important factors in Grinnell's education. At the time, he and Walter Fisher lived in the same rooming house in Palo Alto,

> "which was then a small spread-eagle town with board sidewalks, unpaved streets very muddy in the winter, dim street lights, and stores with false-fronts. Autos were, of course, unknown; 'carriages met all trains.' Everyone, with the price, rode a bicycle. A sumptuous steak cost two-bits. William McKinley was president of the United States; Victoria Regina occupied the throne of England; and in American Ornithology the Age of Coues had just closed. The Cooper Ornithological Club was seven years old and its 'Bulletin,' entering the second volume, had been named 'The Condor.' " (Fisher 1940)

Grinnell supported himself by teaching biology and botany at Palo Alto High School and occasionally taught courses at Stanford. However, his graduate work ended in the spring of 1903 when he came down with a severe case of typhoid fever (Grinnell 1940). Grinnell returned to his parent's home in Pasadena to convalesce, intent on returning to Stanford the next year. He took a teaching position in biology at the Throop Polytechnic Institute, but did not return to Stanford as planned. It was not until 1912, after writing to Professor Gilbert, that it was suggested that Grinnell submit a thesis based on his field research along the lower Colorado River. Grinnell wrote a thesis on his studies there (Grinnell 1914), took an examination, and obtained his doctorate from Stanford in 1913.

Grinnell married one of his students, Hilda Wood, in 1906 and they continued to live in Pasadena. In the spring of 1907, Annie M. Alexander visited Grinnell, trying to contact one of his students, Joseph Dixon, who she wished to employ as a field assistant for a summer expedition to Alaska (Grinnell 1940). Grinnell was interested in the expedition, recalling his own work in the Kotzebue region of the state in the late 1890s (Grinnell 1900). On her return from Alaska, Miss Alexander invited Grinnell to her home in Berkeley over the Thanksgiving holiday. There she told him of her plans to found a museum of vertebrate zoology at the University of

California. These plans were of extraordinary interest to Grinnell and, when the museum was formed in 1908, he became its first director, a position he held for the rest of his life. The present prestige of this museum owes a great deal to Grinnell's foresight and his discipline in the ensuing years and this may well be his greatest legacy.

Of his many contributions, Grinnell's development of a checklist of the birds found in California is probably best known. The idea of preparing a checklist for the state was one of the earliest objectives of the Cooper Ornithological Club. In 1896, in the *Nidologist* (*4*:8 1896), it was reported that

> "The Northern Division met at San Jose September 5, with a large attendance. It has been decided to take up the preparation of a complete annotated list of the Land and Water Birds of California. The work will be begun by County Committees in each county in which the Club is represented by members. Information concerning the work will be sent out during the month and Messrs. Bryant and McGregor have been appointed a committee to receive the county lists when completed."

Subsequently, the plan for a checklist was outlined in more detail (*Nidologist 4*:19 1896):

> "The Northern Division met October 3rd at the residence of Walter E. Bryant, in Oakland. Mr. Ernest Adams of San Jose was elected to membership. Mr. A. W. Anthony was added to the State Committee that is to conduct the final work upon the State list. The following committees were appointed for the counties of Northern California:–Alameda: W. E. Bryant, W. O. Emerson, D. A. Cohen and H. R. Taylor; Amador: Henry B. Kaeding; Lake: A. W. Johnson; Marin: John W. and Jos. Mailliard; Monterey: Oscar P. Silliman and L. W. Brokaw; San Francisco: T. E. Slevin, Claude Fyfe, E. W. Currier; San Luis Obispo: N. M. Moran; San Joaquin: W. B. Sanson and W. F. Sanson; Santa Clara: C. Barlow, W. H. Osgood, R. H. Beck and H. R. Painton; Santa Cruz; Oscar P. Silliman; Sonoma: Henry W. Carriger."

It is unclear whether any draft checklists were ever developed following these organizational efforts.

