

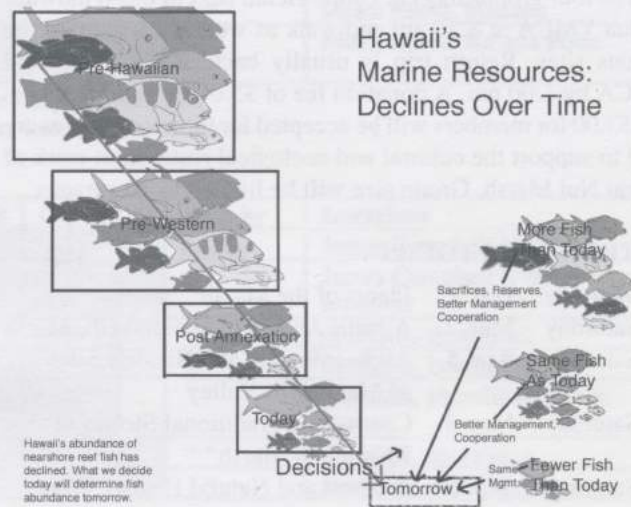
## Hawai'i's Coastal Fisheries at the Millennium

The Fisheries 2001 Symposium documented the status of Hawai'i's coastal fisheries at the millennium and identified strategies for the effective management of our marine resources. The opening address by Richard Shomura, former director of the National Marine Fisheries Service Honolulu Laboratory, "A Historical Perspective of Hawai'i's Marine Resources, Fisheries, and Management Issues over the Past 100 Years.,, and Dr. Kimberly Lowe's presentation on "Hawai'i's Inshore Fisheries at the Dawn of the Millennium" documented the precipitous decline of our coastal marine resources. Dr. Alan Friedlander's discussion of "Marine Protected Areas and Community-based Management" outlined two methods whereby those resources could be rebuilt and sustained. The following is Dr. Friedlander's summation of the Symposium, which he presented to the participants of the second Hawaii Aquatics Conference. It illustrates the need for new management approaches such as the creation of marine reserves to restore our coastal marine resources. The Symposium and the Conference were sponsored by the Hawai'i Chapter of the American Fisheries Society, the Hawaii Audubon Society, the Department of Aquatic Resources, the Hawai'i Cooperative Fishery Research Unit, and the Hawai'i Community Foundation.

The coastal fisheries in Hawai'i have undergone enormous changes in the past 150 years (Figure 1). A breakdown of the traditional kapu system and the demise of the ahupua'a as a management unit after the great mahele in 1848 and annexation in 1898 led to the virtual elimination of traditional Hawaiian fisheries management practices. The early 1900s saw a rapid change from subsistence to a cash economy and large increases in the commercial landing of fish and other marine resources. Following statehood, Hawai'i saw a rapid growth in tourism, an increasingly urban resident population, and the continued development of shoreline areas for tourism and recreation. These changes resulted in another change in the character of the coastal fisheries to one that was dominated by recreational anglers and a greater number of part-time commercial fishers who curtailed their fishing activities to take advantage of more lucrative economic activities. The fisheries for akule and 'opelu represent the only true large-scale commercial coastal fisheries in Hawai'i.

Fisheries catch statistics in Hawai'i are unreliable owing to under-reporting by commercial fishers and a large resident recreational and subsistence fishing catch that goes unreported. Hawai'i is one of the few coastal states that does not require a saltwater recreational fishing license. The nearshore recreational catch is likely equal to or greater than the nearshore commercial fisheries catch, and these recreational fishers take more species using a wider range of fishing gear. In addition to commercial and recreational fisheries, most of the marine orna-

