

Kōlea Stones—Their Features and Ethnohistory

B. LEILANI PYLE¹

INTRODUCTION

Numerous small grooved stones have been recovered during archaeological explorations in the Hawaiian Islands. Some of these stones apparently were used by early Hawaiians as fishing sinkers. Others, particularly those found at inland sites, were more likely the basis of a technique for capturing Kōlea (Pacific Golden-Plover, *Pluvialis fulva*). In this paper, I describe features of “Kōlea stones” and summarize ethnohistorical accounts that explain how these stones were used for capturing birds.

METHODS

The grooved stones that I measured were found in 1973 and 1980 during archaeological surveys conducted at several sites along the Waimea to Kawaihae Road Corridor, Island of Hawai'i (fig. 1). Reports detailing this archeological project (including photos and drawings of some of the stones) were published by Barrera & Kelly (1974), and Clark & Kirch (1983). The stones were deposited in the ethnography collections of the B. P. Bishop Museum, Honolulu where I had the opportunity to examine 26 of them. For each stone, I recorded weight (to 0.1g) and measured length, width, and thickness in mm.

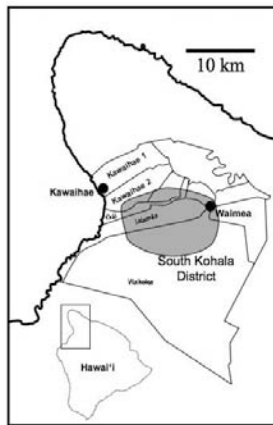


Figure 1. South Kohala District, Island of Hawai'i. Shaded region represents area where many of the Kōlea stones were found

RESULTS

The general appearance of the stones is shown in fig. 2. They are typically elliptical with rounded ends, and are encircled by a transverse groove. All of the grooved stones were found at some distance from the coast, generally >2.0km inland. Means and ranges for the sample (n = 26) were as follows: weight = 76.3g (46.3 – 114.3g); length = 74.2mm (490 - 840mm), width = 38.2mm (220 - 480mm), thickness = 25.2mm (160 - 340mm). All the stones I examined had grooves approximately 2mm deep. Similarly, one stone found in the Wai'anae area also had a groove about 2mm in depth (Mary Riford, pers. comm.).

DISCUSSION

Large numbers of Pacific Golden-Plovers (Kōlea in Hawaiian) winter in the Hawaiian Islands over a season extending from August to May (for details of the migratory cycle, wintering behavior, estimated populations, and other features of the

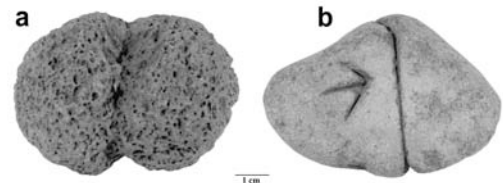


Figure 2 Two examples of Kōlea Stones in the Bishop Museum collection: a) from the island of Hawai'i (Accn: D.874), and b) from the island of Moloka'i (Accn: 1933.111.079). Photos taken by R.L. Pyle and provided courtesy of Bishop Museum.

species, see Berger 1981, Johnson & Connors 1996, Johnson et al. 2001, Johnson 2003).

During the wintering period, the plover was a food resource for Hawaiians (Kepelino, 1859, Kahiolo, 1863a, Malo, 1951; see also Buck, 1964, Handy & Handy, 1972) who captured them with gorges baited with grubs. The snare or gorge (an object that caught crosswise in the throat) was tied to a “Kōlea stone” such that the disabled bird could not fly away. One finds the following quotations among accounts of the technique:

“The pu'u was another method of catching plovers. One end of a cord was tied to a stone and the other end of the rope was made thin and fine and a chicken or turkey bone was tied to this end. The two ends of the bone were thrust into lumps of earth and left in a good place, like a newly made patch or any other place where the plover would not notice the trap. When it swallowed the bone and walked away, the end that was tied to the stone pulled on the rope and made the bone be crosswise in the throat. Thus the plover was killed.” (Kahiolo 1863b:1062)

“In olden times, the islanders were very expert in snaring them, but like other of their former arts, the method has been forgotten, or the present generation is too lazy to practice it. I am indebted to Mr. F. Spencer for one of the ‘Kōlea stones’ used for the capture, which is a piece of smooth lava, grooved to receive a hair-noose. The natives used to set many hundreds of these snares, and on the authority of Mr. Spencer, enormous numbers were caught, the women and girls being quite as expert as the men at the practice” (Wilson and Evans 1899:162).