Grinnell's plan for a state checklist appears to have been based instead on the Colorado list prepared by W. W. Cooke. In a letter in the *Condor* (Grinnell 1901), Grinnell described his intentions:

> "I have therefore undertaken the compilation of a State List, including an index to all the available literature pertaining strictly to California Birds. This I realize is assuming a very difficult and tedious task, for California is ornithologically, without any doubt, the biggest state in the Union. But even if I cannot bring such a thing to publication myself, I shall keep the bibliography and citations systematically arranged, so that anyone else can take up the work where I leave off."

The bibliography Grinnell prepared was published in volumes of the Pacific Coast Avifauna series (Grinnell 1909, Grinnell 1924, and Grinnell 1939), the last having been finished just before his death (Grinnell 1940). State checklists were published in the same series as well (Grinnell 1901, Grinnell 1915, and Grinnell and Miller 1944), and the same approach was also used for regional checklists (Grinnell and Wythe 1927). Grinnell's final state checklist was only about half complete upon his death and was finished by his colleague Alden H. Miller (Grinnell and Miller 1944).

Grinnell's approach to the development of a checklist was to combine a complete literature search with records of specimens and observations. In addition, he also envisioned the use of maps of the state on which observers could indicate certain breeding records

> "These maps are 12x15 inches, and printed on paper that will take a light water-color wash. It is our idea that each active member should procure a quantity of these blank maps, and, devoting one map to each species, indicate all points where he knows that species to breed, *from personal experience*. I think the more active collectors would find this very interesting and instructive; and moreover, after a time the maps could be turned into myself, or whoever had charge of the State List work, and from them could be compiled a set of maps to show our entire knowledge of the distribution of each species in summer within the State."

This part of Grinnell's plan, that is, a qualitative breeding bird atlas, was never carried out. The concept, of course, remains sound. Grenfell and Laudenslayer (1983) and Zeiner et al. (1990) have published maps for the state's birds that are close approximations to what Grinnell was trying to do.

Upon Barlow's death in 1902, the editorship of the *Condor* passed on to Walter K. Fisher. Fisher, although intensely interested in ornithology, found it was not possible for him to continue with the editorship, and Grinnell took the job over in 1905 (Grinnell 1940).

> "The loyal support which was promised to Joseph Grinnell by other Cooper Club members if he would undertake to edit the Condor was so faithfully supplied that he was enabled to carry on the editorial duties through the remaining thirty-three years of his life, assisted by a changing group of associate editors. When he proposed any innovation at one of the annual meetings of the governing board, there was always a hearty 'go ahead, Joe, we'll back you up.' " (Grinnell 1940)

Grinnell provided continuity and stability for the *Condor* until his death in 1939. This was a period where ornithology was still carried out by amateurs as well as a growing number of professionals. Grinnell was able to integrate these efforts seamlessly and the *Condor* did much to hold the Cooper Ornithological Society together through war and depression.

Three Paths in the Early 20th Century

Interest in ornithology and birds followed three pathways in California in the early 20th century, sometimes overlapping, sometimes intertwined, but at other times completely separate. The first pathway was that of the oologists, who continued to pursue their hobby of collecting bird's eggs. The second path was that of the amateur and professional scientists who made up the new Cooper Ornithological Club. The third path was that taken by a new group of people with strong interests in bird conservation and protection.

The oologists who became so active in the 1880s and 1890s continued to add to their egg collections in the San Francisco Bay area well into the early years of the 20th century. Based on egg collections in the Museum of Vertebrate Zoology in Berkeley, the peak of egg collecting in the San Francisco Bay area was from about 1890 to 1930; Fig. 2. As discussed previously, a number of the early oologists were intent on moving beyond just egg collecting and this led to the formation of the Cooper Ornithological Club in 1893. Some of the oologists became active in the new Cooper Club, while others showed little or no interest in the new club. The egg collectors that became active in the Cooper Club often published papers on nesting birds that would probably have been submitted to the *Ornithologist & Oologist* or the *Oologist*. Examples of papers from notable collectors such as Henry Carriger, John Pemberton, and Milton Ray include discussion of nesting of White-breasted Nuthatches in Sonoma County (Carriger 1899),