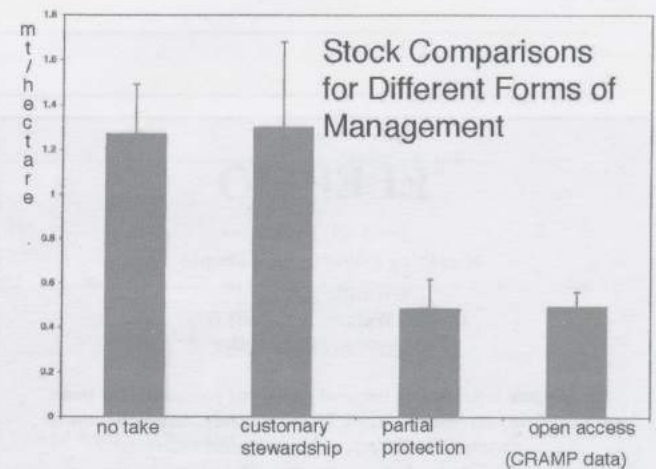
Figure 1



mental fish and invertebrates originating from U.S. waters are collected in Hawai'i, which is known for its high quality animals and rare endemics of high value. There are no regulations limiting the size, number, and collecting season for most species and the full impacts may not be felt yet. The lack of marine-focused enforcement and minimal fines for those few cases that have been prosecuted contribute to a lack of incentive by the population to abide by fisheries management regulations.

Owing to the poor state of Hawai'i's coastal fisheries (Figure 2), the Hawai'i State Department of Land and Natural Resources Division of Aquatic Resources has undertaken a number of measures to improve the management of these resources. A few of these measures include changes in minimum size limits for

Figure 2



CONTINUED ON PAGE 3



## The Natural and Cultural History of Kailua Ahupua'a and Kawai Nui Marsh

*Sponsored by the Kawai Nui Heritage Foundation, 'Ahahui Malama I ka Lokahi and The Kailua Hawaiian Civic Club*

These educational tours of the Kailua Ahupua'a and Kawai Nui Marsh are designed to inform residents, visitors and educators about the Hawaiian archaeological, historic and ecological sites of the marsh. There are also special field study trips available for elementary through college age student groups or Hawaiian cultural groups visiting the sacred sites.

The tour groups meet at Ulupo Heiau next to the Windward Kailua YMCA at 8:30 am and walk as well as car pool to the various sites. Return trip is usually back at the Windward YMCA by 1:00 pm. A donation fee of \$5.00 for non-members and \$3.00 for members will be accepted for the tour. Monies are used to support the cultural and ecological restoration work of Kawai Nui Marsh. Group size will be limited to 20 persons.

### DATES OF 2003 TOURS

1. Saturday Feb. 1 Plants of the Marsh
2. Saturday Mar. 1 Aquatic Animals & Insects of the Marsh
3. Saturday Apr. 5 Archaeological and Historic Sites of Maunawili Valley
4. Saturday May 3 Chants and Traditional Stories of Kawai Nui Marsh
5. Saturday Sept.6 Cultural and Natural History Tour of Kawai Nui Marsh
7. Saturday Oct. 4 Geology of the Kailua Ahupua'a
8. Saturday Nov. 1 Archaeological & Historic sites of Kawai Nui Marsh
9. Saturday Dec. 6 Birds of the Marsh

(Dates or tours may be subject to change depending on weather or other circumstances. Check updates at website: <http://www.ahahui.net/>)

**What To Bring:** Backpack or fanny-pack, walking shoes, water bottle, mosquito repellent, sunscreen, rainwear, hat or cap, sunglasses and snack or lunch. Camera and binoculars are also recommended.

Call Chuck "Doc" Burrows for more information and to register for these educational tours at 595-3922 or email at [ahahui@hawaii.rr.com](mailto:ahahui@hawaii.rr.com).

## 'ELEPAIO

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### EDITORIAL:

## Why Establishing A Statewide Network of Marine Reserves is Important

*by Linda Paul, Executive Director of Pacific Fisheries Coalition*

The Hawaiian archipelago is the most remote, most northern large scale coral reef system in the world. Twenty five percent of Hawaiian reef animals are found nowhere else on earth. Its coral reefs are the oldest and most complex in the United States. Yet less than one percent of Hawai'i's coral reefs are in fully protected reserves or no-take refuges.

