

Having Limu Fun!

Food and Hawaiian culture go together and so do volunteers and the sanctuary. So a mixture of these four ingredients has got to result in some good *kau kau* (food). And, indeed, it did: Some *ono* (delicious) treats came out of the Cultural Food Recipe Workshop, held May 31 at the sanctuary headquarters in Maui. The purpose of the event, open to sanctuary volunteers, was to demonstrate the value of the sanctuary's natural resources .

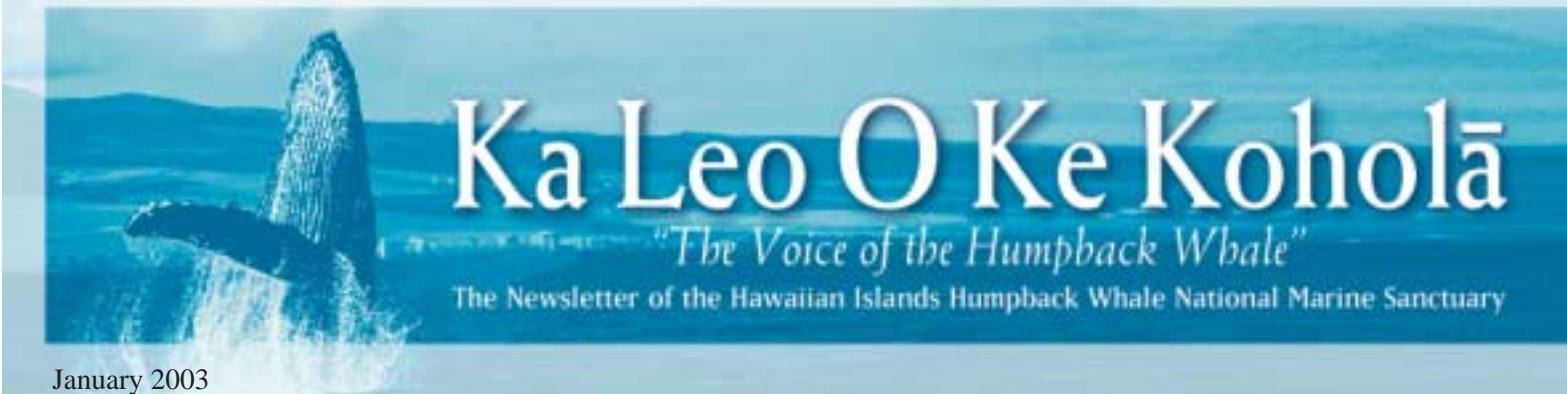
One of most remarkable hits of the workshop was also one of the simplest: *limu kala* or crispy fried seaweed. According to those lucky taste-testers who were there, it's like potato chips—only so much better and healthier for you. Simply wash, drain, and dry the *limu* and drop into hot oil. Wait a moment for it to cool. Then, munch-a-crunch da *limu*!

If you've never put limu on your daily menu, consider what nutritionists say: It is an excellent source of iodine and iron. As Sanctuary Hawaiian Cultural Educator Joylynn Oliveira observes: "Food resources are always limited in an island environment, however, Native Hawaiians were good at cultivating the best that their surroundings had to offer and they were able to prosper." As for harvesting *limu*, the sanctuary shoreline right in front of the Maui site is a prime area, where many local families make a day of harvesting Hawaii's indigenous seaweed.



Sanctuary chefs (from left to right), Carol Carey, Diana Schulte, Rhonda VanWingerden, Gloria Adlawan and Joylynn Oliveira.

