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'ELEPAIO

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Influence of Cold Air Temperatures on Incubation by Captive Nene

by John H. Michael, Jr.[1]

Although generally considered to be an inhabitant of the tropics, and as such, existing in a continuously "tropical" climate, wild Nene (Nesochen sandvicensis) successfully incubate eggs during periods of sub-freezing air temperatures (Kear and Berger 1980). The authors further described successful incubation by captive birds at Slimbridge, England and Pohakuloa, Hawaii when air temperatures fell as low as -8°C and -5°C, respectively. At the same time, they reported that Nene maintained at Slimbridge were observed to abandon nests because of occasional prolonged, but unquantified, frosts. The potential for nest abandonment was one of the reasons mentioned for not allowing females to incubate their clutches. Observations over four years of a pair of Nene held at Olympia, Washington revealed they did not desert their nest despite freezing air temperatures. This suggests that low air temperature in and of itself may not be the cause of nest desertion.

Methods

The pair of Nene discussed in this paper was hatched in 1982 in western Washington. From mid-summer 1982 through 1990 they were kept in Olympia, Washington (approximately 47°N, 123°W) in a fenced enclosure with approximately 2000 m^2 of free roaming area. The dominant vegetation in the enclosure was a combination of grasses with some broadleafed forbs. Evergreen and deciduous trees were also present. In addition to natural forage commercial poultry pellets were continuously available and cracked corn was occasionally provided. The bulk of food observed consumed was grasses. The birds had free access to a tank of water for drinking and swimming. They were pinioned to prevent flight.

The birds were allowed to determine nest location. In each year, they had access to a dirt-floored, uninsulated, wooden barn. Access for the birds was through constantly open doorways. Leaves, straw, grasses, and feathers were utilized for nest construction (Figs. 1 and 2).

Air temperature information was collected at the United States Weather Service station (WSS) in Olympia, Washington (United States Weather Service files). This station is located 13 km to the west of the study enclosure and is at a similar elevation. Although no temperature data was systematically collected at the study site, occasional observations suggested that air temperatures were similar, with the study site being about 1°C to 2°C colder.

The incubation period was recorded as beginning when the female was observed to be continuously sitting on the nest and ending when the last egg hatched.

Results

Incubation by the Nene occurred in March and April in 1986 and in February and March during the succeeding years. Low air tem-

Figures 1 and 2. Nene sitting on nest (left) and standing behind nest with eggs (right).

perature, as recorded at the WSS, generally ranged between -3° to +5°C during the incubation period. On several occasions overnight low air temperature fell to -12°C with an absolute minimum of -12.8°C. Precipitation normally consisted of rain, with an occasional snowfall.

During the four years of observation the annual mean air temperature during incubation ranged from 4.9°C to 8.4°C and the lowest temperature recorded ranged between -2.8°C and -12.8°C (Table 1). Note especially 1989 and 1990 when there were 17 days during the incubation period when the low air temperature was freezing or below. Three days in 1989 and two days in 1990 had daily mean temperatures less than 0°C.

Table 1. Air temperature in degrees Centigrade for Olympia, Washington, during the period of Nene incubation.

	Air Temperature		No. days
Year	Mean	Minimum	low < 0
1986	8.4	-2.8	8
1987	7.1	-6.1	11
1989	4.9	-12.8	17
1990	5.3	-12.2	17

Discussion

During this period of observation, incubation by a captive Nene was not disrupted by low air temperatures. Although nests constructed in 1989 and 1990 were inside the barn, chicken eggs were observed to freeze on days when the daily mean temperature was below freezing. Simple low temperature or severe freezing did not induce nest desertion.

Bellrose (1980) reports that it is not unusual for the Canada Goose (Branta canadensis) to continue incubating even while the bird is covered with snow. The account did not specifically mention or quantify air temperature but it can be assumed that a bird incubating while snow-covered was exposed to sub-freezing temperatures. Consequently, incubating during sub-freezing air temperatures, by at least some species of goose, are not unusual.

Studies of Canada Goose incubation by Aldrich and Raveling (1983) showed that nest attentiveness, in terms of recesses taken during incubation, was related to the female's energy reserves. Further, the amount of energy reserves were directly related to female age and previous incubation experience. Older, more experienced birds stayed on the nest more than did younger, inexperienced females. It is possible that the female Nene's persistence at incubation was learned. As the female Nene considered here got older, and presumedly gained the experience and ability to sequester additional energy reserves, she was able to endure colder temperatures without abandoning her nest.