The Division of Aquatic Resources (DAR) needs a clear, high priority mandate to establish a network of highly protected marine reserves that includes at least 25% of the coral reefs around the main Hawaiian Islands and all of the coral reefs in state waters in the Northwestern Hawaiian Islands. This mandate needs to set forth clear standards as to what habitats should be protected based on the standards set forth for marine reserves by the American Association for the Advancement of Science in February 2001. A statewide network of refuges, large and small, is needed both to restore and sustain the former abundance and diversity of our marine resources as well as to provide insurance against catastrophic events such as hurricanes.

In the main Hawaiian islands our populations of coral reef fish are at most 20-25% of what they were a hundred years ago. Over-harvesting has reduced most of the near shore fish resources in the main Hawaiian islands to levels beyond their capacity to replenish themselves. A network of highly protected reserves will help rebuild reef fish populations as well as protect our unique and fragile coral reef species and ecosystems. Although Hawai'i has several marine life conservation districts and fishery management areas, Hawai'i's marine resources need the same tools, the same protections that Hawai'i's terrestrial resources have been given through the Natural Area Reserves System (NARS).

## Election Results

Both President Wendy Johnson and Director Arlene Buchholz were each re-elected to serve 2-year terms. All of the amendments to our By-Laws that had been required by National Audubon Society were approved. Many thanks to all of our members who took the time to vote.

## February Program Meeting – Monday, February 17

Mike Leech from the Oahu Invasive Species Committee will give a presentation on invasive plants and animals – from Miconia to coqui frogs – with special emphasis on birds.

Program meetings are held at Henry Hall Room 109 on the Chaminade University campus, 3140 Wai'ala'e Avenue, Kaimuki. Meetings are from 7:30 to 9:30pm. Refreshments are served, and HAS publications, T-shirts, and maps are available for purchase.



certain resource species, the initiation of marine recreational fisheries surveys, and changes to the rules governing marine protected areas. A number of communities throughout the state are currently strengthening local influence and accountability for the health and long-term sustainability of their marine resources through revitalization of local traditions and resource knowledge. The State of Hawai'i has been encouraging community-based management of subsistence fishing areas since 1994 and a number of these areas are now being established. Other management measures have included the use of stock enhancement for a few highly prized species and artificial reefs to improve the catch of some coastal fisheries species in a few select locations. The current challenge is to rebuild sustainable fisheries while conserving marine resources and providing benefits to all of Hawai'i's residents.

Ulua and other jacks: a case study

Ulua and their relatives are the most important predators on Hawaiian coral reefs and are also the most highly sought after shoreline sportsfish in Hawai'i. Ulua played an important role in ancient Hawaiian culture and were often fished for sport by the ali'i. Commercial landings of coastal jacks, excluding akule and 'opelu, have declined by as much as 84% since the early 1900s, however, the average size of ulua and 'omilu landed in the commercial fishery has increased since the 1970s likely owing to the increase in the number of boats which now exploit previously unfished areas. Despite this increase in the size of commercially-caught ulua and 'omilu, anglers on all islands reported declines in the average size and number of ulua taken in the recreational fishery. The catch per unit of effort of 100+ lb ulua recorded on each of the main islands in the 1990s was inversely related to the island population density suggesting that overharvest of large individuals is occurring near large population centers.

