



Green Turtles Basking on Tern Island, French Frigate Shoals

by Elizabeth A. Sheekey

INTRODUCTION

The green sea turtle (*Chelonia mydas*) was formally listed in the Threatened category under the U.S. Endangered Species Act in September 1978 and is currently afforded full legal protection. The State of Hawaii gave full protection to green turtles in the Northwestern Hawaiian Islands in May 1974. Green turtles are present throughout the entire Hawaiian Archipelago but come ashore only at select undisturbed sites in the Northwestern Hawaiian islands (Balazs 1980). Green turtle reproduction does not take place within the main Hawaiian Islands. Ninety percent of all reproduction of the Hawaiian population occurs at French Frigate Shoals (Balazs 1980). French Frigate Shoals is a coral atoll with eleven small sand islands and is located within the Hawaiian Islands National Wildlife Refuge, which is administered by the U.S. Fish and Wildlife Service. Green turtles utilize French Frigate Shoals year-round, but an influx of adult turtles arrive during late March and early April each year to breed. Nesting begins in May and most turtles depart during late July and August. The annual breeding population at French Frigate Shoals is estimated at 200-500 adults (Balazs 1980). This represents the largest green turtle rookery in the United States.

Basking on land by green turtles is common in the Northwestern Hawaiian Islands, but is rare elsewhere throughout the world. Although basking occurs year-round at French Frigate Shoals, the incidence of basking is highest during the breeding season (Balazs 1980). Turtles may bask for thermoregulatory purposes or to decrease predation by tiger sharks at a time when a large number of turtles are present (Whittow and Balazs in press). The turtles are extremely sensitive to human disturbance while basking and are likely to leave the beach if they see a human (Manta Corporation 1979, Balazs 1980).

STUDY AREA

Tern Island is an island within French Frigate Shoals. In 1942 the U.S. Navy constructed an airstrip on Tern Island to support naval operations during World War II, increasing the size of the island from 11 acres to 57. From 1942 to 1952, the island was intermittently inhabited by up to 100 military personnel. During the Coast Guard's 1952 to 1979 administration, approximately 20 people (and a few dogs) lived on the island, and recreational use of the beach and surrounding inshore waters was common. Since 1979 the U.S. Fish and Wildlife Service has maintained a small

research station with limited personnel (approximately 4). Current use of Tern Island is restricted by a permit system administered by the U.S. Fish and Wildlife Service and strict rules apply to the use of the beach and near shore waters.

Historical evidence shows that the green turtle population has declined in numbers since the 19th century (Balazs 1980). Prior records of turtles basking on Tern Island are sporadic. Amerson (1971) reported three observations of a turtle basking on the island during the breeding season, during 95 days of observations between 1959 and 1969. He also reported nesting pits on the island's south shore every year between 1964 and 1969. Under the Coast Guard's administration few basking turtles were seen on the island, but they reported yearly occurrences of nesting pits (Balazs pers. comm.). Since 1979, observations of basking turtles have been recorded, but no daily surveys were made. In 1979 one turtle was seen basking on July 14. In 1980, 25 surveys of the beach were made between April 1 and June 7, but no turtles were seen (R. and S. Schulmeister pers. comm.). Nesting pits were present in 1979 and 1980.

METHODS

Between 15 April and 5 June, 1981, daily surveys of the Tern Island beach were made and observations of basking green turtles were noted and mapped. The length of time that an individual turtle basked was recorded when possible. The sexes and sizes of the turtles were also recorded whenever possible, without disturbing the basking turtles. Size was



Green Turtle.

Photo by George Balazs

used as the basis to categorize a turtle as a adult (straight carapace length greater than 81 cm.) or a subadult (straight carapace length between 65 cm. and 81 cm.). Observations of the use of the near shore habitat of Tern Island were also made.

RESULTS AND DISCUSSION

Between 5 April and 5 June 1981, 68 sightings of turtles basking on Tern Island were made. On 36 days (68%), one or more turtles were found basking (Figure 1). This is a marked increase from the number of basking turtles seen in the past. A concurrent study conducted on East Island (located within French Frigate Shoals) did not show a marked increase in the number of turtles basking (G. Balazs pers. comm.) and suggests that the increase on Tern Island was not a result of an atoll-wide increase in population. The increase on Tern Island may be related to a decrease in disturbance since fewer people now live on the island.