Banko (1988) suggests that the benefits of allowing a pair of Nene to incubate and rear the brood outweigh the potential loss of production, since a captive breeding program should attempt to retain as much of the genetic resources and behavioral patterns as possible. In this way, parental care of eggs and all of the associated behaviors can be retained. Fabricius (1991) demonstrated that 26% of the young male Greylag Geese (Anser anser) raised in the wild by Canada Goose foster parents were sexually imprinted to Canada Geese and would only mate with Canadas, even when Greylags were present. Consequently, the practice of hatching Nene eggs and not offering them Nene role models may reduce the ability of some of the offspring to produce young in the wild.

Caution should be exercised in extrapolating the results from observations of captive breeders to the wild. Captive birds are provided with a much "better" environment than wild geese may find. Food and water are both abundant and easily obtained. The threat from predators is reduced or eliminated. The captives may be incapable of flight. As a consequence, the female's daily metabolic requirement is lower. She may be less inclined to abandon a nest because she perceives a more secure environment. Thompson and Raveling (1987) and Murphy and Boag (1989) review the role of body reserves, food availability and utilization, and role of predators in nest attentiveness. Their conclusions support the thesis that a wild goose's nest attentiveness is controlled by the interaction of a number of variables such as body reserves, availability and quality of food, species of predator, and the pair's ability to repel predators. In captivity, all of these variables are eliminated or reduced. The result is the female will be able to devote more time and energy to incubation.

Abandonment of a nest during a period of freezing temperatures is more likely the result of the female reaching some low level of energy reserves requiring her to sacrifice the nest in order to survive. The cold temperatures may speed up metabolism or may reduce the available forage, resulting in a decline in female body condition.

Summary

Incubation by a pair of free-ranging captive Nene was not terminated despite exposure to air temperatures well below freezing. Incubation continued even through periods when the average daily air temperature was below freezing. The reports of captive Nene nest desertion during periods of frosts may have been caused by factors other than air temperature. These factors likely involved the age and physiological condition of the incubating bird.

Acknowledgements

Andy Appleby, Howard Fuss, and Pat Michael reviewed the manuscript and provided numerous valuable suggestions; their input is appreciated. Paul Banko and Charles Stone provided extremely constructive comments and criticism which is sincerely appreciated.

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[1]Washington Department of Fish and Wildlife
600 Capitol Way N
Olympia, Washington 98501-1091

Observations of Pueo Nests on the Slopes of Mauna Kea

by Thomas J. Snetsinger[1]

The Hawaiian Short-eared Owl or Pueo (*Asio flammeus sandwichensis*) is present on all the main Hawaiian Islands, including regular sightings on Kaho'olawe and many offshore islets. While the O'ahu population is listed as endangered by the State of Hawaii, all of the other main islands sustain populations which are not yet listed. The U. S. Fish and Wildlife Service is proposing that the Pueo be listed as a C-2 candidate species for listing (L. Mehrhoff personal communication). The largest populations are found on Hawai'i, Kaua'i, and Maui (Griffin 1989). Despite regular observations of Pueo in many areas, there has been virtually no documentation of their nests and nesting behavior.

In the spring of 1993 three Pueo nests were discovered while conducting field work on native birds. On 22 March, 1993, a Pueo incubating six eggs was discovered near Kanakaleonui on the eastern slope of Mauna Kea at 2756 m elevation. The nest was a simple depression in 30 cm tall grass at the base of a dead mamane (*Sophora chrysophylla*) snag. The nest was approximately 30 cm from the trunk on the downhill (eastern) side of the tree. On the following day, I photographed the nest while the female was away and found seven eggs. One week later, the nest was found abandoned. Based on my examination of a few egg shell fragments and a piece of moist egg shell lining in the nest, I suspect that the nest was predated by a feral pig (*Sus scrofa*), which are occasionally found in the area.