Hawai'i's Environment Benefits from Geographic Isolation

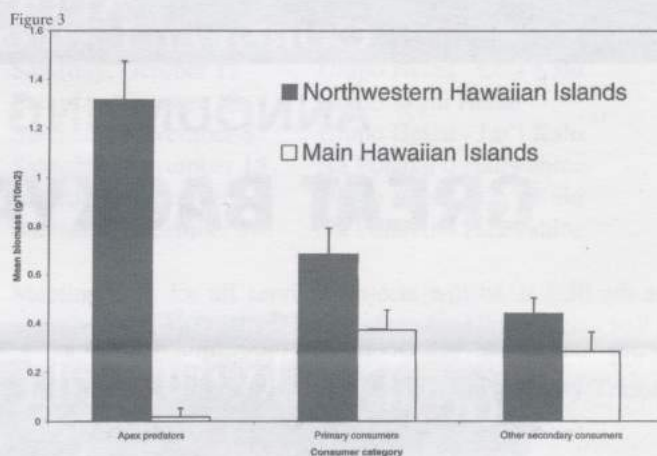
(this March 25, 1999 piece is from *Volcano Watch*, a weekly feature provided by scientists at the Hawaiian Volcano Observatory).

One common saying in the real estate business is that location is everything. This is particularly true from both geological and biological standpoints here in Hawai'i. The Hawaiian hot spot has produced one of the most isolated island chains in the world, with some benefits not often appreciated. One of them is the natural quarantine imposed by more than 3000 km (2,000 miles) of open ocean.

Hawai'i's reputation for having a healthy environment is dependent on this natural quarantine. Many noxious plants, animals, diseases, and disease vectors that occur commonly in other parts of the world never reached the islands because they were unable to cross the open ocean. Those that were brought here either intentionally or accidentally have wreaked havoc on native ecosystems—in most cases because endemic plants and animals that make the island's biota so special never evolved natural defenses against the alien invaders.

One example is the impact that introduced predators, diseases, and mosquitoes had on the decimation of Hawai'i's unique native forest birds. Avian malaria and pox virus transmitted by the night-biting southern house mosquito, *Culex*

Unlike the Main Hawaiian Islands, the populations of large jacks in the Northwestern Hawaiian Islands are presently very healthy and represent one of the few remaining large-scale, intact, predator-dominated reef ecosystems left in the world. More than 54% of the total fish biomass in the Northwestern Hawaiian Islands consisted of apex predators, whereas this trophic level accounted for less than 3% of the fish biomass in the Main Hawaiian Islands (Figure 3). Within the Northwestern Hawaiian Islands, the frequency of occurrence of 'omilu and ulua are 3- to 5-fold higher at French Frigate Shoals compared to Midway Atoll, where they have been fished by U.S. Naval Air personnel for nearly a century and since 1996 where they have been the target of a catch-and-release fishery since Midway was transferred to the U.S. Fish and Wildlife service. This suggests that the management regime for ulua and other predatory jacks in Hawai'i is currently inadequate and the use of large no-take marine reserves may be a viable management measure to rehabilitate these and other fish populations.



quinquefasciatus, and direct predation by introduced rats, cats, and mongooses, have decimated most lowland native birds. What has been left are the more disease-resistant and predator-evasive non-native birds like the mejiro, cardinals, mynas, and doves.

At Hawai'i Volcanoes National Park, we typically see yearly epidemics of avian malaria and pox in native honeycreepers between September and December—the time of year when *Culex* mosquito populations reach their peak. One commonly finds sick or dead 'apapane and 'amakihi in backyards in Volcano or along trails and roads. Most of these birds suffer from severe anemia caused by the malarial parasites and frequently have large tumors caused by avian pox virus on their feet and legs. Since these diseases are transmitted by mosquito bite, native birds can be infected with both at the same time, leaving them so ill that they are unable to forage or escape from introduced predators.

Laboratory studies have shown that some high elevation honeycreepers, like the 'I'iwi, have a fatality rate of up to 90

CONTINUED ON PAGE 4



**HAWAII'S ENVIRONMENT BENEFITS FROM GEOGRAPHIC ISOLATION... CONTINUED FROM PAGE 3**

percent after exposure to a single infective mosquito bite. These diseases have relatively little effect on bird populations in other parts of the world, but they are as pathogenic in Hawaiian birds as ebola virus in humans. As a result, some of the island's most interesting and spectacular native birds, such as the scarlet 'i'iwi and the rare and elusive 'akiapola'au, are now found only in cold, high elevation forests where they are above the current range of mosquitoes.