Most turtles (88%) were seen on the long, sandy south shore. Eleven percent were seen on the small rubble north beach and one percent was seen on the east beach, an intermittent sand bar. In the past, basking turtles were occasionally seen on the north beach, which was not used as heavily for recreational purposes by Tern Island residents (Balazs pers. comm.). Current recreational use of the beach has been virtually eliminated.

Twenty-nine turtles (43%) basked for more than four hours and two (3%) for more than two hours. Basking time for 37 turtles (54%) was not determined. The fact that many turtles basked for more than four hours indicates that the turtles were exhibiting true basking behavior and were not casually wandering onto the beach.

Fifty-four (79%) observations were of adults and 14 (21%) were of subadults. No juveniles were seen basking. Of the 31 sexed adults, 15 were males and 16 were females. This sex ratio is consistent with other studies (Balazs 1980). The high number of adults seen is an indication that breeding turtles used the island during the 1981 season.

Eleven individual turtles could be identified by carapace markings and irregularities. The eleven individuals accounted for 33 (49%) of the sightings. Repeated observations of the

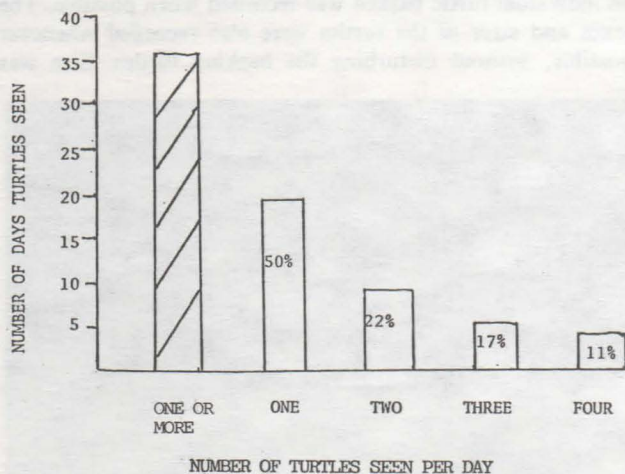
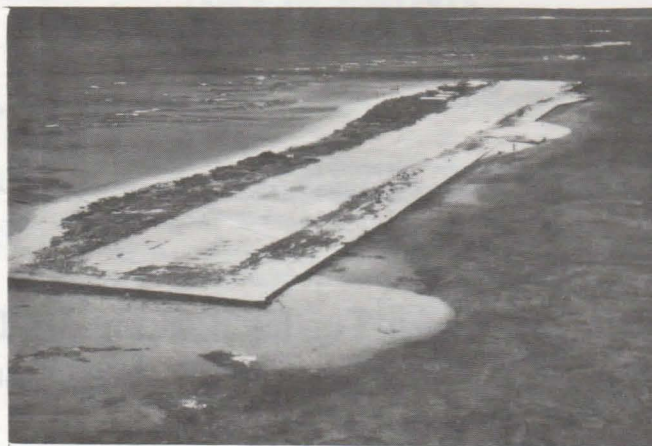


Figure 1: Number of days different numbers of basking turtles were seen on Tern Island between 15 April and 5 June 1981.



Tern Island, French Frigate Shoals, Northwestern Hawaiian Islands

Photo by George Balazs

same basking individuals may represent the beginning of an adult population which will continue to use the island in the future. Balazs (1980) reported that turtles repeatedly bask and nest on a particular island and to some extent at the same site on the island.

In 1981, nesting pits first occurred on the south shore of the island on May 29. Six nesting pits were seen on the island before my departure on June 5.

The near shore habitat of Tern Island is also used by turtles. Thirteen sightings of turtles swimming near shore were made. Six observations of turtles copulating in near shore waters were made, the first was on April 26 and the last on May 23, 1981.

The importance of French Frigate Shoals as the largest breeding concentration of the threatened Hawaiian green turtle is well documented (Balazs 1980). Tern Island represents a very suitable habitat within French Frigate Shoals for basking and breeding turtles. The relationship between basking and nesting suggests that for Tern Island to increase its potential as a viable nesting area, basking will also have to increase. The marked increase in basking turtles in the 1981 season may be attributed to the low number of people now inhabiting the island and the regulated use of the beach and near shore waters.

The endangered Hawaiian Monk Seal (*Monachus schauinslandi*) also uses the Tern Island beach for basking. Seal use of the beach for basking has dramatically increased since 1979 (Schulmeister 1980) and it is quite possible that the green turtle will show the same trend. Continued monitoring of turtle use of Tern Island is necessary to determine if the 1981 season is the beginning of a new trend or represents a unique year. If human use of Tern Island remains low, this increase in use of the island by the turtles can be expected to continue.