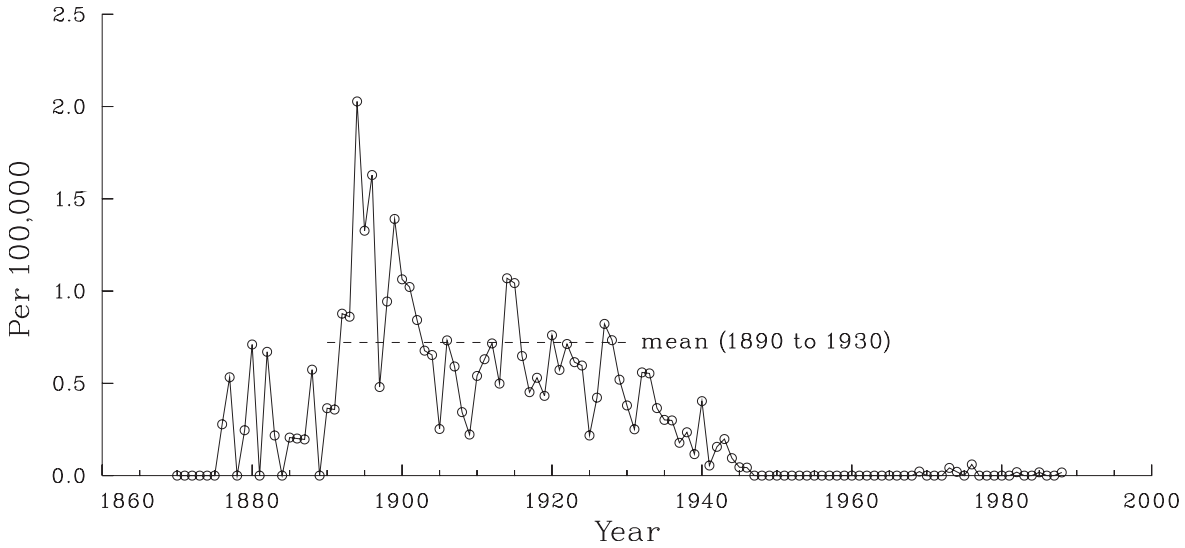

Figure 2. Distribution by year of the number of egg collectors whose egg sets are in the Museum of Vertebrate Zoology, Berkeley, California, normalized by population; nine counties of the San Francisco Bay region.

Loggerhead Shrikes in the San Joaquin Valley (Ray 1899), and Pine Siskins in San Mateo County (Carriger and Pemberton 1907).

It can be inferred, however, that other egg collectors did not come into contact with members of the Cooper Club, or at least not with Joseph Grinnell, who was preparing both a California state checklist (Grinnell 1902, Grinnell 1915) and regional lists (Grinnell and Wythe 1927). The reasons for the lack of communication between some of the oologists and Grinnell can only be guessed, but it seems likely that there were as many reasons as there were silent oologists. As an example, Harry Painton collected four sets of Common Moorhen eggs in Santa Clara County in 1894 (WFVZ #163759, CAS #5559–5561). Painton was one of the founders of the Cooper Ornithological Club, but it appears that Grinnell was never aware of these records as he noted breeding no further north along the coast than Santa Barbara (Grinnell 1915) and was not aware of any breeding records in the San Francisco Bay area (Grinnell and Wythe 1927). In this case, it appears that Painton was largely inactive by the time Grinnell arrived in the Bay area and it is possible that he had sold his egg collections by this time, parts of which were eventually acquired by the Western Foundation of Vertebrate Zoology and the California Academy of Sciences.