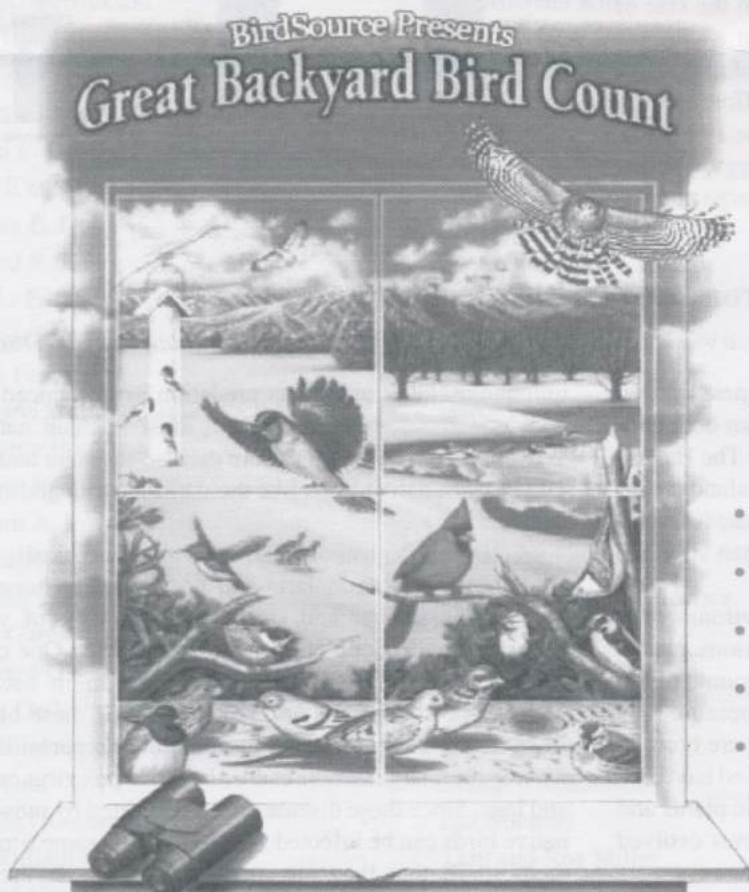
Can something similar happen to the island's human population? The answer unfortunately is "yes." The Hawaiian people were decimated by the introduction of European diseases, such as measles. In more recent times, island residents have suffered from periodic epidemics of dengue virus—a tropical disease that causes high fever and flu-like symptoms. The last major outbreak occurred on O'ahu during World War II, when servicemen

returning from the South Pacific infected localized populations of the introduced mosquito, *Aedes aegypti*. The insects, in turn, spread the infection to residents. Before the outbreak was controlled by expensive door-to-door efforts to eradicate the mosquito vector, more than 1,500 island residents were taken ill. (Editor's note: this article was written before the most recent dengue fever outbreak last year.)

Hawai'i's quarantine regulations and restrictions on importing plants and animals are intended to protect us from catastrophes like this. Unfortunately, the speed and global nature of modern transportation places us only one arrival away from accidental introduction of a new pest that might erode our quality of life. To learn more about these threats, we invite you to visit the Hawaii Ecosystems At Risk website ([www.hear.org](http://www.hear.org)), maintained jointly by USGS-Biological Resources Division, University of Hawai'i, and the National Park Service.