On 3 April, 1993, I found two Pueo fledglings at Kanakaleonui, approximately 1.5 km from the predated nest. One chick could fly only a few meters and the other remained hidden in a pukiawe (*Styphelia tameiameiae*) bush. A single parent circled above and called constantly. The call was a sharp "tchak" repeated every few seconds. The nest itself was never discovered, as Short-eared Owl chicks usually disperse from the nest before they fledge (Mikkola 1983). One week later, I observed a juvenile capable of flight near the same site, and I assumed this was one of the chicks.

A third nest containing four downy owlets was discovered above the Pu'u La'au cabin on 5 May, 1993. The nest was a simple clearing in the grass under a small mamane; the nest was on the downhill (western) side of the tree. The nest was found abandoned one week later after a heavy rainfall that lasted for several days. Three dead owlets were recovered, including one that was partially scavenged. These owlets had grown considerably during this week and had begun developing flight feathers. Remains of the partially scavenged owlet and the missing owlet were found in the stomach of one of the siblings. Cannibalism among chicks is typical of other Short-eared Owl sub-species (Mikkola 1983).

Pueo nests with young or eggs have been found in March, May (two nests), August (dispersed bird not yet able to fly), November, and December (Berger 1981), and it appears that Pueo nest throughout the year in Hawaii. The nesting effort and clutch size of most sub-species of Short-eared Owls is correlated with available food supply (Mikkola 1983). Based on my observations, I believe that nesting by Pueo in the dry mamane-naio forest of Mauna Kea is seasonal with peak nesting occurring during March-June, at the same time as peak breeding by other forest bird species.

Acknowledgements

I thank Steve Fancy, Brad Keitt, Karen Wilson, John Simon, Calvin Harada, and Thane Pratt for their assistance on this project. Additional thanks go to Brad Keitt and Keri Snodgrass who discovered the nests at Kanakaleonui and Pu'u La'au, respectively. I also thank Steve Fancy, Michelle Reynolds, and Thane Pratt for their comments on a previous draft of this manuscript.

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[1]National Biological Survey
Pacific Islands Science Center
Hawai'i Research Group
P. O. Box 44
Hawai'i National Park, HI 96718

Four Receive Research Grants

by Phil Bruner

The Hawaii Audubon Society received several applications for research grants during 1994 and is happy to announce that upon the recommendation of the Grants and Scholarship Committee four projects were funded. The recipients are Patrick Hart, Eric VanderWerf, Miko Iwasa, and Lisa Stratton.

Hart's study involves the endangered Hawaii 'Akepa. He seeks to determine whether or not nest-site limitations are an important factor in the decline of this species. Delayed plumage maturation and population structure in the 'Elepaio is the subject of VanderWerf's research. Iwasa is studying the endangered Hawaiian monk seal. She is interested in discovering the reproductive hormone profiles of female Hawaiian monk seals in order to assess the feasibility of predicting ovulation and detecting pregnancy using fecal steroid concentrations.

Stratton is working on one of Hawaii's most endangered ecosystems, the native lowland dry forest. Her study is investigating the implications of water resource partitioning in restoration projects. Stratton was awarded funds from the George C. Munro Dry Forest Fund.

All of the recipients have agreed to provide a summary of their findings to be published in the *'Elepaio*. We wish them well in their work and encourage others to apply for research grants. (See story below.)

Research Grants

The Hawaii Audubon Society makes grants for research in Hawaiian or Pacific natural history. Awards generally do not exceed $500 and are oriented toward small-scale projects within Hawaii. Special consideration will be given to those applicants studying dryland forests and aeolian systems on Hawai'i. The deadlines for receipt of grant applications are 1 April and 1 October. For an application form send a self-addressed stamped envelope to Grants, Hawaii Audubon Society, 1088 Bishop Street, Suite 808, Honolulu, HI 96813. For more information, call Phil Bruner, (808) 293-3820 (W).

Paradise Pursuits Preliminaries

by Wendy Johnson

February marks the beginning of the 1995 Paradise Pursuits competition season with preliminary rounds on O'ahu slated for the last two Saturdays of the month. Three-person teams of high school students from 10 public and private high schools will be fielding questions on topics relating to the four Paradise Pursuits quiz categories: Hawaii's natural history, native species, alien species, and human impact on the environment. Schools participate in two-team, single elimination matches and each team is supplied with an electronic buzzer which they use to signal their readiness to answer a particular question. After preparing for several months, most teams have a very good command of the Paradise Pursuits study materials, so student teamwork, careful listening, and communication skills become important elements for success in the competitions, because the game format can make for a lively, and sometimes tense, atmosphere.