The recipe for *limu kala* came from veteran sanctuary volunteer Gloria Adlawan. She also brought prepared a *limu*-laden salad that went over well at the workshop. Gloria has been gracious enough to share the recipe as follows: Get one large bowl. Mix together four types of edible *limu*, half cup of tomatoes, half cup of onions, fresh garlic clove and ginger root in quantity to taste. Optional but suggested ingredient: Sit down with friends, enjoy and talk story about the sanctuary's yummy gifts from the sea. Y



RESEARCH TRIES TO UNRAVEL WHALE SONG MYSTERY



Dr. Jim Darling studies whale song in sanctuary waters. The yellow flag displays the number of his NOAA Fisheries ESA/MMPA permit, without which, close approach of humpbacks (less than 100 yds.) in Hawai'i is prohibited. Such permits are issued to scientists for research supporting endangered species recovery efforts.

Whale song may not be quite as romantic a tune as its been made out to be. Even though the crooning only comes from males, the female gender doesn't appear to be easily seduced by the tune that reverberates for many miles in the underwater world. In fact recent research suggests that male singers interact primarily with other males. Still, scientists believe that singing and mating go together in humpback society.

The exact role of the humpback song has been under investigation by Dr. Jim Darling, who spent this last winter collecting recordings of male humpbacks in Hawai'i sanctuary waters. Darling had originally hypothesized that males use the song to display dominance. This would mean that the "alpha whales" at the top of a social hierarchy would have a distinctive song that would stand out as an aural badge of social position, perhaps analogous to the chest-beating of the alpha male gorilla. It would follow that such lead singers would outdo their subordinates in the task of attracting a female for mating purposes.

This hypothesis was based on the proposal that humpbacks have a mating system known as dominance polygyny, where the most powerful males gain access most easily to females through a dominance order established by fights and displays. "We thought that the overt male-male competition, the fighting, on the breeding grounds as well as the song, could be accounted for within this mating system," says Darling.

Darling's latest studies, however, fall short of confirming a strong connection between the song and breeding success amongst male humpbacks. After analyzing hundreds of spectrograms (visual depictions of the whale songs), to date he has not found

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the variability in the songs between individuals that would be predicted from the dominance polygyny hypothesis. Unless, says Darling, there are subtle distinctions in the whale songs which we are just not picking up yet. "We are not ready to discard this hypothesis entirely," he notes, "but so far we haven't found any kind of obvious differences in the songs that might be expected".

Another emerging hypothesis proposes that some humpback males may cooperate on the mating grounds, and the song may facilitate this behavior. Here, too, however, Darling says male behavior patterns vary so much it is difficult to generalize. While some singers draw other males that appear to approach females as a unit, other males appear to work solo. Quite often, when singers are joined by other males, the interaction is very brief and then they speed off in different directions, says Darling.

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Sanctuary Note: In addition to the sanctuary, this research was funded by The National Geographic Society, West Coast Whale Research Foundation and private donations.

ABOUT THE SANCTUARY

The Hawaiian Islands Humpback Whale National Marine Sanctuary was established by Congress in 1992 to protect humpback whales and their habitat in Hawai'i. To achieve this goal, the sanctuary conducts public education and scientific research in coordination with a variety of government and non-government organizations. As part of the National Marine Sanctuary System administered by the National Ocean Service of the National Oceanic and Atmospheric Administration (NOAA), the sanctuary is one of 13 areas designated as marine environments of national significance. NOAA and the State of Hawaii co-manage the sanctuary as a federal-state partnership.



HAWAIIAN ISLANDS HUMPBACK WHALE
NATIONAL MARINE SANCTUARY
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ON THE SANCTUARY'S HUMAN SIDE: MEET A SAC MEMBER



Walter R. Haas, DVM, represents Kaua'i County on the Sanctuary Advisory Council.

Those who know Dr. Walter Haas as Kaua'i's favorite veterinarian would hardly be surprised to learn that his passion for living things extends to seashells. "I'm fascinated by the creatures that make their way to the islands inside of shells. Each one has its own personality," he marvels. Malacology—or the scientific study of shells, Haas says, is especially rewarding in the Pacific islands where geographic isolation has created conditions for thousands of species to evolve on their own unique paths. In addition to being an avid shell collector, Haas has also served as the local chapter director of the National Malacological Society.