Continued on page 26

“The small fine limb bone of a plover is run through a grub and tied with a long thread, which is fastened to a rock. The plover swallows the grub and the bone sticks in the throat. A number of lines are set out at one time.” (Wise 1917:1)

“Near this place [on Maui] we saw several boys anxiously watching some object, and on getting near them, found they were employed in catching birds. This was done by baiting small sticks, to which a string was tied, and the other end of the string fastened to a small stone: the bird swallows the stick along with the bait, and in attempting to fly off, it pierces his throat, and he is thus secured.” (Wilkes, 1845:243).

In an examination (though not exhaustive) of ethnographic literature concerning other Polynesian groups, I found no mention of a similar method for catching plovers. However, Philip Bruner (Brigham Young University, Hawai‘i) told me that he has seen people in the Tuamotus catching Bristle-thighed Curlews (*Numenius tahitiensis*) with a gorge tied by a string to a hidden stake. The bird would pick up the bait with the gorge inside, toss it in the air, catch it with its bill, and swallow it.

In the Forbes/Edmondson Ethnographic Collection at the Hawai‘i Volcanoes National Park, there is a transversely grooved stone (approximately 54mm long x 37mm wide x 28mm thick) with a string tied to it, and attached to the string is a small stick or bone pointed at both ends (Catalogue #41, HNPK, Accession No. 5). The artifact was presented to the Park in 1951 by Mrs. Harry Edmondson who identified it on the accession record as a “stone for catching the Pacific golden plover.” Mrs. Edmondson told me during a conversation on 7 June 1982 that the Hawaiians were still using grooved stones to catch plovers when she was a young girl, and that she had personally collected a number of such stones (pers. comm.).

The Bishop Museum Ethnography Collections contain grooved stones from early O‘ahu excavations and these may also be plover-capture artifacts. Emory & Sinoto, (1961:57) describe

two such stones: one a “rather large oval stone of basalt, grooved transversely” was found near the Makani‘olu Shelter; another came from the floor of Kuli‘ou‘ou Shelter and measured 53mm long, 41mm wide and 29mm thick. These dimensions are in close agreement with the size of the previously mentioned artifact at Hawai‘i Volcanoes National Park and with some of the stones from the Waimea-Kawaihae Corridor excavations. Notably, the lowest levels of Kuli‘ou‘ou Shelter contain large numbers of bird bones and the radiocarbon date at this level is AD 1004 ± 180 (Emory & Sinoto, 1961).

Yet another significant artifact was recovered in the Kawēkiu Shelter (located near the Makani‘olu Shelter): “Almost escaping notice was a tiny angular bone 20 mm long and ground to a sharp point at each end. This is the only gorge of its kind which we have noticed” (Emory & Sinoto, 1961:52-53). The gorge recovered from Kawēkiu Shelter appears to be the only one of its kind described in the literature. The frequently found “bone picks” and “awls” are pointed only at one end (Emory & Sinoto, 1961). The Makani‘olu and Kawēkiu Shelters were 0.6km from Kuapā pond, which was a shorebird and waterfowl habitat.

Aside from eating them, the Hawaiians may have used plovers in at least one other way. Frances Spencer Bickerton, who grew up in the Waimea area, recalls about plovers: “The Hawaiians got them and boiled them down . . . and used them for their lamps and so we smelt plover all year round.” (Bickerton 1915:1770). Thus, it appears that plovers were a source for oil. The full extent of this usage is unknown. It does not appear that plover feathers were used in Hawaiian featherwork. Plovers are not included in lists of birds whose feathers Hawaiians used in their featherwork (Brigham, 1899, Malo, 1951, Buck, 1964, Handy & Handy, 1972, Holt, 1985). Sheila Conant (University of Hawai‘i), who has done extensive research on feathers used in Hawaiian featherwork, has found no plover feathers in the featherwork she has examined, and no literature reference for such usage (pers. comm.).

