

## Karluk Biological Resources

During our search for information on Karluk's sockeye salmon and associated biota, we incidentally learned about reference specimens held in various museums. Since these preserved and archived collections are valuable Karluk resources, their locations are listed below. The following summary is not an exhaustive list of Karluk specimens held in museums or institutions worldwide, but it does show where at least some collections exist.

### Algae

**1899: University of California Expedition**—Marine algae from Karluk, Uyak, and Kodiak are present in the Herbarium of the University of California, Berkeley. These were collected in the summer of 1899, primarily by William Albert Setchell and A. A. Lawson, but also by W. L. Jepson and L. E. Hunt. A summary of Karluk's marine algae was published by Setchell and Gardner (1903).

**1926–27: Willis H. Rich** (1885–1972)—Diatoms from Karluk, Thumb, and O'Malley lakes are present at the US National Museum, Washington, DC. These diatoms were originally collected by Rich and then became part of the Albert Mann and Paul S. Conger collections before being deposited in the US National Museum.

**1940s: A. L. Brigger**—Diatoms collected from stones at Camp Island and the Karluk River, and from boards at the Karluk River weir, are located in the Diatom Collection, California Academy of Sciences, San Francisco, CA (Accession Numbers 611045–611047).

**1959: Emile Manguin**—In 1960 Manguin described and photographed 51 new diatom taxa from Karluk Lake. His diatom collection was housed at the Laboratoire de Cryptogamie, Muséum National d'Histoire Naturelle, Paris, France, but in recent years other diatomists failed to find the Karluk material at the museum (Kociolek & de Reviere 1996). These Karluk diatoms were originally collected by Douglas K. Hilliard of the Arctic Health Research Center, US Public Health Service, Anchorage, AK, and sent to Manguin (1960) for his research.

### Bryophytes

**1901–1902: William Titus Horne** (1876–1944)—At least eight bryophyte specimens from the Karluk

area are present at the New York Botanical Garden, Bronx, NY.

**1954: Jones D. Reeves**—While working as a FWS summer field assistant, Reeves collected bryophytes from the Karluk Lake area for the Museum of Oklahoma A & M, Tahlequah, OK.

### Vascular Plants

**1889: Tarleton Hoffman Bean** (1846–1916)—85 plant specimens that Bean collected from the Karluk area in August 1889 are present in the US National Museum, Washington, DC, while 126 specimens are located in the Field Museum of Natural History, Chicago, IL.

**1897: Trevor Charles Digby Kincaid** (1872–1970)—Plants that he collected from the Karluk area in July 1897 are present in the US National Museum, Washington, DC; University of Washington Herbarium, Seattle, WA; and University of Michigan Herbarium, Ann Arbor, MI.

**1897: Walter Harrison Evans** (1863–1941)—Evans worked as a botanist for the US Department of Agriculture, Office of Experimental Stations. Plants he collected from the Karluk area in July 1897 are present in the US National Museum, Washington, DC.

**1901–1902: William Titus Horne** (1876–1944)—A large collection of plants from the Karluk area is present at the New York Botanical Garden, Bronx, NY. Horne worked at the Karluk River hatchery in 1901–1902. He collected the type specimen of the birch *Betula hornei* at Karluk in August 1902; the type can be viewed at the New York Botanical Garden website. (Available at: <http://sweetgum.nybg.org/vh/specimen.php?irn=398554>; accessed 29 July 2011). On 8 December 1903, Horne presented a paper entitled “The Vegetation of Kodiak Island, Alaska” to The Torrey Botanical Club in New York, based on his Karluk plant collections, which included aquatic macrophytes and algae from the river, small tributary streams, ponds, and bogs. A summary of his talk was published in the club's scientific journal in 1904 (Earle 1904), with about 50 plant species mentioned from four plant communities (low-lying *Vaucheria* bogs, grasslands, high-lying peat bogs, and alpine).