Another collector active in the early 20th century was Will E. Unglish who lived in Gilroy. It appears that Unglish was unaware of the Cooper Club and Grinnell's work with the new checklists until the publication of the "Directory to the bird-life of the San Francisco Bay region" (Grinnell and Wythe 1927). He had collected egg sets of Lesser Nighthawk along Uvas Creek near Gilroy as early as 1894 (Unglish 1929) and at least three sets of eggs of the Black-chinned Hummingbird (Unglish 1932). That he published these records in the *Condor* not long after the publication of the "Directory" by Grinnell and Wythe suggests that he simply was unaware of the Cooper Club and its activities. Yet the channels of communication between local oologists appear to have been much better. In his Cooper Club paper on the Lesser Nighthawk

(Unglish 1929), he mentions that he introduced D. Bernard Bull, another active egg collector, to the Uvas site in 1922, and Bull discovered additional nesting birds on Coyote Creek (where the Parkway Lakes are now) the same year. Another local collector, Charles Piper Smith, also took eggs from the Coyote Creek site and appears to have been a member of the Cooper Club (Smith 1926), but how Unglish and Grinnell finally came together is unclear. Eventually, Unglish published six papers in the *Condor* and provided many of his records to Charles G. Sibley for his "Birds of the South San Francisco Bay Region" (Sibley 1952).

It appears that other collectors were completely removed from the influence of ornithologists such as Grinnell. Homer A. Snow who lived in Newark, Alameda County, was an active collector in California. In 1911, Snow collected multiple egg sets of California Gull and Caspian Tern in Riego, Butte County on flooded lands near the Sacramento River (Shuford and Ryan 2000). Yet at the time of his second California checklist, Grinnell (1915) was unaware of either of these nesting records. Eventually, as various egg collections were donated to museums, knowledge of these events entered the ornithological record (Grinnell and Miller 1944).

The second pathway was that of the amateurs and professionals who made up the Cooper Ornithological Club. Their primary interests at the beginning of the 20th century were on the taxonomy and life histories of the birds in the western United States. Yet for anyone interested in birds, it was clear that game species were disappearing under the pressure of market hunting and that many species were being killed in excessive numbers for use by the millinery trade. After its formation in 1883, the American Ornithologists' Union formed the Committee on the Protection of North American Birds. It lobbied intensively to have a model bird law passed in each state that would prevent the killing of birds for commerce. The AOU committee was initially successful, but the game distributors and milliners then started to rely on the recalcitrant states for their supplies. At this point the AOU committee worked for a national law that would prevent interstate trade in game birds and skins. This effort eventually led to the Lacey Act which did much to reduce the commercial slaughter. The Cooper Club was active in supporting the AOU actions and in lobbying for the passage of a model bird law in California.

The *Condor*, from the beginning, published letters and articles that documented commercial or social activities that were detrimental to birds. Generally, these articles were not a call to arms for political action, but rather a demonstration of facts that could be used to support opposition to the activities. Early examples include a letter from Frank S. Daggett documenting the indiscriminate use of poison by orchardists (Daggett 1900) and a paper by Vernon Bailey on the killing of grebes in northeastern California for their skins (Bailey 1902). These types of articles continued over the years and were important in providing a scientific basis for political action. Noteworthy are a well documented article by Jean Linsdale (1931) on the number of birds killed by thallium poison used for ground squirrel control, and an account by Mary M. Erickson of "sportsmen" gatherings to shoot jays and hawks for the supposed benefit of California Quail (Erickson 1937). As conservation groups, such as the local Audubon societies developed (see below), the need for these activities by the Cooper Club lessened.

The third pathway was the establishment of conservation organizations with a primary interest in birds. In 1886, George Bird Grinnell, editor of sportsman's magazine *Forest and*

Stream, suggested that an organization be formed for the protection of wild birds (Buchheister and Graham 1973). He volunteered his own staff for the administration of the new organization to be called the Audubon Society. The response of the public was astonishing. In a year's time 39,000 people had signed up, but Grinnell found the administrative burden too great and eventually relinquished the project.

