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THE HISTORY OF BIRD BANDING

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BIRDS have been used by man to carry messages since very ancient times. Quintus Fabius Pictor, who was born about 254 B. C., recorded in his 'Annals' that "When a Roman garrison was besieged by the Ligurians a swallow taken from her nestlings was brought to him for him to indicate by knots made on a thread tied to its foot how many days later help would arrive and a sortie must be made." That siege occurred during the Second Punic War, 218–201 B. C. This is probably the earliest recorded instance of the marking of birds to carry a message. Pliny in his 'Natural History' completed in 77 A. D., further declared: "Pigeons have acted as go-betweens in important affairs, when at the siege [by Mark Anthony, 44 B. C.] of Modena, Decimus Brutus sent to the consul's camp dispatches tied to their feet." And later: "A man of knightly rank at Volterra, who owned a racing-in-hand [chariot] used to catch swallows and take them with him to Rome [135 miles distant southeast] and dispatch them to take the news of a win to his friends, as they returned to the same nest; they had the winning colors painted on them." Taurosthenes, by means of a pigeon, sent to his father on the isle of Ægina the news of

his Olympic victory; also the news of the death of Orillo was carried from Damiata in Greece to Egypt by a pigeon. During the Crusades, as at the siege of Jerusalem and during the crusade of St. Louis, pigeons were made useful in the service of war in a similar manner.

Marco Polo, who travelled in Asia between 1275 and 1295, in writing on falconry, stated (according to Boni, 1845): "Each bird belonging to the sovereign and the Barons has a tablet of silver on its feet, with its name and that of the owner inscribed so that wherever caught it can be returned to him." Thomas Nuttall in 1840 wrote: "A Canary Falcon sent to the Duke of Lerma, returned in 16 hours from Andalusia to the island of Teneriffe, a distance of 750 miles." This suggests that this particular bird must have carried an identifying mark. No dates were given, but the best-known Duke of Lerma lived from 1552 to 1625.

The use of metal bird bands dates back at least to the sixteenth century, if not much before. John Bachman, in an address before the Literary and Philosophical Society of Charleston, S. C., March 15, 1833, said: "The story of the falcon of Henry II is well known, which pursuing with eagerness one of the small species of bustards at Fontainebleau, was taken the following day at Malta, and recognized by the band which she bore." The distance flown was 1350 miles. William Smiley, in 1838, wrote: "A falcon which belonged to Henry IV of France escaped from Fontainebleau and in 24 hours was found in Malta." Robert Mundie, in 1878, referred to the same Peregrine Falcon as a bird belonging to Henry IV of France. Henry II of France reigned from 1547 to 1559 and Henry IV from 1589 to 1610. Since Fontainebleau received its first extensive development by Henry IV of France, who was fond of sporting events, it is likely that he, rather than the more war-minded Henry II, was this early bird bander. The development of the forest began in 1598. Bachman also referred to "a Bluebird that was so marked as to be known, built its nest for ten successive years, in a box that had been prepared for the purple martin." This undated observation may be the earliest report of an annual record of returns of a marked bird. J. D. LaFleur wrote: "History tells of a Falcon caught in the Southern Ocean in 1772 which carried around its neck a parchment bearing the inscription 'Jacob 1610'." That message may never be deciphered.

Clarence S. Jung, referring to early banding operations, cited John George Keysler's 'Travels' published in 1760, which describes the taking of a Common Heron in 1728, having on its leg a silver band with the engraved name of Duke Ferdinand, grandfather of the then present elector, showing that the bird had carried the band over 60

years. This bird was therefore banded in 1669 or before. Gilbert White wrote: "As some people were shooting in the parish of Trotten, in the County of Sussex, they killed a duck in that dreadful winter of 1708–9, with a silver collar about its neck on which were engraven the Arms of the King of Denmark." Sir William Jardine reported having heard of a like anecdote of a swan.

Frederick C. Lincoln related the incident of the Great Gray Heron, said to have been captured in Germany in 1710, bearing several rings, one of which apparently had been attached several years previously in Turkey. In 1729, at Starenberg Palace, nine miles from Munich, an account translated by C. S. Jung, says: "The court caught herons for diversion. At the end of the season a heron was released with a silver ring on the foot, the name of the reigning elector engraved thereon." Benjamin White, as quoted by Jung, wrote in 1776: "A recent instance of one [Common Heron, *Ardea cinerea cinerea*] that was taken in Holland by a hawk belonging to the Stadtholder, the bird having a silver plate fastened to one leg, with an inscription importing it had been before struck by the elector of Cologne's hawks in 1735." Oliver Goldsmith in his 'Animated Nature' also referred to this same experience, stating it was captured "35 years after being banded"—which indicates that it was caught in 1770. Count de Buffon, in 1798, also referred to the same incident, as did Bigland in 1828, and Thomas Pennant, as related by Jung.