- 1903: Cloudsley L. Rutter** (1867–1903)—230 plant specimens collected from the Karluk area in May–August are in the US National Museum, Washington, DC (Hulten 1940). Rutter’s plant specimens from Alaska are also present in the Arnold Museum and Harvard University Herbarium, Harvard University, Cambridge, MA; and University of Copenhagen Botanical Museum, Denmark (Vegter 1983).
- 1904: Charles Vancouver Piper** (1867–1926)—Plants that Piper collected from the Karluk area in July 1904 are present in the US National Museum, Washington, DC. Apparently, some of these specimens are also present at the University of Copenhagen Botanical Museum, Denmark, and Rijksherbarium, Leiden, Netherlands. Piper, an Agrostologist for the US Department of Agriculture, visited Alaska for two months in the summer of 1904 to collect plants and to determine which grasses and forage plants were most important for the region’s grazing lands. He prepared a report on the most common grasses and forage plants on Kodiak Island and described early attempts by residents to raise cattle, sheep, and goats (Piper 1905).
- 1926: Willis H. Rich** (1885–1972)—It is likely that Rich’s collection of aquatic plants from Karluk Lake was originally deposited in the Dudley Herbarium of Stanford University, but in 1976 was transferred to the California Academy of Sciences, San Francisco, CA. A list of plants collected by Rich at Karluk Lake is located at Branner Library, Stanford University (G4372.K28 1926.R5).
- 1950: US FWS**—A small collection of 15 pressed plants from Karluk is located in the National Archives and Records Administration, Anchorage, AK (Record Group 22). These plants are mainly aquatic macrophytes, sedges, and rushes.
- 1954: Jones D. Reeves**—Reeves made a plant press while working as a FWS summer field assistant and collected specimens from the Karluk Lake area for the Museum of Oklahoma A & M, Tahlequah, OK.
- 1962: Eric Hulten**—Hulten collected plants near Pinguicula Lake (Barnaby Lake) and the lower Karluk River in June. Specimens are located at the Botanical Museum, University of Lund, Sweden, and at the Swedish Museum of Natural History, Stockholm, Sweden.
- 1964–65: Richard Blott**—Blott made a large collection of vascular plants at Karluk Lake while working as a FWS Seasonal Biologist, but the location of his collection is unknown.
- 1994: Carolyn L. Parker**—Many plants collected at

Camp Island and north of Karluk Lake are located at the University of Alaska, Museum of the North, Fairbanks, AK.

## Invertebrates

- 1889: Tarleton Hoffman Bean** (1846–1916)—Marine invertebrates (copepods and isopods) collected at Karluk by Bean are located in the US National Museum of Natural History (NMNH# 38570–38573, 39342, 67672). The collected copepods are the salmon sea lice, *Lepeophtheirus salmonis*.
- 1896: Cloudsley L. Rutter and Arthur W. Greeley**—In late 1896, Rutter and Greeley collected bird lice (order Phthiraptera) from willow ptarmigan, dip-pers, and chickadees at Karluk. These specimens are located in the Essig Museum of Entomology, University of California, Berkeley.
- 1903: Cloudsley L. Rutter** (1867–1903)—Marine invertebrates collected at Karluk by Rutter are located in the US National Museum of Natural History. Apparently, the stomach contents of juvenile sockeye, coho, and Chinook salmon that Rutter collected in June and July 1903 at Karluk Spit and Lagoon were later examined by Bradley (1908) for the amphipod *Corophium salmonis* at the University of California, Berkeley, and likely were retained in this collection.
- 1926–30: Willis H. Rich** (1885–1972)—Rich collected zooplankton from Karluk, Thumb, and O’Malley Lakes and originally sent these samples to Chauncey Juday at the University of Wisconsin, where they may be deposited in the zoological museum.
- 1939–41: William M. Morton** (1905–1981)—Freshwater mollusks taken from charr stomachs at Karluk Lake were sent to taxonomic specialists at the US National Museum of Natural History for identification in 1950 and these specimens were likely added to this collection. Likewise, freshwater leeches found in charr stomachs at Karluk and Thumb lakes were also sent to the same museum and added to its collection—*Glossiphonia complanata* (NMNH# 37321) and *Erpobdella punctata* (NMNH# 37111).
- 1955–56: Philip R. Nelson and Gary Lyle Seawright**—Zooplankton collected by both FWS biologists from a small pond north of Spring Creek, Karluk Lake, are located at the US National Museum of Natural History (NMNH# 141767, 285273). These plankton samples were originally collected for scientists at the Arctic Health Research Center, Anchorage, AK.
- 1956: Douglas K. Hilliard**—Hilliard worked for the Arctic Health Research Center, US Public Health

Service, Anchorage, AK, and collected zooplankton at Karluk Lake. A few of his specimens are present at the US National Museum of Natural History (*Diaptomus pribilofensis*—NMNH# 210770).

**1958: US FWS**—Copepod gill parasites (*Ergasilus auritus*) collected from Karluk River fish are located in the US National Museum of Natural History (NMNH# 107547)

## Birds

**1889: Tarleton Hoffman Bean** (1846–1916)—Bean collected birds from the Karluk area for the US National Museum, Washington, DC.