Plover stones and one or two small double-pointed bones are remains of a technique developed by the Hawaiians for catching plovers. These artifacts are significant in better

Continued on page 27

‘Elepaio

ISSN 0013-6069

Managing Editor: Lydi Morgan

Scientific Editor: Ron Walker

The ‘Elepaio is printed on recycled paper and published nine times per year: February, March, April, May, June/July, August/September, October, November, and December/January

850 Richards Street, Suite 505

Honolulu, HI 96813

Phone/Fax: (808) 528-1432

E-mail: hiaudsoc@pixi.com Website: www.hawaiiadubon.com

Pacific Fisheries Coalition (PFC) (a project of HAS)

Tel: (808) 262-6859 Website: www.pacfish.org

Board Roster:

John Harrison President

Wendy Johnson, First Vice President

Ron Walker, Second Vice President

Liz Kumabe, Recording Secretary

Carol Bebb, Director

Carolyn Blackburn, Director

Phil Bruner, Director

Arlene Buchholz, Director

Tom Jacobs, Director

Staff:

Casey Primacio, Office Manager

Linda Paul, Executive Director for Aquatics

Committee Chairs:

Conservation: John Harrison

Education: Wendy Johnson & Liz Kumabe

Elepaio: Ron Walker

Field Trips: Casey Primacio

Fundraising: Carolyn Blackburn & Tom Jacobs

Grants & Scholarships: Phil Bruner

Membership: Carolyn Blackburn

Program: Arlene Buchholz

Publications: Linda Paul & Wendy Johnson

Website: Stephen Bibbs

understanding the food and lamp oil sources of the Hawaiians from ancient times through the turn of the 20th century.

ACKNOWLEDGEMENTS

Oscar W. Johnson reviewed this manuscript on several occasions and made many useful suggestions for improvement; Allen Ziegler, staff of the Bishop Museum Library and Archives and the Bishop Museum ethnographic collection provided assistance. I am grateful to my son and daughter, Richard and Ellen Pyle, who provided much technical assistance as well as general encouragement and support.

¹Researcher and Librarian, Cultural Surveys Hawai'i, Inc. 1314 Kalakaua Ave., Apt. 1010, Honolulu, Hawai'i 96826, email: lpyle@hawaii.rr.com

LITERATURE CITED

- Barrera, W., Jr. & M. Kelly. 1974. Archaeological and historical surveys of the Waimea to Kawaihae Road Corridor, Island of Hawaii. B.P. Bishop Museum Dept. of Anthropology Report 74-1 (unpeel). 84 p.
- Berger, A.J. 1981. Hawaiian Birdlife, 2nd Edition. University of Hawaii Press. Honolulu, Hawaii. 260 p.
- Bickerton, F.S. 1915. Testimony in a court case. Hawaii State Archives. Attorney General Case File No. 2311:1768-1770
- Brigham, W.T. 1899. Hawaiian feather work. B.P. Bishop Museum Memoirs 1: 1-81.
- Buck, P. 1964. Arts and crafts of Hawaii. B.P. Bishop Museum, Special Publication 45: 1-606.
- Clark, J.T. & P. Kirch. 1983. Archaeological investigations of the Mudlane-Waimea-Kawaihae Road Corridor, Island of Hawaii. B.P. Bishop Museum Dept. of Anthropology Report 83-1 (unpubl.). 532 p.
- Emory, K. & Y. Sinoto. 1961. Hawaiian archaeology: Oahu excavations. B.P. Bishop Museum Special Publication 49: 1-77.
- Handy, E.S.C. & E.G. Handy. 1972. Native planters in old Hawaii, their life, lore and environment. B.P. Bishop Museum Bulletin 233: 1-641.

- Holt, J.D. 1985. The art of featherwork in old Hawaii. Topgallant Publishing Co. Honolulu, Hawaii. 176 p.
- Johnson, O.W. 2003. Pacific and American Golden-Plovers: reflections on conservation needs. Wader Study Group Bulletin 100: 10-13.
- _____ & P.G. Connors. 1996. American Golden-Plover (*Pluvialis dominica*), Pacific Golden-Plover (*Pluvialis fulva*). In *The Birds of North America*, No. 201-202 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C. 40 p.
- _____, P. L. Bruner, J. J. Rotella, P. M. Johnson, & A. E. Bruner. 2001. Long-term study of apparent survival in Pacific Golden-Plovers at a wintering ground on Oahu, Hawaiian Islands. *Auk* 118: 342-351.
- Kahiolo, G.W. 1863a. Edible birds. *Kuokoa* May 2, 1863. [Hawaiian newspaper article, translation by Mary K. Pukui in B.P. Bishop Museum Archives HEN Notes Vol 1:1062.]
- _____. 1863b. About the Kolea, Golden Plover. *Kuokoa* May 9, 1863. [Hawaiian newspaper article, translation by Mary K. Pukui in the B.P. Bishop Museum Archives HEN Notes Vol 1:1014-1016.]
- Kepelino (Zepherino Keaukalani). 1859. Short notes pertaining to Hawaiian life. Descriptions of Hawaiian birds. XVIII: Kolea, A bird of the shore. Translated by Mary K. Pukui. B.P. Bishop Museum Archives HEN Notes Vol 1:1127-1155.
- Malo, D. 1951. Hawaiian antiquities. Translated by Dr. N. Emerson. B.P. Bishop Museum Special Publication 2:1-278
- Wilkes, C. 1845. *The Narrative of the United States Exploring Expedition, during the years 1838, 1839, 1840, and 1842* (in five volumes). Lea and Blanchard, Philadelphia. 338 p.
- Wilson, S.B. & A.H. Evans. 1899. *Aves Hawaiienses: The birds of the Sandwich Islands. Seven Parts.* R.H. Porter, London. 257 p. [Parts I - VI first published 1890-1896]
- Wise, J. 1917. Bird Catching (by Hawaiians). MS.SC Stokes Group 2, Box 1.1. Oral narrative in the John Stokes Collection, B.P. Bishop Museum, Honolulu, Hawaii. 1 p.