Each game begins with a "toss-up" question to determine which team will have the opportunity to first select a particular subject area for their set of four "category round" questions, worth five points for each correct answer. Once the second team has had their turn at the initial category round, a new toss-up is offered and the second category round is played, with each correct answer now worth ten points. Next comes the fast-paced "Pueo" round with each team striving to be the first team to "buzz in" and answer each of the eight questions in this segment of the game. A correct answer at this stage is worth 10 points, while an incorrect answer results in a subtraction of 10 ponts from that team's total score. The final segment of the game includes a third toss-up and category round with questions worth 15 points each, as well as a second Pueo round with 15 points awarded for each correct answer, and 15 ponts subtracted if the answer is incorrect. Five point tie-breaker questions are held in reserve to be used if necessary.

Neighbor island competitions are scheduled for the first three Saturdays in March, with the highest-scoring teams from each island meeting on O'ahu in April for semi-final and final rounds which will be taped and edited for TV broadcast. Hawaii Audubon Society has received many generous prize donations for the students and the intangible rewards related to participating in Paradise Pursuits make every team member an automatic winner.

Seven 'Alala Chicks Released Into Wild

Seven 'Alala (Hawaiian Crow) chicks were released into their natural habitat on the Big Island last October, increasing the wild population by about 35 percent. The 'Alala is one of the most endangered birds in the world, with about 20 birds (including the newly released ones) thought to exist in the wild, all on the Big Island. Four of the seven chicks were offspring of the captive flock at the State's Olinda Endangered Species Propagation Facility on Maui. Fourteen birds, including two breeding pairs, remain in captivity at Olinda.

The seven young birds were released from one of the largest aviaries ever built in Hawaii, where they had been fed and cared for until their release on 25 October. By day's end, six of the birds had ventured out of the aviary. The seventh followed the next day. The 'Alala hatching, rearing, and release program is implemented by the Peregrine Fund based in Boise, Idaho.

The 'Alala eggs were removed from their wild nests by biologists from the National Biological Survey and the U. S. Fish and Wildlife Service (USFWS) last April. Five birds hatched in May and were reared at a temporary incubation facility on the Big Island by biologists from the Peregrine Fund. In July, two of the chicks were transferred to Olinda to augment the captive flock at that facility. In exchange, four Olinda chicks were transported to the Big Island, where they joined the other three young birds in the aviary until their release. USFWS biologists monitor the birds year-round.

This is the third year of the 'Alala recovery program, which was initiated in 1992 when the known population in the wild was 12 birds. In 1993, seven young were produced and reared, with five returned to the wild and two sent to Olinda. These actions were implemented based on recommendations from the National Academy of Sciences and the 'Alala Recovery Team.

The 'Alala live in the heavily wooded forests of the Kona District, though their range once extended farther north, south, and east. Tracking the birds can be difficult, and exact population counts are unknown, but are believed to be between 18 and 20. One additional bird may exist on the slopes of Hualalai, though it has not been seen since 1991. Only three potential breeding pairs have been identified in the wild.

Source: USFWS

Kilauea Point Closed for Repairs

Kilauea Point National Wildlife Refuge is undergoing repairs and is closed to the public through March. Extensive repairs to the roads and walkways damaged by Hurricane 'Iniki necessitate the temporary closure.

Entrance roads, parking areas, and walkways will be rehabilitated and improved. Similar project repairs are occurring throughout Kaua'i's three National Wildlife Refuges.

According to Refuge Manager Richard Voss, the work was scheduled from January through March to avoid disturbing seabirds that nest on the refuge.