The failure of Grinnell's project was not that there was no need for bird protection, but that his organizational approach was not appropriate. In 1896, the Massachusetts Audubon Society and Pennsylvania Audubon Society were formed as statewide organizations and the next year additional societies were formed in New York, New Hampshire, Illinois, Maine, Wisconsin, New Jersey, Rhode Island, Connecticut, and the District of Columbia. More societies from other states followed in subsequent years (Buchheister and Graham 1973). In 1899, Frank M. Chapman started his magazine *Bird-Lore*, and this was adopted by the various Audubon societies as their official publication. In 1901, the various state Audubon societies formed a loose federation called the National Committee of Audubon Societies. William Dutcher, who had led the AOU's Committee on the Protection of North American Birds, was selected as the chairman. This organization was incorporated as the National Association of Audubon Societies on 4 Jan 1905 and Dutcher was elected president.

The first Audubon society in Northern California, the Audubon Association of the Pacific, was formed on 15 Jan 1917. A monthly newsletter, the *Gull*, was first published in Jan 1919 and continues to the present with news on conservation topics, reports of field trips, and summaries of unusual bird sightings. Under the present name of the Golden Gate Audubon Society, it was incorporated as a chapter of National Audubon in 1948.

The Santa Clara Valley Audubon Society

The Santa Clara Valley Audubon Society was organized on 8 Jan 1925 (Turner 1962). The first executive committee was comprised of seven officers and four additional members. At least during the early years, it seemed that the principal interests of the society were in field trips and bird study (Turner 1962). An extract from the May 1929 minutes reads:

> "Miss Yvonne Champreux gave the report of the April field trip.
> A report of the high spots of the recent Ornithology field trip was given.
> Mr. Alton Alderman presented the results from his Killdeer observations.
> Mr. Wilbur Shelley gave a report on a Mocking bird nest that he found.
> Dr. Pickwell gave a brief talk on the Ornithological publications of the West."

When Dr. Gayle B. Pickwell (1899-1949) became president in 1928, he proposed that the society publish a newsletter like *The Gull*, that was published by the Audubon Association of the Pacific. He offered to become the editor and the first volume of this new publication, *The Wren-Tit*, was issued in 1929. Four numbers were published each year, from 1929 to 1931, but then publication ceased (Phyllis M. Browning, pers. comm.). No newsletter was published over the next 15 years, rather announcement of meetings and field trips were sent out to individual members (Turner 1962):

> "Up to 1947 announcements were sent out each month to each member. These were single sheets containing announcements of field trips, monthly meeting and director's meeting. Beginning in

> 1947 two or more mimeographed sheets were published giving more details about field trips. Also 'Seasonal Observations' by Emily Smith appeared. Results of Christmas Counts were shown in detail. This new type publication was known as the 'The Bulletin.' By 1949 and 1950 The Bulletin had as many as six or eight or even ten pages especially when Mr. Sibley was editor. It was not until 1954 that the 'The Avocet' was born."

None of the early "bulletins" included volume or number, and they were issued somewhat irregularly (Phyllis M. Browning, pers. comm.). Five were sent out in 1947, 15 in 1948, 16 in 1949 and 13 in 1950. The first title of the newsletter was simply the *Santa Clara Valley Audubon Society*. In 1951, the newsletter was renamed the *Bulletin of the Santa Clara Valley Audubon Society* and 11 newsletters were published in 1951 and 1952. In 1953, there were again 11 newsletters published, but with the tenth newsletter, November 1953, the title was changed to the *Santa Clara Valley Audubon Society Bulletin* and it was assigned Vol. 1, No. 1. Ten newsletters were published in 1954. Through June 1954 (Vol. 1, No. 8), the newsletter continued its title and then in September 1954 (Vol. 1., No. 9) it was renamed *The Avocet*, the name that it retains today. Over the last 50 years there are numerous errors in publication date, volume, and number (Phyllis M. Browning, pers. comm.).