**1896–97, 1903: Cloudsley L. Rutter** (1867–1903)—The bird specimens that Rutter collected from Karluk were initially deposited in the Stanford University zoological museum, but later these were transferred to the California Academy of Sciences, San Francisco, CA. Specimens included at least 15 species—common raven, bald eagle (skin and eggs), rock sandpiper, rock and willow ptarmigan, American dipper, black-capped chickadee, black-billed magpie, northern shrike, savannah sparrow, fox sparrow, song sparrow, white-crowned sparrow, pine grosbeak, and snow bunting. Another four bird skins from black-billed magpie, common redpoll, and rosy finch were collected by Rutter at Karluk in 1896–1897 and eventually deposited in the Museum of Vertebrate Zoology, University of California, Berkeley. During this same period, Richard C. McGregor obtained bird skins of pine grosbeak from Karluk (probably originally collected

by Rutter), these now being located in the Museum of Vertebrate Zoology. On 17 May 1903 Rutter found a tundra swan's nest (*Cygnus columbianus*) at Karluk Lake and collected six eggs for Barton Warren Evermann. One egg was broken, but five of these swan eggs were eventually included in the Richard Magoon Barnes egg collection and are presently held in the Illinois State Museum, Springfield, IL.

**1897: Arthur W. Greeley**—Two bird species (rosy finch and northern fulmar) collected by Greeley at Karluk are located at the California Academy of Sciences, San Francisco, CA

**1926–29: Willis H. Rich and Seymour P. Smith**—The field notes of both biologists document that many bird eggs were collected in the Karluk Lake area for Dr. Harold Heath, Stanford University, but the present location of this large egg collection is unknown. Originally, they may have been deposited in the Stanford University museum, but presently can not be located in the California Academy of Sciences, San Francisco, CA. At least one golden-crowned sparrow egg collected by Smith at Karluk eventually was deposited in the Museum of Vertebrate Zoology, University of California, Berkeley, CA

**1954, 1956: John Q. Hines**—Hines collected birds from the Karluk area for the natural history museum in the Wildlife Department, Humboldt State University, Arcata, CA. At least 13 species were obtained in the Karluk area, though present museum records indicate that some specimens are missing. Hines worked as a FWS stream guard at Karluk in 1954 and 1956.



Two immature bald eagles in a cottonwood tree nest, Karluk Lake, 1960. (U.S. Fish and Wildlife Service, National Digital Library, FWS-6515)

## Fishes

**Prehistoric: Alutiiq Museum, Kodiak**—This museum archives fish body parts (scales, vertebrae, and other bones) recovered in archaeological excavations at and near Karluk. The material includes salmon and various marine species (cod, halibut, and others).

**1889: Tarleton Hoffman Bean** (1846–1916)—Bean collected fishes from the Karluk area for the U.S. National Museum, Washington, DC.

**1896–97, 1903: Cloudsley L. Rutter** (1867–1903)—Rutter collected fishes from both freshwater and marine habitats at Karluk and placed specimens in the Stanford University Museum (these fishes are now at the California Academy of Sciences) and U.S. National Museum. He published a report on tide-pool fishes at Karluk (Rutter, 1899). Rutter may have collected fishes from the Karluk area in 1894 while aboard the

- Grampus*, these specimens being deposited in the US National Museum.
- 1925: Charles H. Gilbert** (1859–1928)—Specimens of Karluk’s sockeye salmon (SU 25226) are located at the California Academy of Sciences, San Francisco, CA
- 1926: Willis H. Rich and Seymour P. Smith**—Specimens of Karluk’s sockeye salmon are located at the California Academy of Sciences, San Francisco, CA
- 1926: Harlan B. Holmes**—A shad, *Alosa sapidissima*, collected at Karluk in 1926 was deposited (SU 13629) in the Stanford University collection and was later transferred to the California Academy of Sciences, San Francisco, CA.
- 1933–35: Thomas Barnaby** (1903–1998)—Sockeye salmon (UW 003712) and coastrange sculpin (UW 003760) that Barnaby collected from the Karluk River are located in the University of Washington fish collection, Seattle, WA.
- 1937–38: Allan C. DeLacy** (1912–1989)—DeLacy collected a shad at Uyak Bay in 1937, Dolly Varden (UW 013792) from the Karluk River weir in 1938, and Arctic charr (UW 020737) in Karluk Lake in 1940. He also collected (with Morton) Dolly Varden (UW 020752–020755) and threespine sticklebacks (UW 025934) from the Karluk Lake basin in 1939–1941. These are in the University of Washington fish collection, Seattle, WA.
- 1939–40: William M. Morton** (1905–1981)—Morton collected Arctic charr (UW 004776, 020745, 041176–041177, 041182–041183), Dolly Varden (UW 004777, 020756, 028781, 028786, 028788, 041156–041188), juvenile salmon (UW 041158–041160, 041171–041172, 041186, 041190), threespine stickleback (UW 004998, 041189), and coastrange sculpin (UW 005035, 041175) from the Karluk Lake and River basin in 1939–1941, these being located in the University of Washington fish collection, Seattle, WA. He also collected (with DeLacy) sockeye salmon (CAS 13153), Chinook salmon (CAS 13177), Dolly Varden (CAS 60559), and Arctic charr (CAS 60575), these being located at the California Academy of Sciences, San Francisco, CA.
- 1956: Douglas K. Hilliard**—He collected sockeye salmon at Karluk Lake, these being located at the University of Alaska, Museum of the North, Fairbanks, AK.
- 1959: U.S. Fish and Wildlife Service**—Arctic charr collected from Karluk are located in the University of Washington fish collection, Seattle, WA.
- 1961: Benson Drucker (1931–2000)**—Coastrange sculpins that Drucker collected at Karluk Lake are located at the University of Alaska, Museum of the