HAS Program Meeting

Program Meetings are sponsored by HAS and the UH Biology Department, and are held at UH Mānoa's St. John lab building (Botany Building) in room 011 (ground floor auditorium). The address is 3190 Maile Way. Attendance is free and open to the public.

June 15, Monday, 6:30 – 8:30 p.m.

Gardening for a Greener Future, with Lydi Morgan

Lydi will discuss the benefits of organic agriculture as it relates to environmental and personal health. She will provide gardening tips and discuss local efforts to increase food security for our islands. Lydi is a gardener and educator with The Green House and Kokua Hawai'i Foundation's 'AINA In Schools program. She is the Managing Editor for the 'Elepaio and former Office Manager for Hawaii Audubon Society.

‘IWI

A Poem by H. Paul Porter

Originally printed in 'Elepaio. Vol. 8, #7, January 1948.

To what fear of gods of fire ingrained
Into your memory here among Oahu's hills
Can be ascribed the way your breast with music fills
Yet makes your burst of melody seem strained?
It may be that the rippling noted entrained
Within a stream of ecstasy - your wills
Burst forth defiance to the flame that kills,
But Pele glanced your way - and you refrained.

We who come later see your flash of red -
Hear your glad voices, but the strain is there.
You sing, with effort though your song be fair,
Yet Pele and her flame are long since dead.
Cast off your fears - the gods can do you no harm
Against the brilliant magic of your charm.

HAS Awards For Student Research

By Wendy Johnson, Education Committee Chair

The Hawaii Audubon Society presented two awards for outstanding research relating to Hawaii's natural history at the 51st Hawai'i State Science and Engineering Fair. In early April representatives of the Hawaii Audubon Society's Education Committee joined other agency judges in studying the exhibits and interviewing students on the subject of their original research.

Andrew Webster, who is a freshman at Mililani High School, received the HAS Senior Division Research award for his project entitled "*Pluvialis fulva* Population Monitoring on O'ahu". Andrew chose three locations on O'ahu where he counted Pacific Golden Plovers (kolea) on five consecutive days and also noted four different variables which might impact the number of plovers feeding in their territories at any time. Plover observations at Mililani High School, McGrew Point and Ko'olina also included data on precipitation, wind, ground cover and human activity. Andrew consistently found the most plovers at Ko'olina, where he determined that well-maintained grassy fields provided an ideal ground cover for catching insects and spotting predators. While Andrew is already very knowledgeable about the Kolea and their habits, he has identified several other research questions he would like to try to answer in the future.

The HAS award for outstanding Junior Division Research relating to Hawaii's natural history went to a project submitted by Robert Tanner Heckman, a sixth grader at St. John Vianney School in Kailua. Robert's project, entitled "Coral Damage Along Lanikai Beach" involved snorkeling transects at four stations in the near off-shore water at Lanikai. Robert learned to identify corals and coral diseases, while noting crush marks and broken branches on the coral. He also counted numbers of visitors to the beach in the areas adjacent to each of the transects. Robert concluded that areas with the most people on the beach showed negative impacts to coral health in the near shore waters. He thinks that if people were more aware of the presence and the biology of living coral, they would be more careful not to step on it. Robert wrote a letter to the Mayor to suggest that educational signage should be posted at Lanikai beach.

Congratulations to this year's winners!



Andrew Webster received the HAS award for outstanding Senior Research relating to Hawaii's natural history.