A scientist at heart with a flair for parlaying his natural curiosity into community service, Walter Haas has the right stuff for the many civic-minded hats he wears, including that of the Kaua'i County Representative on the Sanctuary Advisory Council. Serving in this capacity since the council was first established, Haas has brought a steady and dependable presence to the volunteer board.

During the sanctuary designation process, when citizen opinion was sharply divided over a proposed management plan, Haas's empathy went out to all sides: "The fishermen were dead set against a sanctuary, because they worried it would end their careers. The environmentalists wanted it because humpbacks are endangered. I felt strongly that a sanctuary could be created that would protect the interests of both groups." After expressing this stance at public meetings, Haas opened his mail one day to find that someone (he's not sure who) had sent him an application to become a member of the Sanctuary Advisory Council. Haas filled out the paper work and the rest, as they say, is the history of an agency that took root with the help of citizen stakeholders who knew they could count on SAC representatives like Haas to adequately represent their views to sanctuary managers.

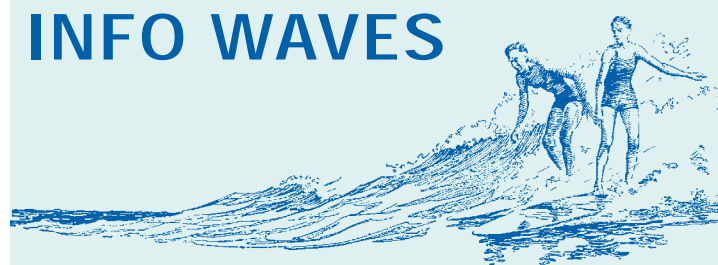
Raised in California, Haas will tell you laughingly he had the distinction of being the first "bagboy" in his home state's first supermarket. He never expected to find himself at home in the middle of the sea. But, after serving in both the Army and the Navy and receiving a degree from Colorado A&M University, he spotted a newspaper ad for a veterinarian position in the Territory of Hawai'i. Half-jokingly, he asked his new wife Mabel if she would like to move to Hawai'i. Recalls Haas: "Without missing a beat, she said yes and I knew my bluff had been called." Haas took up the post in Kaua'i in 1949 and he and his wife never looked back, raising four sons on the Garden Island. Among the many community duties he's chosen to put on his own plate, Haas has been an executive Boy Scout leader, a Rotary Club regular, a trouper in the theatrical productions of the Kaua'i Community Players and a member of various professional veterinarian societies.

Somehow, he still gets in time to pursue his love for seashells. As the featured lecturer at the Sanctuary Education Center in August, he shared his enthusiasm for the small treasures deposited by waves on Hawai'i's shores. Explaining his fascination, he says, "It's amazing to look at something in the natural world and consider all the things the earth has been through." And for those who don't quite have the eyes to see, Dr. Haas is sure to find a way to highlight the wonders. **Y**

RESEARCH... *Cont. from page 1*

"One way to prove a connection between the mating system and song is to conduct testing that would genetically determine the paternity of calves," observes Darling. But with the population of this highly migratory ocean species on the rise in Hawaii, he admits this would be difficult, though, he adds such studies are being conducted elsewhere. In the meantime, few would disagree with Darling when he says that whale song – one of the sea's most intriguing mysteries – in time and with patience and study, will open our eyes to one of the most unique systems of communication found anywhere in nature. **Y**

INFO WAVES



SANCTUARY REAUTHORIZED THROUGH MID 2007

On September 9, 2002, Governor Ben Cayetano accepted the sanctuary's revised management plan, thereby "reauthorizing" the sanctuary in state waters through August of 2007. "Five years ago, we took a step forward to protect Hawaii's precious ocean resources," Governor Cayetano said. "And after this period of review and public comment, it's evident that the structure and processes put in place work. I'm happy to endorse the revised plan."