Records of local observations were published in the *Wren-Tit* series, although the observers' names were frequently omitted as well as other details. With the new series of publications in 1947, Emily Smith compiled these records as the "Seasonal Observations" column and this was followed by Charles Sibley with his "Field Observations" column. The practice of listing local observations of birds continues in *The Avocet* to the present.

A review of the minutes and newsletters of the Santa Clara Valley Audubon Society provides information on the early Christmas Bird Counts held in the valley (Turner 1962). In the November 1928 minutes it is written that, "Dr. Smith announced that the December field trip would be taken to Alum Rock Park. Miss Emily Smith suggested a Christmas Bird Census be taken on the December trip." Thus, the first San Jose Christmas Bird Count (CBC) was held as part of the monthly Audubon trip. From *The Wren-Tit* and accounts published in *Bird-Lore*, it appears that the San Jose CBC continued to be held each December in conjunction with the monthly trip to Alum Rock Park. It appears that the first count on which multiple parties were used took place in 1940. The announcement of the December 1940 Christmas count was as follows (Turner 1962):

> "Members interested in taking the bird census will meet at the regular corner at San Carlos and South Fifth Streets at 8:00 A.M. One party under the leadership of Mrs. Elizabeth Price will go to the Alviso Marshes; and a second party, under the leadership of Dr. Pickwell and Miss Emily Smith, will go to Alum Rock Park. After the census taking, the parties will return to the home of Mrs. Lester Brubaker at 191 Mt. View Avenue (just off Alum Rock Avenue in the vicinity of the San Jose Country Club, see sketch) at 4 o'clock to compile a report for Bird Lore. Members unable to attend the field trip are invited to come and hear results of the census."

The early CBCs, although held within a 15-mile diameter circle, made no attempt at systematic coverage. The first systematic approach occurred on the 1949 CBC where the count circle was divided into segments for the first time (Turner 1962):

> "The Bulletin issue of January 1950 contains details of the December 26, 1949 Christmas Count. It was the nineteenth for the Society and was led by James G. Peterson. For the first time San Jose was divided into five segments and each segment was worked to some degree. Center of the

> count area was the corner of Capitol Avenue and Maybury Road. . . There were 24 observers in five parties. Total hours on foot 20—total miles on foot 24.6. The following people were mentioned as participating: Mrs. Grace Brubaker, William Creelman, Curt Dietz, Mrs. W. A. Hillebrand, Miss Elsie Hoeck, Mrs. Emma Miller, Mrs. Harvey Miller, Catherine and Mary and Miller, Mrs. Beatrice Nielson, Mrs. Anne Peterson, James Peterson, Sharon and Laurel Jean Peterson, Mr. and Mrs. Clyde Prusman, C. G. Sibley, C. L. Sleeper, Mr. and Mrs. Irving Snow, M. F. Vessel, Albert Wool, Mr. and Mrs. Charles Zwaal. Total 98 species; 19,221 individuals."

At this time the Santa Clara Valley Audubon Society had 100 members.

At the formation of the Santa Clara Valley Audubon Society in 1925, the executive committee included three local ornithologists: John O. Snyder, Charles P. Smith, and Emily D. Smith. Snyder's ornithological contributions have been discussed previously. At the time the new society was created, Snyder was the head of the Department of Zoology at Stanford (Jennings 1997).

Charles Piper Smith (1877-1955) was born in St. Catharines, Ontario, Canada and his family moved to Anderson, Indiana, where he graduated from high school in 1897 (Thomas 1956). He went on to Purdue University and obtained a B.S.; his primary interest being natural history. He attended Stanford University from 1904 to 1906 and again in 1907 to 1908, at which time he obtained an M.S. in zoology with a thesis on spiders. His name does not appear in any of the papers or notes published in the Condor at this time and it is unclear how active he was in local ornithology.