The HAS award for outstanding research in the Junior Division went to Robert Tanner Heckman

Fish and Wildlife Service Provides \$1 Million in Land Acquisition Funds to Hawai'i

Interior Secretary Ken Salazar has announced more than \$57.8 million in grants to 27 states to support conservation planning and acquisition of vital habitat for threatened and endangered fish, wildlife, and plants. The grants, awarded through the Cooperative Endangered Species Conservation Fund, will benefit numerous species ranging from the Lake Erie watersnake to endangered Hawaiian plants.

This year, the cooperative endangered species fund provides approximately \$7.6 million through the Habitat Conservation Planning Assistance Grants Program, \$36 million through the Habitat Conservation Plan Land Acquisition Grants Program, and \$14.1 million through the Recovery Land Acquisition Grants Program. The three programs were established to help avoid potential conflicts between the conservation of threatened and endangered species and land development and use.

"These grants are critically important tools to help conserve our nation's threatened and endangered species," said Secretary Salazar. "They provide state agencies with much needed resources to empower landowners and communities to protect habitat and foster environmental stewardship for future generations."

The recovery land acquisition grants provide funds to states and territories to acquire habitat for endangered and threatened species with approved recovery plans. Habitat acquisition to secure long-term protection is often an essential element of

a comprehensive recovery effort for a listed species. Funds awarded to the State of Hawai'i are often combined with other federal, state, and private funds to complete acquisitions.

On the Island of Moloka'i, \$1 million will be provided to the State of Hawai'i to help acquire a perpetual conservation easement over 614 acres of strategic watershed on the eastern end of the island. Stretching from the summit almost to the ocean, this connected parcel follows the traditional Hawaiian land delineation and management system or ahupua'a. The property has several federally listed threatened or endangered species as well as critical habitat in and around the proposed easement area. Listed species that will benefit from the acquisition are: ko'oko'olau (*Bidens wiebkei*), 'Ōwikiwiki (*Canavalia molokaiensis*), koki'o ke'oke'o (*Hibiscus arnottianus* ssp. *immaculatus*), pua'ala (*Brighamia rockii*), haha (*Cyanea dunbariae*), nŋnŋ (*Gardenia brighamii*), loulou (*Pritchardia munroi*), and *Phyllostegia hispida*.

Since 2001, the U.S. Fish and Wildlife Service has provided more than \$13 million in recovery land acquisition grants to the State of Hawai'i.

For a complete list of the 2009 grant awards for these programs (Catalog of Federal Domestic Assistance Number 15.615), see the Service's Endangered Species Grants home page at <http://endangered.fws.gov/grants/section6/index.html>.

Source: USFWS News Release dated April 17, 2009.

Membership in Hawaii Audubon Society 2009

Regular Member:	\$ 25.00	Foreign Membership (Airmail)
Student Member:.....	\$ 15.00	Mexico.....
Supporting Member:.....	\$100.00	Canada.....
Family Membership.....	\$40.00	All other countries
		\$ 26.00
		\$ 28.00
		\$ 33.00

*These are annual membership dues, valid January 1 through December 31.
Donations are tax deductible and gratefully accepted.*

Name _____

Address _____

City, State, Country, Zip _____

Phone _____ Email _____

Membership \$ _____ + Donation \$ _____ = Total \$ _____

New Membership Renewal

Please make checks payable to Hawaii Audubon Society and mail to us at 850 Richards St., #505, Honolulu, HI 96813.

PLEASE LET US KNOW IF YOUR ADDRESS CHANGES.



HAWAII AUDUBON SOCIETY
850 RICHARDS STREET, SUITE 505
HONOLULU, HAWAII 96813-4709

www.hawaii-audubon.com
Phone/Fax: (808) 528-1432
hiaudsoc@pixi.com

Nonprofit Organization
U.S. Postage
PAID
Honolulu, Hawaii
Permit Number 1156

ADDRESS SERVICE REQUESTED

‘ELEPAIO • 69:4 • MAY 2009

Calendar of Events

Table of Contents

Friday, May 1
HAS Scholarship Applications Due

Friday, May 8
Full Moon Seabird Adventures

Monday, June 15
HAS Program Meeting
Gardening for a Greener Future
See page 27

Kōlea Stones—Their Features and Ethnohistory25

‘IWI A Poem by H. Paul Porter.....27

HAS Program Meeting.....27

HAS Awards For Student Research 28

**Fish and Wildlife Service Provides \$1 Million
in Land Aquisition Funds to Hawai‘i.....29**

Membership Application.....29