October Field Trip

by Judy Kearney

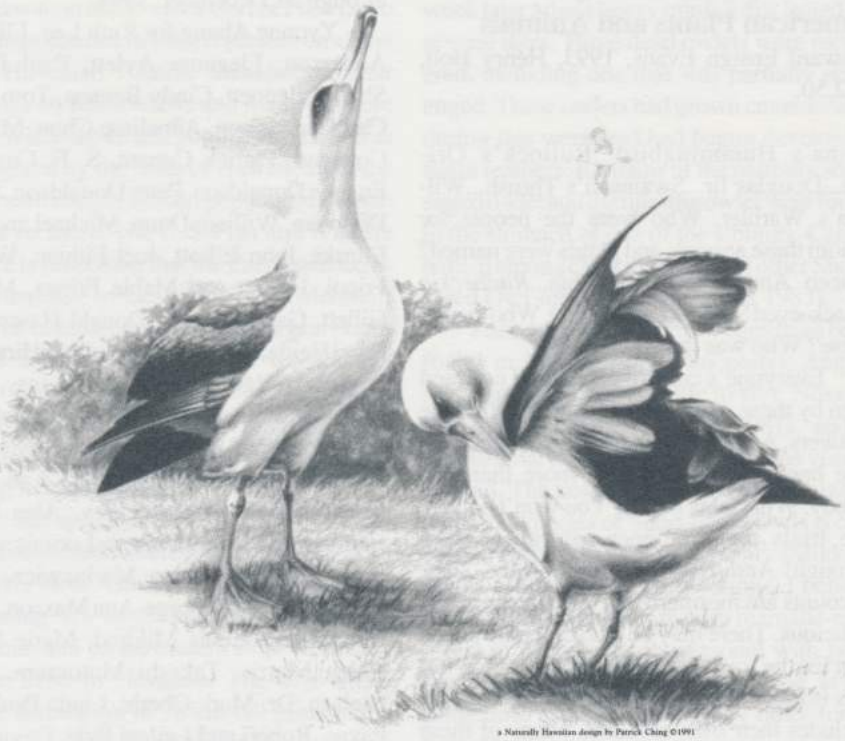
The October field trip began under sunny skies at the Kahuku Sugar Mill where 20 birders began by checking off Rock Doves and House Sparrows. We proceeded into the James Campbell National Wildlife Refuge where one Ring-necked pheasant was spotted. We were fortunate to see all four endangered endemic waterbirds—the Hawaiian Stilt, Hawaiian Duck, Hawaiian Moorhen, and Hawaiian Coot, almost immediately.

Numerous Cattle Egrets, Black-crowned Night-Herons, and Pacific Golden-Plovers were spotted as well as many Mallards, Northern Pintails, and Northern Shovelers. One Blue-winged Teal and one Great Frigatebird were also spotted.

The shorebirds observed included Wandering Tattlers, Ruddy Turnstones, three Pectoral Sandpipers, two Longbilled Dowitchers, and, thanks to sharp-eyed Lance Tanino, one Common Snipe.

Also seen were Spotted Doves, Red-vented Bulbuls, Common Mynas, Common Waxbills, Red Avadavats, and Nutmeg Mannikins.

Laysan Albatross Project Update



O'ahu Albatross Project

E ho'i mai ana ka mōlī

Above is T-Shirt designed for project volunteers. © Patrick Ching

by Andy Cowell

This season's Albatross Project on Kaohikaipu Island is off to a good start. The decoys were set up on 14 November, 1994, more than a month earlier than last season. We began observing immediately, though no albatross were cited in November.

December was another story. The first live Laysan Albatross appeared and landed on 10 December. At least one bird was spotted on each of the next five days, with a maximum of three in the area at any one time. After a one week lull, additional sightings and landings occurred on four other days, between 22 and 30 December. Many of the sightings during the month involved birds which remained on the island for several hours at a stretch, and multiple birds were involved, with the sightings and landings often involving pairs.

These observations are a significant increase over those recorded last year. In fact, no albatross were sighted last year until the second week of January. Those involved with the project are enthusiastic about the success so far this year. Approximately three dozen volunteers are involved at this point, though there is certainly room for more. Call Andy Cowell at 944-6421 if you are interested. We are looking for volunteers who can observe for about three hours once every two weeks, or more if you like.

Of additional note, the first humpback whales in the vicinity of the project were sighted on 29 December, and one to two Hawaiian monk seals have been frequenting Manana Island on and off since 16 December. The seals were still there on 31December, though the last of an incredible 1,000 rehabilitated Wedge-tailed Shearwaters have finally departed from Sea Life Park. Obviously, a lot is going on around Manana and Kaohikaipu Islands, which is all the more reason to join us if you have the time and inclination.

Mahalo and Aloha to Alan Ziegler and George Campbell

by Lynne Matusow

With the new year comes some changes in the mail distribution of the *'Elepaio*.