"In 1763," M. Fontaine reported, as quoted by Bigland, "a buzzard was brought to me . . . After some time I fastened a small bell to its talons, and also attached on its breast a bit of copper with my name engraved on it. I then gave it entire liberty"—but this bird became tame and remained locally. Jung refers to a falcon in the shire of Angus, Scotland, which eloped from its master with two heavy bells on each foot on September 24, 1772, and was killed two days later in Flintshire.

Wendell F. Fogg cited a note by the Reverend Richard Polwhele, published in 1796, relating how the Third Earl of Oxford, George Walpole had his hawks capture a heron unharmed on which he placed a gold ring engraved "E. Oxford" and the date. The emperor captured the bird ten years later and sent the ring to the Earl. Since the Earl succeeded to the title in March, 1751, and died in 1791, with many years of mental unbalance, it is believed that the bird was banded between 1773 and 1781. Fogg also reported: "A heron captured in 1844 bore a band dated fifteen years before," or in 1829. William Yarrell, in 1843, recorded: "Several swifts, indelibly marked, returned not only for three years in succession, but one of their number

was caught in the same locality at the expiration of seven years." Landsborough Thomson wrote that J. Schenk brought to light three records of marked storks which are believed to have journeyed from Europe to India, one of which dated from 1813, another 1884. These early activities cannot be regarded as made with any intention of scientific investigation, interesting as they are individually.

In Europe, systematic bird banding was first suggested in 1866 by C. Millet who wrote: "A scheme is proposed for marking migrant birds by differently colored threads, whereby their movements may be more certainly determined." J. A. Palmén of Helsingfors, however, in an address before the 2nd International Ornithological Congress in Budapest in 1892, during a discussion of the problems of migration, declared skeptically: "A model procedure for the investigation of the individual species cannot be prescribed. It is rather to be expected that each inquirer will learn something from the practical methods of the others." Although his plea was for a concerted coöperation among bird students, he had no vision of the capture and marking of individual birds. Even Whitlock, in 1897, questioned whether it is possible to prove that any species of bird in central Germany migrates to the southern parts of Africa to winter there.

Systematic bird banding was begun in Europe in 1899 by Christian Mortensen, first with Starlings, later with storks, ducks and larger birds of prey. He received so many interesting returns from his banded birds that it stimulated others in Europe. Thienemann, at the October, 1900, meeting of the German Ornithological Society, suggested that a bird station be founded at Rossitten in East Prussia. The station was opened January 1, 1901, but Thienemann did not begin banding work until 1903. In 1904, Tomlinson began marking Starlings near Edinburgh, and Gurney banded young Gannets on Bass Rock in the Firth-of-Forth with rings marked "Bass Rock 1904." In 1905, Hamilton, at Baron's Court, County Tyrone, Ireland, marked Woodcock with rings inscribed "B. C." Ardilaun, at Cong, County Galway, used rings marked "A. Cong" and Graham had "R. G." on his bands. Banding was started in Hungary in 1908, in France in 1909, and this same year it was propounded in 'British Birds' and started on a large scale in England.

In America, Audubon is usually acknowledged as the first bird bander, having begun this activity in Pennsylvania. While living along the Perkiomen Creek, near Philadelphia, about 1803, he wrote of a nest of young Phoebes: "When they were about to leave the nest, I fixed a light silver thread to the leg of each, loose enough not to hurt the part, but so fastened that no exertions of theirs could remove it.

. . . At the next year's season when the Pewee returns to Pennsylvania I had the satisfaction to observe those in the cave and about it. Having caught several of these birds on the nest, I had the pleasure of finding two of them had the little ring on the leg."

Leon J. Cole deserves the honor of having introduced scientific, systematic bird banding to America when he stated, in an address before the meeting of the Michigan Academy of Science held March 28–30, 1901: "In order to get information on the movements of fish, the United States Fish Commission fastened numbered tags upon individuals that have been caught and let them go again. It is possible such a plan might be used in following the movements of individual birds, if some way could be devised of numbering them which would not interfere with the bird in any way and would still be conspicuous enough to attract the attention of any person who might chance to shoot or capture it." Cole made these remarks without knowing anything of the individual attempts of Audubon or of the others in Europe. At the Cambridge meeting of the American Ornithologists' Union, November 18, 1908, Cole read a paper on "The Tagging of Wild Birds as a Means of Studying their Movements." He had been instrumental in having this work taken up by the New Haven (Conn.) Bird Club the previous winter, but by this time Bartsch and Taverner, and some others, had already begun their activities in banding.