ACKNOWLEDGMENTS

I would like to acknowledge those who contributed to this paper: U.S. Fish and Wildlife personnel John Andre, Robert Schulmeister and Susan Schulmeister. I would also like to thank George Balazs, Robert Shallenberger, Audrey

Newman and Charles Stone for their comments on the manuscript. This work was done while the author was a Biological Technician volunteer with the U.S. Fish and Wildlife Service. Quarters and logistical support was provided by the U.S. Fish and Wildlife Service.

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'ALALA REPORTED FROM THE AHUPUA'A OF MANUKA, SOUTH KONA, HAWAII

by Samuel M. Gon, III

The 'Alalā, or Hawaiian Crow (*Corvus tropicus* Kerr) is an endangered species endemic to the island of Hawaii. It has been estimated (U.S. Fish and Wildlife Surveys, unpublished data) that as few as 30 to 150 wild birds remain in sites such as Pu'u Wa'a-wa'a (Tomich, 1971), Palani, Hualalai, Captain Cook Ranch and McCandless Ranch (Giffin, 1976, 1980), Hōnau-nau Forest Reserve and Ka'u (Sakai and Ralph, 1980). Any opportunities to study the bird in a natural situation are valuable.

During 15 to 18 August, 1982, Suzan Harada and I conducted an arachnological study at an established study site approximately 1 km. upslope of the Manukā State Park in South Kona, Hawaii (c. 600 m. elev.). On 16 August, at about 1815 hr., a lone 'Alalā was heard flying noisily through the overstory vegetation. It was observed as it moved clumsily through the canopy trees and landed in an emergent 'ohi'a tree (*Metrosideros collina*). It remained at its perch, emitting soft croaks and fairly loud caws intermittently in the fading ambient light. Approaching dusk ended the observation.

On the following evening, we again heard a crow landing in the canopy trees approximately 70 m. downslope of our campsite. After about 20 sec. of fumbling through the canopy vegetation, the bird settled, called loudly twice and fell silent.

During the previous year, while conducting my research alone, on 15 August, 1981, at late dusk (1918 hr.) I had heard a large bird moving through the upper vegetation at the same campsite. Dead twigs and leaves showered to the ground as a result of its progress. Although the failing light and the dense vegetation allowed me only incomplete silhouettes of the bird, I suspected at the time that it was an 'Alalā. On that occasion, the vocalizations were not the "cawk" or "ca-wak" commonly reported (Tomich, 1971; Berger, 1981), but instead were dominated by indistinct croakings and raspy murmurings, occasionally escalating to include a louder, raspy "haw". Due to poor lighting conditions both years, it was not discerned whether the bird was banded or marked in any way.

The two years' sightings differ in location by less than 100 m. map distance. Also, judging from the clumsy movements noted during both years' sightings, I suspect that both observations are possibly of one individual. Although juvenile 'Alalā have been described as clumsy (Sakai and Ralph, 1980), the two subsequent years of observation of this bird's blundering movements might indicate advancing age or chronic injury, rather than immaturity. Furthermore, the clumsy flights of juveniles are typically accompanied by one or both parents (Sakai and Ralph, 1980), while each of the Manukā sightings involved a single, unaccompanied bird.

The vegetation at the site is a mixed closed canopy of alahe'a (*Canthium odoratum*), lama (*Diospyros ferrea*), olopua (*Osmanthus sandwicensis*), papala kepau (*Pisonia inermis*), kopiko (*Psychotria hawaiiensis*), and ho'awa (*Pittosporum hosmeri*) under emergent 'ohi'a lehu'a (*Metrosideros collina*). The fruit of both *Diospyros* and *Pittosporum* have been noted as forage plants of the 'Alalā (Tomich, 1971; Berger, 1981). However, no feeding behavior was noted during the Manukā sightings.

The significance of the sightings lies in the documented rarity of the 'Alalā in the southern portion of the South Kona District during the past three decades, and the lack of recorded sightings in the Kapu'a-Manukā Forest Reserve since the 1950's (Banko and Banko, 1980). This report serves to re-establish the presence of 'Alalā in Manukā.