After leaving Stanford, Smith taught at agricultural colleges in Utah and Maryland and also worked for the Maryland Board of Agriculture and the a seed company in Baltimore (Thomas 1956). Smith had married Edyth G. Menker of San Jose in 1910 and they returned to the San Francisco Bay area in 1920, when Smith took a job teaching biology at San Jose High School. At this time, his primary interests were in botany, entomology, and ornithology. He appears to have been quite active in the local area, both as an ornithologist and egg collector (Smith 1926, Smith 1927a) and member of the new Audubon Society (Turner 1962). Interestingly, in 1927, he finished a manuscript for "The Birds of Santa Clara County" and was looking for assistance in its publication (Turner 1962). However, the manuscript was never published and its whereabouts is unknown.

By this time, Smith's primary interest was in botany and his particular passion was for the lupines. In 1926 he re-entered Stanford to prepare a Ph.D. thesis on the distribution of lupines in western North America and in 1927 he obtained his Ph.D. (Smith 1927b).

Charles Smith obtained a grant from the National Research Council in 1930 to study lupines in herbaria in Europe. While gone that summer in Europe, his seven year-old daughter Rachel died suddenly and, not long after his return in the fall, his wife Edyth also died. Smith remarried the next year and lived in Saratoga for the rest of his life (Thomas 1956). Although he continued to work on issues dealing with the distribution of lupines, including extensive self-publication, it does not appear that he remained active as an ornithologist, as his name is seldom mentioned in local Audubon reports after 1930.

Emily D. Smith (1886–1972) was born in Connecticut and came to the Santa Clara Valley in 1913, eventually settling in Los Gatos (Mewaldt 1989). Known to everyone as "Miss

Emily," she taught as an instructor at the San Jose State Teachers College in the 1920s and 1930s, where she worked with Gayle Pickwell in developing numerous nature guides and booklets that are used for science education. Active in the Santa Clara Valley Audubon Society since its beginning, she led field trips, compiled the Christmas Bird Count, and wrote for and sometimes edited the chapter newsletters. She was also a bird-bander and active in the California Native Plant Society. For everyone, she was a reservoir of information on all topics ornithological (Mewaldt 1989). She also found time for two major investigations of rarer species nesting in the San Francisco Bay area, the first on Black Swifts (Smith 1928) and the second on Lesser Nighthawks (Pickwell and Smith 1938). A meticulous observer, her records document much of what we know about the status of less common birds in the South Bay in the middle part of the 20th century.

Pickwell, Sibley, and Mewaldt–The San Jose State University Connection

Local ornithology at the beginning of the 20th century seemed most closely associated with Stanford University, in part because of the zoological interests of faculty such as John Snyder, Harold Heath, and Walter Fisher, but also because of students such as Joseph Grinnell. Later, from the 1920s on, the scientific side of local ornithology was more closely associated with San Jose State University, then known as the San Jose State Teacher's College. Three of the faculty are representative of this connection: Gayle Pickwell, Charles Sibley, and Dick Mewaldt.

Gayle Benjamin Pickwell (1899-1949) came to San Jose in 1927 or 1928, joining the faculty of the San Jose State Teacher's College. He was raised in eastern Nebraska (Pickwell 1948) and, based on his early publications (Pickwell 1925a, Pickwell 1925b), it appears that he attended the University of Nebraska and, later, Northwestern University. His doctoral work was performed at Cornell University where he was granted a Ph.D. in 1927 for his dissertation on Horned Larks (Pickwell 1927), which was later published as a monograph (Pickwell 1931).

Pickwell was active in the community as well as in research and teaching at the Teacher's College. He became the president of the Santa Clara Valley Audubon Society in 1928 and instituted the publishing of *The Wren-Tit*, the first chapter newsletter (Turner 1962). Over the next two decades he was a frequent leader or participant on field trips. His broad interests in the natural history of birds are reflected in a number of papers in the *Condor* over the next decade (Pickwell 1932a–d, Pickwell 1937a, Pickwell and Smith 1938). Of particular interest, was his joint paper with Emily Smith on the nesting behavior of the Lesser Nighthawk in Santa Clara County.