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## Kawai Nui Service Projects for 2003

*The Kawai Nui Heritage Foundation and 'Ahahui Malamā I Ka Lokahi, in cooperation with Kailua Hawaiian Civic Club, DLNR Division of Hawaii State Parks, and Windward YMCA invites you to kokua and malama Kawai Nui Marsh on our 2003 Service Projects*

**NA POHAKU O HAUWAHINE** (The rock formation of the Hawaiian Mo'ō goddess and guardian of Kawai Nui Marsh) is located on the right-hand side of Kapa'a Quarry road at the Y-intersection before entering the Kapa'a Landfill Transfer Station. It offers a panoramic view into the "piko" of Kawai Nui Marsh where one can observe in tranquility the wetland birds and marsh vegetation. Brush removal and trail construction has revealed ancient Hawaiian terraces that align the massive rock outcrops. We are planting the area with native plants to restore a dryland forest ecosystem. We are also working in the marsh to form a wetland bird habitat.

**HOLOMAKANI HEIAU** (The running wind) was presumed to be destroyed according to McAllister's account in 1933 but was rediscovered in 1987. Archaeological surveys suggest that this site may be a "possible prehistoric heiau or large platform terrace structure of some significance." This site is located on a 319 acre privately owned property on the mauka side of Kapa'a Quarry road about 0.7 miles from the intersection of Kalaniana'ole Hwy. A short hike of 15 minutes from the Quarry Road along roadways created by off road vehicles will lead to the site. Off road trucks have damaged the rock wall of the heiau in recent years and have caused erosional runoff in the watershed. We have cleared and maintained the heiau terraces from vegetative overgrowth to make visitors aware and respectful about this sacred site.

**ULUPO HEIAU** (Night of Inspiration) one of the first sacred temples to have been built as a "māpele" (agriculture) heiau by the first people or menehune and dedicated to Kaneulupo. Later in the reign of high chief Ku'ali'i, the temple may have been reconstructed as a luakini or human sacrificial heiau. The Kailua Hawaiian Civic Club and Ka Pa Ku'i A Holo are the co-curators for this heiau and conduct service projects every second Saturday of the month. Ahahui Malamā i Ka Lokahi has taken the lead to restore the ancient spring fed lo'i kalo (taro terraces) located behind the heiau.

**KAWAI NUI ESTUARY WETLAND BIRD ISLET RESTORATION** As part of the Ahahui Malamā i ka Lokahi research program in Kawai Nui Marsh, an islet located at the Kaha Park side of the Kawai Nui estuary has been cleared of alien vegetation and will be landscaped as a wetland bird habitat. Service project dates to this site will be announced periodically.

Saturday, January 11	Ulupo Heiau - Lo'i Kalo
Saturday, January 18	Na Pohaku o Hauwahine
Sunday, February ??	Ulupo Heiau - Lo'i Kalo
Sunday, February 15	Holomakani Heiau
Sunday, March 8	Ulupo Heiau - Lo'i Kalo
Saturday, March 15	Na Pohaku o Hauwahine
Saturday, April 12	Ulupo Heiau - Lo'i Kalo
Saturday, April 19	Na Pohaku o Hauwahine
Saturday, May 10	Ulupo Heiau - Lo'i Kalo
Saturday, May 17	Na Pohaku o Hauwahine
Saturday, June 14	Ulupo Heiau - Lo'i Kalo
Saturday, June 21	Holomakani Heiau
Saturday, July 12	Ulupo Heiau - Lo'i Kalo
Saturday, July 19	Na Pohaku o Hauwahine
Saturday, August 9	Ulupo Heiau - Lo'i Kalo
Saturday, August 16	Na Pohaku o Hauwahine
Saturday, September 13	Ulupo Heiau - Lo'i Kalo
Saturday, September 20	Na Pohaku o Hauwahine
Saturday, October 11	Ulupo Heiau - Lo'i Kalo
Saturday, October 18	Holomakani Heiau
Saturday, November 8	Ulupo Heiau - Lo'i Kalo
Saturday, November 15	Na Pohaku o Hauwahine
Saturday, December 13	Ulupo Heiau - Lo'i Kalo
Saturday, December 20	Na Pohaku o Hauwahine

Meeting time for all service projects will be at 8:30 am and completed by 2:00 pm. Meeting place for Ulupo Heiau will be at the heiau parking area next to the Windward YMCA. For Na Pohaku o Hauwahine it will be inside the gated City Transfer Station on Kapa'a Quarry Rd.