The 'Alalā was once common in Kona (Perkins, 1903; Munro, 1960), but has disap-

peared from most areas. The disjunct sighting in Manukā may be one of a remnant population in lower South Kona, or may represent a recent re-establishment into the area. Since Manukā has State Forest Reserve status, there is the potential of eventual use of the area as a site for 'Alalā translocations or release of captive-reared birds. Further investigation is called for in the vicinity.

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REPRINTS OF ARTICLES

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FIELD TRIP TO WAIPIO OCTOBER 17, 1982

by R.L. Pyle

Twenty-eight members and guests gathered at the Makalena Golf Course Sunday morning 17 October for the Society's field trip to the wetland areas on Waipio Peninsula at Pearl Harbor. Weather was warm and clear and the dirt roads around the ponds and basins were dry and firm despite the rains of recent weeks.

The first stop was at the east settling basins. Basin No. 1 along the east side of the road was wet but had no birds. No. 2 at the east end of the row of five basins had good mud and lots of shorebirds. Among the many Lesser Golden Plovers, Ruddy Turnstones and Sanderlings were eleven dowitchers, 1 Pectoral Sandpiper and 1 Ruff. The Ruff, probably a female (reeve), had white unmarked underparts and obviously yellow legs. All participants had a chance to view these interesting birds at leisure through spotting scopes. A number of endemic, endangered Hawaiian (Black-necked) Stilts were scattered among the other birds, and a pair of Koloa (Hawaiian Ducks) flew off when the group first arrived. A few Black-headed and Red Munias were present in the tall grass around the edges of the basins. Basin No. 3 had some plovers and turnstones resting on the dry bottom, and the other adjacent basins were dry as they have been for many months.

Proceeding down the peninsula, the group passed the large field south of the east basins which formerly provided regular views of the introduced Skylarks. Since last spring, however, the vegetation has been much too tall for them.

Continuing westward, the cars drove slowly along the east and north (mauka) sides of the Central Pond to the hill overlook at the northwest corner. This large pond seemed to have good water and mud, but relatively few birds. Some of the group saw a different-looking bird that might have been a Black-bellied Plover, but it flew off before it could be identified.

The hill overlook also provides a good view of West Basins A, B and D. In the deeper water of A were three Northern Shovelers and many Hawaiian (American) Coots. On the drier mud of Basin D were many shorebirds including 1 dowitcher, 1 Pectoral Sandpiper and 1 Sharp-tailed Sandpiper.

Next stop was at the Fountain and Overflow Ponds at the mauka end of the wetland complex. The aerator "fountains" had been removed from the Fountain Pond some months earlier, leaving a nice wetland of shallow water with many

grassy islands. Three 'Auku'u (Black-crowned Night-Heron), several coots and a Pintail were there, along with the regular shorebird species. The Overflow "Pond" was nearly dry and had more shorebirds including several Wandering Tattlers, a Semi-palmated Plover and a small, light-legged peep. The latter was of the Least Sandpiper type, although its bright white (instead of dingy light) outer tail feathers and generally plainer upperparts suggested to some the possibility that it might have been a Temminck Stint from northeastern Asia. No final consensus was reached.

Part of the group visited the South Pond and had good views of 2 Lesser Yellowlegs and another Pectoral Sandpiper. Cattle Egrets were in good numbers throughout the area along with the abundant Spotted and Barred Doves and Common Mynas. Two Rock Doves and several Red-vented Bulbuls on the way out completed the bird list.

After the traditional stop in Waipahu for a cold soda, one car visited the Honouliuli Unit of Pearl Harbor National Wildlife Refuge. The White-faced Ibis was there. This is the same bird first seen at Waipio on the Society's trip in November 1976, and which has been seen regularly the year-round in Waipio and Honouliuli ever since. There were more ducks in the south pond of Honouliuli. Most were Northern Shovelers with some Pintails, 2 Koloa, 2 others that may have been American Wigeon, and 1 smaller duck that could have been a teal. A fine count of 110 Hawaiian Stilt included more than 80 concentrated in the south pond. One Hawaiian (Common) Gallinule, 3 Black-headed Munias and several Red-crested Cardinals were also seen.

MULL'S WORK FOR H.A.S. WILL BE MISSED

by Charles Lamoureux

Mae E. Mull, who has been one of the most active members of HAS for the last 12 years has asked to take a less active role in the Society. Her main interests have been in education and conservation action for better protection of Hawaii's native wildlife and their habitats. Since moving to the Big Island 10 years ago, she has been the area representative for HAS on Hawaii Island matters. Her service to the Society has been tremendous, and we will be hard put to find a replacement who can bring to this task the ability, knowledge, and enthusiasm that Mae has. The Board is still seeking such a person.