For many years George Campbell and Alan Ziegler have labelled and mailed the publication. Alan, usually singlehandedly, spent at least one full day each month affixing labels, sorting the mail by zip code, preparing postal service forms, putting over 2,000 *'Elepaio* in bags, and taking hundred of pounds of mail to the bulk rate window.

George was responsible for processing the first class and foreign addresses. He too had to affix labels. Then it was off to the post office to mail them. In addition, George picked up the *'Elepaio* from the printer and delivered them to Alan.

With the arrival of 1995, these two unsung heroes (for without their hard work the *'Elepaio* would not have been mailed on time) have moved on to other things. We will miss their assistance in this area but know their support of Audubon continues. To both, we offer many mahalo nui loa and aloha.

Professional Mailing Service Takes Over

Commencing with this issue, we have contracted with a mailing house to handle the mailing of *'Elepaio* to those who receive it bulk rate. Until we can merge our local and the National Audubon lists and prepare our own labels, will will no longer be able to stop duplicate mailings. The majority of the bulk rate mailing will be prepared on cheshire labels, which are much cheaper to process. We ask you to bear with us, and, if you receive more than one copy of *'Elepaio,* to give the extra to a friend.

Moving?

Please allow four weeks for processing address changes. Because our records are kept in order by zip code, we need both old and new addresses.

Hawaii Audubon Publications

Hawaii's Birds by the Hawaii Audubon Society, 4th edition, 1993. Over 150 color photographs and illustrations. $11.50 per copy ($9.95 plus $1.55 postage).

Please add $1.00 for postage and handling for orders on the following:

Checklist of the Birds of Hawaii—1992 by R.L. Pyle. Lists all taxa naturally occurring in Hawai'i and introduced species that have established viable populations. Also includes all changes from the 1983 checklist. $2.00.

Checklist of the Birds of the Mariana Islands by James D. Reichel and Philip O. Glass, 1991. Lists all taxa naturally occurring in the Marianas and introduced species that have established viable populations. $2.00.

Checklist of the Birds of Micronesia by P. Pyle and J. Engbring, 1985. Lists all taxa naturally occurring in Micronesia and introduced species that have established viable populations. $2.00.

Field Card of the Birds of Hawaii by R.L. Pyle and A. Engilis, Jr., 1987. A pocket-sized field card listing bird taxa found in Hawai'i, with space for field trip notes. $.25; five or more, $.20/copy.

Endangered Waterbirds of the Hawaiian Islands by R.J. Shallenberger, 1978. Hawaiian Stilt, Coot, Gallinule (Moorhen), and Duck, each described in two pages of photographs and text. $1.00.

Posters, 43 x 56 cm., $1.00 each.

Our Homes are Hawaii's Wetlands, 1984. Native wildlife of a Hawaiian marshland.

Hawaiian Forests Are More Than Trees, 1988. Hawaiian forest plants, invertebrates, birds, and the Hawaiian hoary bat. Booklet included.

Back Issues of *'Elepaio* and Indices to *'Elepaio*:

Vol. 1-40 — $1.00 per issue, $10.00 per volume

Vol. 41 to present — $0.50 per issue, $5.00 per volume

Complete set (Vols. 1-51) — $400

Index Vols. 36-40 — $2.50

Index Vols. 41-45 — $2.50

Index Vols. 46-50 — $2.50

*All back issues of *'Elepaio* are at above cost plus applicable postage.

Send orders, with check payable to the Hawaii Audubon Society, to Hawaii Audubon Society, 1088 Bishop St., Suite 808, Honolulu, HI 96813.

BOOK REVIEW

by Darlene Fiske

The Pioneer Naturalists: The Discovery and Naming of North American Plants and Animals
Howard Ensign Evans, 1993, Henry Holt, $22.50.

Anna's Hummingbird...Bullock's Oriole...Douglas fir...Swainson's Thrush...Wilson's Warbler. Who were the people for whom these animals and plants were named? Queen Anne's lace...forsythia...*Rudbeckia* (black-eyed Susan's Latin name). Who named these? Who was thus honored?

Everyone's curiosity is piqued now and then by these references. It is hard to find the answers. And here we have the answers all in one handy book. But it is more than just handy. What tales it tells! You won't believe the trials these pioneer naturalists went through! And they wrote beautifully. Their accounts are mesmerizing, their descriptions delicious. There may be encyclopedic books that list the scientists and their honorifics, but this book is especially enjoyable because it includes their own accounts. Many of these naturalists knew each other; sometimes they worked together.