Dr. Paul Bartsch of the Smithsonian Institution, in June, 1902, visited colonies of Black-crowned Night Herons near Washington and banded 23 with bands inscribed "Return to Smithsonian Institution" with the year and a number. He obtained a report of one of these herons shot September 24, 1902, at Abington, Maryland, 55 miles from the place of banding. From 75 others banded in 1903 came a report of one found dead in Cuba two years later—the first long-distance record of a bird banded in America. This work by Bartsch was actually the first scientific use of numbered bands in America.

P. A. Taverner was the person who initiated the distribution of bird bands, by furnishing some 200 hand-made aluminum bands to his correspondents. Taverner, then of Ann Arbor, at a meeting of the Michigan Ornithological Club at Ann Arbor, April 2, 1904, proposed his plan to attach aluminum bands to the legs of birds "with the hopes that they might be found by ornithologists." Taverner had a vision of the scientific advantages of banding in that, as he said, "exact data on the ages of different plumages, length of life of birds, individual routes of migration and the distances travelled by individuals, are but some of the problems that must be attacked," and he offered to supply the bands. His bands were marked: "Notify the

Auk, N. Y." with a serial number. From them came the second long-distance record—a young Flicker banded May 29, 1905, at Keota, Iowa, taken December 25, 1905, in Sabine County, Louisiana.

Thus, individual banding operations grew apace, with the identity of some early banders still unknown. In 1907, according to Henry Oldys, a Canvasback was killed on October 25 at Manahawkin, New Jersey, with a band marked "T. J. O. D. 48," and in November, a Redhead Duck, banded "TJOD 49" was shot at Beach Haven, N. J., as reported by Seymour Woodruff. How many other privately marked bands have been used is unknown. Albin F. Mattson banded a Marsh Hawk in 1927 with a band inscribed "A. F. M. Cokato, Minn." F. W. Rapp of Vicksburg, Michigan, caught a Coot with a poultry band around its neck with the number 30 stamped in front and the name "Afton Reed" scratched in the back. Other personal bands have doubtless been used but never systematically registered with a central office which could assist in completing records, such as those recently marked "R. S. Baker, 5 Bain, Toronto." Other messages follow the methods of the notes placed in bottles and cast overboard. A Duck Hawk was found at Cape Canaveral, near Palm Beach, Florida, December 10, 1888, with a tin cap-box attached to its neck by a wire and bearing a message within dated October 10, 1888. The bird had been released from the Frying Pan Shoals Lightship off Cape Fear, slightly less than 200 miles from the place where it was found. Similar records deserve publication.

The late Jack Miner is regarded as the pioneer bander of America, considering the amount of his work and the extent of his reports of returns from distant localities. He established his sanctuary for ducks and geese near Kingsville, Ontario, Canada, in 1904, and tagged his first duck, a Mallard, in August, 1909. That individual duck was shot at Anderson, North Carolina, in January, 1910. This is the first complete flight record of a banded duck. In the spring of 1939, Jack Miner tagged his 20,000th Canada Goose.

Dr. John B. Watson began his work in 1909 with Noddy and Sooty Terns at the Tortugas Reservation, Florida, using paint for marking the birds. The birds were shipped to Galveston, Texas, or to Cape Hatteras, North Carolina—air distances of 1200 and 800 miles, respectively—and some returned thence to their nests. This is the first 'homing' experiment recorded in America.

The next step in the development of bird banding was organizational. Bird banding as a scientific study was introduced to the American Ornithologists' Union at the Cambridge meeting in November, 1908. The following year, on the evening of December 8, 1909,

the A. O. U., assembled in New York, organized the American Bird Banding Association, with Leon J. Cole as president and with 34 charter members. After inquiries among six different European organizations, the style of band recommended by 'Country Life' of London was adopted, and 7500 bands of eight sizes were ordered. They bore a serial number with "Notify Am. Museum, N. Y." or "Notify A. M., N. Y." or "Notify the Auk, N. Y." That year, 4173 bands were distributed among 44 persons, and 800 were used on 73 species of birds. During the early years, most of the banding energy was expended upon fledglings in which there was a high mortality and the number of returns were relatively few.