On Sept. 14 the Board sent the following letter:

Dear Mae:

The Board of Directors of the Hawaii Audubon Society has received your letter of August 30, and at its meeting of September 13 accepted with regret your resignation as Hawaii Island Representative of the Society.

The Board respects your wishes to undertake a sabbatical leave from your active role in Society activities and from conservation issues in general. We will miss your spirited defense of native plants and animals and the ecosystems they inhabit. We will soon come to appreciate even more the vital role you have played in assembling the facts, knowing the law, the rules, and the regulations, and exhibiting the persistence necessary to assure that the objectives of the Hawaii Audubon Society are at least heard before government decisions affecting the native biota are finalized.

The members of the Board also want you to know that you and Bill share our deepest sympathy at this time of personal tragedy. When you have had time to recapture the spark of conservation activism; when the urge to speak out at a public hearing again becomes as strong as the urge of the kōlea to fly south when summer ends; when the combined actions of bulldozers, mongooses, mouflon, mosquitoes, weeds, and politicians to bring about the immediate termination of Hawaii's marvellous experiments in evolutionary biology again become too blatant to ignore, then the Hawaii Audubon Society will be waiting to call once more upon your talents. In the meantime, we wish you well on your sabbatical

Mahalo and aloha,

Charles H. Lamoureux
President

HAWAIIAN HAWK POSTERS

The Hawaiian Hawk color posters ("Pulama, Conserve Native Wildlife") are still available for sale from the Conservation Council for Hawaii at a minimal cost. All proceeds are being used to pay for the printing and distribution of thousands of wildlife week packets to local classrooms. Write to: CCH, P.O. Box 2923, Honolulu, HI 96802.

DECEMBER PROGRAM:

"RARE AND ENDANGERED BIRDS OF GUAM"

Our Monday, 20 December speaker will be John Engbring of the U.S. Fish and Wildlife Service. He will present an illustrated talk, "Rare and Endangered Birds of Guam", based on a bird survey conducted in 1981.

This will also be the annual Hawaii Audubon Society meeting. New officers, as elected under the new mail-in ballot system, will also be announced.

The meeting will be held at McCully-Moiliili Library on S. King St. at 7:30 p.m.

DECEMBER FIELD TRIPS:
CHRISTMAS BIRD COUNTS

In December, the Audubon Society's field activities are concentrated on the annual Christmas Bird Count. This year there will be counts on Kauai, Oahu, Maui and the Big Island. See the Calendar of Events on page 52 of this issue for the list of Compilers and dates for each count. More birders, beginners as well as experienced, are needed to help with all counts, especially those on the outer islands. The areas for most of the counts extend from the mountains to the sea, and some urban areas are included. Aside from the regular counters, people who can count around their homes and/or bird feeders, or at sea while fishing or sailing on count day, are invited to participate.

Perspective participants should contact the appropriate count compiler directly. There is a participant's fee of \$1.50, which goes to National Audubon Society to help (only partially) defray the costs of publishing all of the nationwide counts in the July issue of *American Birds* magazine.

'ELEPAIO BY AIRMAIL

Members and subscribers wishing to have the 'Elepaio sent by airmail to addresses outside Hawaii may now obtain this service by remitting the additional amount needed to cover airmail postage costs. These amounts for 12 monthly issues are:

U.S. and territories and Canada-	\$4.50
Central America, Caribbean	- \$12.50
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MEMBERSHIP AND SUBSCRIPTION RENEWAL

Local Hawaii Audubon Society memberships (except life members!) and 'Elepaio subscriptions are due for renewal on January 1, 1983. The dues remain at \$6.00 for the 12 months of 1983. Dues for junior members (18 years and under) remain at \$3.00. Any membership not paid within two months from the due date will be dropped from the rolls.

Hawaii Audubon Society members who are also members of National Audubon Society should NOT send dues at this time. These joint memberships are automatically renewed with the National membership.

Dues may be included with the ballot in the voting envelope.

HELP WITH THE 'ELEPAIO

Volunteers will be needed to help with the January issue of the 'Elepaio. If you can type and would like to help, please call Marie at 533-7530. Also, paste-up will be held beginning at 6:30 p.m. on 14 December (Tues.) at 1415 Victoria St. #1515. Dial the entry phone number for Simasko. No experience necessary! We will train!