North, Fairbanks, AK.

**1889–1998: U.S. National Museum of Natural History**—This fish collection contains Karluk specimens of all eleven fish species known to occur in the lake and river—coastrange sculpin, threespine stickleback, ninespine stickleback, Chinook salmon, chum salmon, coho salmon, pink salmon, sockeye salmon, steelhead, Arctic charr, and Dolly Varden. Collections were made by many biologists.

## Mammals

- 1896–97: Cloudsley L. Rutter** (1867–1903)—Mammals that Rutter collected in the Karluk area were added to the Stanford University Museum and later these were transferred to the California Academy of Sciences, San Francisco, CA. Specimens included river otter (*Lontra*), vole (*Microtus*), ermine (*Mustela*), and fox (*Vulpes*).
- 1927: Seymour P. Smith**—While doing his fisheries work at Karluk Lake in 1927, Smith shot a very large brown bear, which is now displayed at the U.S. National Museum, Washington, D.C. (Dodge, 2004).
- 1930: Claude H. Barr**—At least two adult brown bears (male and female) were shot at Karluk Lake (Barr, 1931) and fully mounted by Julius Friesser for display in the Mammal Hall, Illinois State Museum, Springfield, IL. Possibly two other younger bears were also obtained. The bears were displayed in a diorama of the Karluk Lake region for a number of years (Eifert, 1941), but eventually this scene was dismantled and at least three of the four Karluk bears were placed in storage at the museum. According to the curator, the male bear is still in the museum collection, but not the female bear. In 2006 a photograph of the mounted Karluk male bear was present at the Illinois State Museum website.
- 1952: Roy R. Lindsley**—On 23 May 1952 at Karluk Lake, FWS biologist Lindsley killed the largest Alaskan brown bear ever recorded (based on skull size). The male bear (about 540 kg) was taken to complete a planned Alaskan exhibit at the Los Angeles County Natural History Museum (Lindsley, 1978). The fully mounted bear remained on display at the museum until about 1987, when it was donated to Tunghai University Natural History Museum in Taichung, Taiwan (Dodge, 2004).<sup>1</sup> The Los Angeles County Nat-

<sup>1</sup> Jim Dines, Mammalogy Collections Manager, Natural History Museum of Los Angeles County, Los Angeles, CA, personal commun. with Richard L. Bottorff, 2006.

ural History Museum retained the record bear skull in their collection and presently has a permanent diorama that exhibits two other Karluk Lake brown bears, a sow and a cub, taken by Fred Henton in 1938. The part of this diorama that shows the sow can be viewed on the museum's website. (Available at: <http://www.nhm.org/site/explore-exhibits/permanent-exhibits/north-american-mammals/grizzly-bear>; accessed 29 July 2011). The museum also has a partial skeleton of a Karluk brown bear taken near Cascade Creek in May 1976.

**1954: Jones D. Reeves**—Mammals, especially lemmings, were collected by Reeves from the Karluk Lake area for the Museum of Oklahoma A & M., Tahlequah, OK.

**1958: Robert C. Feuer**—Feuer collected the skins and skulls of voles, short-tailed weasels, river otter, and bats from the Karluk Lake area while working as a

FWS Seasonal Biologist. Most specimens were deposited at Tulane University, New Orleans, LA. The *Microtus* specimens were divided between Tulane University, University of Florida, and University of Michigan. He published a short paper on these mammals (Feuer, 1958).

**1960s: Numerous Collectors**—Many brown bear skulls were collected from different sites around Karluk Lake and archived at the University of Alaska, Museum of the North, Fairbanks, AK.

**1963–1965: Jerry R. Loll**—He collected the skins and skulls of tundra voles and a red fox from the Karluk Lake area while working as a FWS Seasonal Biologist. Some specimens may be in the mammal collection at Florida State University, Tallahassee, FL, while others are in the personal collection of Jerry R. Loll, Indianantic, FL.