The New Haven Bird Club had begun banding operations during the winter of 1907–1908, using bands marked "Box 2, Yale Sta. New Haven, Conn." The banding committee consisted of Dr. Louis B. Bishop, Leon J. Cole and Clifford H. Pangborn. On October 27, 1908, Dr. Bishop reported to the Linnaean Society of New York on the work inaugurated in New Haven and the banding of nestlings that year, and suggested that Linnaean members coöperate. Dr. Jonathan Dwight, Jr., pointed out the valuable information relative to the course and extent of travel of individual birds which an extended adoption of tagging work would probably open to ornithological science. On November 22, 1910, Dr. Francis Harper reported on his banding of Spotted Sandpipers on Four Brothers Island. Interest thus was aroused among individuals, but the Society took no action until the autumn of 1911 when it offered to foster the work of the young American Bird Banding Association.

The New England Bird Banding Association was organized on January 17, 1922, under the tireless energy of Laurence B. Fletcher, to develop a stable organization. Fletcher foresaw the advantages of concerted activity and arranged for a meeting to be held in August 1921, in the lecture room of the Boston Society of Natural History, to hear Dr. S. Prentiss Baldwin tell about bird banding. Fifty interested persons attended, and the meeting was so successful that the next spring meeting was held for organizing. E. H. Forbush was elected President and L. B. Fletcher, Secretary. The name of the association was changed in 1924 to the Northeastern Bird Banding Association. The publication 'Bird-Banding' was started in 1926.

The Inland Bird Banding Association was formed at the Chicago meeting of the A. O. U., October 24, 1922, with S. Prentiss Baldwin, President, and William J. Lyon (of Waukegan, Ill.), Secretary. The I. B. B. A. was brought about largely through the efforts of Mr. Lyon who had previously written to about 75 persons who he thought might

be interested. In March, 1922, Lyon began editing the Bird Banding Department of the Wilson Bulletin. In June, 1929, the I. B. B. A. began publishing the 'Inland Bird Banding News' with O. A. Stevens as Editor and Secretary.

The Eastern Bird Banding Association was organized on April 24, 1923, at a meeting of the Linnaean Society of New York held in the American Museum of Natural History. Dr. Arthur A. Allen was elected President, J. E. Webster, Secretary, and Rudyerd Boulton, Executive Secretary. The monthly publication 'EBBA NUS' ('EBBA News' after 1944) was started during 1938.

The Cooper Ornithological Club in California moved next by forming a banding chapter of the Cooper Club, which became the Western Bird Banding Association at a meeting held January 11, 1925, with J. E. Law as Chairman. The first meeting was held April 5–7, 1926, and the publication 'News from the Bird Banders' followed. Prior to the development of the W. B. B. A., some banding had been done in the west. Joseph Kittridge, Jr. began banding on May 26, 1915, near Missoula, Montana, and Mrs. Amelia S. Allen, on July 24, 1918, may have become the first bander in California. Each of these persons used bands supplied by Howard H. Cleaves, Secretary of the American Bird Banding Association, who collected the early records. The 'Condor' records show that 31 birds were banded during 1915.

Traps were first designed for catching pigeons, poultry and sparrows, exclusive of the bird-nets used previously in Europe. Specially designed traps included one of Charles W. Miller used by the Worthington Society for the Study of Bird Life at Shawnee-on-the-Delaware, and also the automatic trap designed by Charles H. Tesch of Milwaukee for catching English Sparrows. That was probably the first automatic trap. The first trap used for banding purposes was the 'Government Sparrow Trap,' formerly called the funnel trap and originally designed in 1912 by the U. S. Department of Agriculture for getting rid of the obnoxious English Sparrows. It, with the Miller and Tesch traps, was described by Ned Dearborn. Dr. S. Prentiss Baldwin, who was the originator of the plan of trapping birds for banding, began to trap English Sparrows about 1913 at Gates' Mills, Ohio. He began banding in 1914 and soon designed various forms of traps. Thus was started the development of endless ways and methods of catching birds for banding.

The Biological Survey assumed control of the bird-banding activity in the United States in 1920, after the American Bird Banding Association dissolved its organization in January, 1920, and turned its bands over to the Survey. Dr. Alexander Wetmore used the first bands

issued by the Biological Survey by banding about 1000 ducks in the Bear River marshes in Utah, from 1914 to 1916. The Survey bands were of aluminum and were marked with a serial number and "Biol. Surv." or "Bi-Surv." with or without "Notify Wash. D. C." or "Washington, D. C." In 1921 there were about 135 coöperating banders. The Biological Survey was merged with the Bureau of Fisheries to form the Fish and Wildlife Service in the U. S. Department of the Interior on June 30, 1940.

Thus bird banding has progressed until from 1920 to June 30, 1944, a total of 4,690,873 birds had been banded with reports of 331,480 later captured, shot or found. During the fiscal year ending June 30, 1944, a total of 162,418 birds of 349 species had been banded under the direction of the Fish and Wildlife Service.

By such methods bird banding was developed as an important branch of scientific investigations in biology.

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