**WHAT TO BRING:** Backpack, lunch, 1 qt. water, rain gear, mosquito repellent, gloves.

**TOOLS:** Sickles, pruners, handsaws, machete, weeders, cultivators, picks, shovels.

Call Chuck "Doc" Burrows for more informations at 595-3922 or email at [ahahui@hawaii.rr.com](mailto:ahahui@hawaii.rr.com).

(Dates may be subject to change depending on weather or other circumstances. Check update at website: <http://www.ahahui.net>)

## Field Trips for 2003

All trips with an \* are still in the process of being planned. Details will be provided as the scheduled dates get closer. A donation of \$2 per participant on all field trips is appreciated.

**February 22:** Go behind the scenes at Sea Life Park and learn about the Seabird Rehabilitation program. Meet convalescent and non-releasable seabirds face to face (beak to face, actually!). In past years, we've seen White Terns, Laysan Albatross chicks, Red-footed Boobies and more. In the convalescent area, there are also Wedge-tailed Shearwaters and Sooty Terns. The \$12.50 (including HAS \$2) per person price of this field trip also includes admission to Sea Life Park for the rest of the day. Please call the HAS office to register: 528-1432.



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## Mahalo to HAS Annual Appeal Donors

The following HAS and Joint HAS/NAS members have made Annual Appeal Donations from November 25 to December 31, 2002. We extend our most sincere thanks to them for showing their support of the work we do! Many thanks to:

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## Winter-breeding Seabirds and Visiting Shorebirds

Here is a chart of what months these birds may be seen in the Hawaiian islands, what they're doing here, and where they can be found. This isn't a complete list; it's only intended to offer ideas for winter birdwatching.

Seabirds	J	F	M	A	M	J	J	A	S	O	N	D	Activity	Locations
Gray-backed Tern													breeding and nesting	Moku Manu
*Laysan Albatross													" "	Ka'ena Point, Kilauea NWR
Red-footed Booby													" "	Moku Manu, Kilauea NWR, Ulupa'u Head
Red-tailed Tropicbird													" "	Kilauea NWR, Manana island
Sooty Tern													" "	Moku Manu, Manana
**Wedge-tailed Shearwater													" "	Moku Manu, Ka'ena Point

\* ground nesters; don't venture off trail when viewing birds. Please keep pets at home.

\*\* nests in burrows dug in sand; don't venture off trail, use caution, keep pets at home.

Shorebirds, waterfowl	J	F	M	A	M	J	J	A	S	O	N	D	Activity	Locations
Bristle-thighed Curlew													eating	James Campbell NWR
Ducks (various species)													" "	James Campbell NWR, other wetlands
Long-billed Dowitcher													" "	mudflats, shorelines
Pacific Golder Plover													" "	mudflats, lawns, fields.
Ruddy Turnstone													" "	mudflats, shorelines, fields, lawns
Sanderlings													" "	mudflats, shorelines
Wandering Tattler													" "	mudflats, shorelines

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Regular US Member (via bulk mail, not forwardable)	\$ 15.00	Mexico	\$ 21.00
First Class Mail	\$ 21.00	Canada	\$ 22.00
Junior Members (18 and under)	\$ 10.00	All other countries	\$ 28.00
Supporting Member	\$100.00		

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**Marine Policy Analyst:**  
Kim Moffie, 529-0430

**HAS Administrative Assistant:**  
Linda Shapin

## Calendar of Events

**February 17** Program Meeting Invasive Species. *See page 176.*

**February 22** Field Trip seabird rehabilitation behind the scenes at Sea Life Park. *See page 176.*

**March 10** HAS Board meeting open to all members, 6:30 to 8:30 p.m. at the HAS office. Education and Conservation Committees meet at 5:45 p.m. before Board meetings.

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