The unusual and delightful thing about *Pioneer Naturalists* is that the arrangement shows how their lives intertwined. You will find yourself in the happy position of following up one name and cross referencing it with another. This is truly a "dip and sip" book—you'll read one segment and be lured into another as you track one person and find him meeting others.

It is an excellent reference tool. It is also charming as pleasure reading. Rarely do you find a good reference book that is also strictly fun to read. Your nature-loving friends may be jealous of your new-found knowledge, but they will also be fascinated with your interesting facts.

Mahalo Donors

The Hawaii Audubon Society thanks the following members for their generous donations. This list reflects donations received through 31 December, 1994.

Yvonne Abang for Ruth Lee, Elisabeth Anderson, Eleanore Aylett, Paul Banko, Shirley Bennett, Cindy Benson, Tom Chell, Carl Christensen, Anneliese Chun, Marshall Coleman, Patrick Conant, S. F. Cushman, Eugene Donaldson, Peter Donaldson, Steven Donovan, William Dunn, Michael and Janet Elinski, John Elliott, Joel Fithian, William Friedl, Hubert and Mable Frings, Michele Gillett, Gail Hartman, Donald Hasenyager, Sibyl Heide, Hatsue Higa, Noboru Hirayama, Peggy Hodge, Marbry Hopkins, Brian Horiuchi, Bernard Lum Hoy, Betty Johnson, Pearl Johnson, Karl Kenyon, Harvey King, Patricia Kupchak, Ronald D. C. Lau, Linda Nash Leighton, Carol Lilley, Alan Littau, John Loncar, Jr., and Karen Loomis.

Also, Wilhelmina Markiewicz, Helen Koch Matthews, George-Ann Maxson, Hung-Hong Mew, Louis Mildred, Marie Morin, Helen Morris, Takeshi Motomura, Diane Nielsen, Dr. Mark Oberle, Linda Paul, John Payne, Robert and Leilani Pyle, David Roberts, Hal and Elly Roberts, William Schipper, Dan Sheedy, Joel Simasko, Dr. Jenny Stone, Hideko Taketa, Walter Tokushige, David Ward, Jr., Lorrin Wong, Deborah Woodcock, Alice Woolaway, and Alan Ziegler.

Mahalo Volunteers

The Hawaii Audubon Society thanks the following members and friends who helped with the annual fundraising, ballot, and dues renewal mailing:

Dance Aoki, Diane Aoki, Cindy Bensen, Sadie Doyle, Colleen Heyer, Karl Heyer, Lynne Matusow, Christi Moore, Andria Pak, Linda Paul, Bill Rodgers, Malee Saito, Joyce Stanney, and Alice Zacherle.

Hawaii Audubon Society

1088 Bishop Street, Suite 808
Honolulu, Hawaii 96813
Telephone and FAX (808) 528-1432

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Lynne Matusow 531-4260
Editorial Assistants:
Robert L. Pyle
Reporters:
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The *'Elepaio* is printed on recycled paper.

T-shirts for Sale

The Hawaii Audubon Society has a stock of T-shirts designed to spread the Audubon message. Not only are they attractive personal apparel, but they make excellent presents as well.

T-shirts bearing the Society's 'Elepaio logo are available in blue spruce and mountain rose with a black design. We also have a few in ash (gray). In addition, the "hot" Kolea (Pacific Golden Plover) T-shirts are also available. This T-shirt is white with a three-color design of the Kolea and native hibiscus. Proceeds from the Kolea T-shirt go to help HAS fund research on shorebirds in Hawai'i and elsewhere in the Pacific region.

T-shirts are $12 each, plus $2.00 per shirt for postage. They are available in medium, large, and extra large adult sizes only. When ordering T-shirts, be sure to list size and first, second, and third choice of color. To order T-shirts send your check, payable to the Hawaii Audubon Society, to Yvonne Izu, 1957 Alai Place, Wahiawa, HI 96786. Don't forget to add $2.00 per shirt for postage. Insufficient postage will delay your order until the proper amount is remitted. T-shirts are not available at the HAS office.

HAS Dues for 1995

All amounts are in U.S. dollars.
Includes delivery of *'Elepaio*.