Pickwell was interested in the teaching of ornithology and zoology and he prepared teaching materials that were widely used (Stone 1935). However, he had broad interests that extended beyond ornithology. He wrote texts on a variety of natural history topics that were used as part of the basic science curriculum (Pickwell 1937b, Pickwell 1939a-b, and Pickwell 1940). He also had a particular interest in herpetology and wrote a field guide for the Pacific Coast that included many of his photographs and personal observations (Pickwell 1947).

Pickwell's too early death at fifty was mourned by his friends in the Audubon Society (Turner 1962):

> "Our beloved Dr. Gayle Pickwell died May 29, 1949. The memory of his rich, inexhaustible enjoyment of birds and his gay comradeship on field trips will be always with those of us who knew him when he was an active member of our Society. A busy professor of ornithology and zoology at San Jose State College and a writer of many books on birds and other nature study subjects, Dr. Pickwell found time to share with the members of the Audubon Society his profound knowledge of birds and his delightful enthusiasm for bird watching."

Charles Gald Sibley (1917-1998) was born in Fresno, California and was raised in Oakland (Corbin and Brush 1999). He entered the University of California, Berkeley in the mid-1930s where he was exposed to Joseph Grinnell and his methods of recording field notes, which Sibley followed for the rest of his life. After graduating from Berkeley with an A.B. in Zoology in 1940, Sibley worked in the Public Health Service a year and then served in the Navy during World War II. After the war, he returned to Berkeley and obtained a Ph.D. in 1949. His Ph.D. dissertation (Sibley 1949) dealt with speciation and hybridization in the red-eyed towhees of the Mexican highlands. He joined the faculty at the San Jose State College in 1949 as an Assistant Professor of Zoology and held this position until 1953 when he moved on to Cornell University (Corbin and Brush 1999). During the period that Sibley lived in San Jose, he was an active member of the Audubon Society, editor of the newsletter and also compiled observations of local birds in a column titled "Field Observations." Locally, Sibley is best known for his mimeographed notes "The Birds of the South San Francisco Bay Region," which was published in 1952. These notes report on all species known from the local area and are a valuable record of the status of Santa Clara County birds at the midpoint of the 20th century.

Sibley's Ph.D. dissertation was focused on speciation of birds based on morphometric characters. At Cornell University, and in later years at Yale University, Sibley was a major contributor to the development of molecular systematics in birds, that is, determining the relationships and evolution of birds based on their molecular chemistry.

> "He became one of the leading ornithologists during the last half of the 20th century, was one of the founders and a major player in the emerging field of molecular systematics, and contributed significantly to our knowledge of the evolutionary relationships among the higher avian taxa." (Corbin and Brush 1999).

With Charles Sibley's departure from San Jose State College in 1953, a faculty position in zoology became available, and this job was filled by Leonard Richard Mewaldt (1917-1990) (L. Richard Mewaldt, pers. comm.). Dick Mewaldt, as he was known by everyone, obtained his B.S. from the University of Iowa in 1940, and served in the U.S. Army from 1942 to 1946 (Ralph 1991). He earned a M.S. at the University of Montana in 1948 and a Ph.D. at Washington State University in 1952. Dick became a Master Bander at the age of 19 and his major research interests throughout his career dealt with the cycles of reproduction, molt, and migration of passerines, particularly the White-crowned Sparrow (Ralph 1991). He was one of the founders of the Point Reyes Bird Observatory (now PRBO Conservation Science) in 1965 and was the President of the Board of Directors for many years. Later, in the 1980s, he helped found the San Francisco Bay Bird Observatory in Alviso. Dick was one of the original members

of the Santa Clara County Breeding Bird Atlas Committee, and this atlas is dedicated to his memory.

This brief history of local ornithology started with voyages of exploration, which were followed by settlement, population growth, and the decline of natural habitats. Early ornithologists were keen to understand the birds that live in this area and that early interest extends to today. The linkage for all, past ornithologists and present ones, has been the discovery of knew knowledge and its publication. This linkage, although sometimes fragile, continues to this day with the publication of this atlas.

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