MEMBERS WELCOME AT BOARD MEETINGS

The Board encourages members to attend and participate in the monthly Board meetings. It is a good way to get more involved in conservation issues and in the workings of the Society.

SHERYL IVES BOYNTON ART SHOW

Each December on Kaua'i, The Goldsmith Gallery selects one artist to feature at a show. This year, Sheryl Ives Boynton will be displaying new watercolors of various native birds and plants. Her works are detailed and realistic, yet still capture the spirit and liveliness of Hawaii's birds. Sheryl's dramatic 'Io painting was featured on the Conservation Council's 1982 National Wildlife Week poster. Another watercolor of a Kaua'i 'Akioloa will appear in the December issue of Aloha magazine. Among her new paintings are a Pueo, 'O'u, 'Elepaio, 'Apapane, a nesting 'I'iwi, and Kaua'i's resident exotic - the Golden Eagle.

The show's opening on Saturday, 4 December, from 7:00 to 10:00 p.m. will feature live music and plenty of kaukau. For further information, contact Sheryl at P.O. Box 651, Waimea, Kaua'i, HI 96796.

MAHALO TO CONTRIBUTORS

We would like to thank the following contributors whose gifts have arrived since the last 'Elepaio acknowledgements:

Mark Andrews, Pahoa; Barbara Ah Chick, Honolulu; Mary E. Diehl, Dublin, CA.; Mary Dillingham, San Francisco, CA.; Ronald P. Donovan, Dorchester, MA.; Beverly Haid; Nancy Heaton, Lahaina; P. LaTourrette, Los Altos, CA.; P.A. Lilly, Kula; Lloyd/Moore Foundation, Honolulu; Harold Martin, Kailua-Kona; Stephanie Nagata/Patrick Conant, Honolulu; Patricia Otake, Honolulu; Robert A. Peterson, Boston, MA.; Robert L. Pyle, Kailua; J. Michael Scott, Hawaii National Park; Margaret Sickels, Hyattsville, MD.; Greg Smith/Lydia Held, Seattle, WA.; James Thropp, Paauilo; Les Walls, Haleiwa; Walter Ziegler, Kaneohe.

In addition, the following persons have made donations to Hawaii Audubon Society in memory of Margaret Titcomb:

Janet E. Bell, Honolulu; Miriam E. Sinclair, Honolulu.

Norris Henthorne

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PACIFIC SEABIRD SYMPOSIUM

The Ninth Annual Meeting of the Pacific Seabird Group will be held December 1-3, 1982, at the Hawaiian Regent Hotel in Honolulu. Symposium topics will be (1) the ecology of tropical seabirds and (2) human disturbance and effects of predation on seabirds. The symposia will be one-half day each. In addition, there will be several paper sessions related to Pacific seabirds. People interested in receiving more information on this meeting should contact Stewart I. Fefer, U.S. Fish and Wildlife Service, P.O. Box 50167, Honolulu, Hawaii, 96850 or call Stewart at 546-5608.

CALENDAR OF EVENTS

- Dec. 13 (Mon.) Board meeting at the home of C. Lamoureux, 3426 Oahu Ave., Honolulu, at 7 p.m. (988-2255).
- Dec. 18 (Sat.) Waipio, Oahu Christmas Bird Count. M. Stemmermann, Compiler, (949-3430).
- Dec. 18 (Sat.) Lihue, Kauai Christmas Bird Count. W. Sears, Compiler (822-3045).
- Dec. 18 (Sat.) Hosmer Grove, HNP, Maui, Practice Christmas Bird Count at 9 a.m. C. Crivellone, (572-9177).
- Dec. 19 (Sun.) Honolulu Christmas Bird Count. R. Pyle, Compiler, (262-4046).
- Dec. 19 (Sun.) Pu'u O Kali, Maui Christmas Bird Count. C. Crivellone and M. Evanson, Compilers (572-9177).
- Dec. 20 (Mon.) Annual meeting, 7:30 p.m. at McCully-Moiliili Library, 2211 S. King St., Honolulu, featuring *Rare and Endangered Birds of Guam*.
- Dec. 22 (Wed.) Kapaa, Kauai Christmas Bird Count. W. Villanueva, Compiler (245-8913).
- Dec. 26 (Sun.) Volcano, Hawaii Christmas Bird Count. L. Katahira (967-7416) and E. Ikawa, Compilers (967-7367).

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