Regular Member	
Delivery to U.S. zip code addresses	
Via bulk mail	**$ 10.00**
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Life Member (one-time payment)	**250.00**
(three annual payments)	**100.00, 100.00, 50.00**
Benefactor (one-time payment)	**500.00**
Patron (one-time payment)	**1,000.00**
Delivery to non-U.S. addresses:	
Mexico (airmail only)	**16.00**
Canada (airmail only)	**17.00**
All other countries (surface mail)	**18.00**
All other countries (airmail)	**28.00**
Introductory dues for National and Hawaii Societies:	**20.00**
(Includes delivery of *'Elepaio* and *Audubon Magazine* as bulk or 2nd class mail to U.S. zip codes. Renewal, $30 annually.)	

Linda Paul Leads Hawaii Audubon

At the 12 December, 1994, Annual Meeting the following were declared elected to office for two-year terms: Linda Paul, President; Emily Gardner, Second Vice President; Sherilyn Garrett, Recording Secretary; and Reginald E. David, David Hill, Wendell Lee, Nanea Parks, and Dr. Flo Thomas, directors. Continuing in office with terms expiring this December are Kendall McCreary, Corresponding Secretary; Joyce Stanney, Treasurer, and Shannon Atkinson, John Harrison, Lynne Matusow, and Kevin Shaney, directors. At the January Board meeting, Andy Cowell was appointed director. His term expires in December.

Birding on O'ahu

A two-page guide listing areas on O'ahu where interesting birds may be found and where access is not a problem is now available. Written by Peter Donaldson, it offers important information for birders unfamiliar with Hawai'i. The guide is not designed to give detailed directions or information on bird identification. For a free copy, send a self-addressed stamped envelope to O'ahu Birding Guide, Hawaii Audubon Society, 1088 Bishop Street, Suite 808, Honolulu, HI 96813.

Your Bequest Can Help

A bequest to the Hawaii Audubon Society is an excellent way to help in our conservation efforts. George C. Munro, enthusiastic and tireless field ornithologist and naturalist, provided for a fund to be used exclusively for the protection of native dry forests. Today, the George C. Munro Fund provides money for research projects on such forests.

Although an attorney should be consulted in the drafting of your will, a model clause for bequests is set forth below.

"I hereby give, devise, and bequeath to the Hawaii Audubon Society, Honolulu, Hawai'i, the sum of _____ dollars (or set forth a description of property), to be used for the general purpose of said organization."

For more information and assistance, contact the Hawaii Audubon Society, 1088 Bishop Street, Suite 808, Honolulu, HI 96813, (808) 528-1432.

Calendar of Events

First Tuesday of Every Month
Monthly meeting of the Conservation Committee, 6:30 p.m., at the Coffee Line, 1820 University Avenue (in the YWCA). To join or for more information call Andy Cowell, 944-6421 (H).

First Wednesday of Every Month
Monthly meeting of the Education Committee, 7:00 p.m., at the Coffee Line, 1820 University Avenue (in the YWCA). To join or for more information call Emily Gardner, 734-3921 (H). The Committee is actively seeking new members to work on the Paradise Pursuits Program. All are welcome.

Sunday, February 12
Field Trip. Half day (3-4 mile) hike of Maunawili Trail to see birds and plants. Wear hiking shoes (could be muddy). Bring water, sunscreen, and binoculars. Meet at 8:15 a.m. at the State Library on Punchbowl Street or 9:00 a.m. in Waimanalo at the junction of Waikupanaha St. and Mahiku Place. For more information call trip leader Linda Paul, 262-6859 (H). Suggested donation: $2.00.

Monday, February 13
Board meeting, 7:00 p.m., HAS office.

Monday, February 27
General meeting, 7:30 p.m. Peggy Hodge will present a slide show on her recent trips to Iceland and Greenland. We will see special bird sanctuaries with nesting seabrids, puffins in cliffs, and water fowl in lakes and fjords. Paki Conference Room, Bishop Museum. Refreshments will be served.

Birders Network

HAS has a list of birders who are interested in informal trips with other members, allowing members to find others to go along with them on their outings—for the sake of safety, to share information on good spots, or simply to increase the fun. If you are interested in putting your name on the list, which is circulated to all those on the list, call or write HAS, attention Andy Cowell.

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