Formally presented to the Governor by the National Oceanic and Atmospheric Administration (NOAA) in early August, the revised plan is the product of 18 months of review and revision, involving sanctuary staff, agency partners, the Sanctuary Advisory Council (SAC), and other involved citizens. The revised plan presents updated goals and strategies for natural resource protection, cultural resource enhancement, research, administration, and education and outreach. No new regulations or boundary changes were made.

Governor Cayetano was especially supportive of the plan's new strategies to identify new resources for possible inclusion in the sanctuary. In accordance with the sanctuary's original Congressional mandate, and in response to an overwhelming number of public comments supporting inclusion of additional resources, the revised sanctuary management plan specifies a community-based process to identify, assess and, if deemed appropriate, designate new resources for sanctuary management and conservation.

Acting Sanctuary Manager Naomi McIntosh was delighted to get word of the Governor's approval. "We're very honored with Governor Cayetano's approval and continued support of the sanctuary. We look forward to working with all our partners, including our state agency partners, as we put the revised management plan into action over the next 5 years." Copies of the revised plan are available on line at <http://www.hihwnms.nos.noaa.gov/> or contact your nearest sanctuary office (see info on opposite page) to request a copy.

SANCTUARY LESSONS IN LINE WITH DOE SCIENCE STANDARDS



Teachers practice using a grid to draw a full-sized humpback at sanctuary HQ in Kihei, Maui. The exercise demonstrates the immense size of a humpback and helps kids learn about the concept of two-dimensional scale.

There was something different about the educator's workshop held June 18 at sanctuary headquarters on Maui. The full day of activities—part of a weeklong field studies course aimed at teaching environmental concepts through hands-on experience—was up to standards. Make those the official Hawai'i Department of Education science curriculum standards, please.

"Participants not only wanted information on humpback whales and the sanctuary program, they wanted to learn how to use the information to meet the benchmarks now being used to measure the quality of science instruction in the classroom," said Rhonda Van Wingerden – Sanctuary Marine Educator. Thus, as part of the workshop, sanctuary staff members and volunteers demonstrated activities, and explained the concepts which the activities are intended to deliver. For example, they presented an exercise where participants line up to span a length of 40 feet which equals the rostrum-to-fluke length of an average adult humpback whale. In addition to being a fun way of illustrating the

Ka Leo O Ke Koholā

is published for the Hawaiian Islands Humpback Whale National Marine Sanctuary by the Hawai'i Department of Land and Natural Resources (DLNR) with funding provided by the National Oceanic and Atmospheric Administration (NOAA) under contract # 50ABNC-8-00063. Feature articles by Liza Simon. Send comments on the newsletter to: Jeff Walters, jeffrey_s_walters@exec.state.hi.us

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Please visit the sanctuary web site: www.hihwnms.nos.noaa.gov

animal's huge size, the demonstration doubles as a lesson in how to use models to explain natural phenomena.

In contrast to past years, where no homework was assigned, field studies participants this year were required to apply what they learned at the sanctuary and other participating Maui sites in crafting their own environmental studies curriculum plan. College credit for the course, organized by the State Division of Aquatic Resources, was increased from one to two credits, to be applied towards a degree in the outreach program at the University of Hawai'i. Rhonda Van Wingerden said that the caliber of work involved in this year's field studies course may signal a growing trend in science education. She noted that the sanctuary's beachfront site in Kihei is slated to host another interdisciplinary science workshop for Project Isle, an East Coast-based teacher's group. "There seems to be a growing awareness that a living classroom is a very effective way to engage student interest in science education," said Rhonda Van Wingerden. **Y**

SANCTUARY DATEBOOK

[Kaua'i Sanctuary Ocean Count Volunteer Training and Humpback Whale Lecture](#)

January 11 (Saturday)

Place: King Kaumualii School Cafeteria

Time: 10:00 am - 12:30 pm

Contact: Jean Souza, 246-2860 (*Advance registration requested*)

[Kaua'i Lecture Series](#)

January 11 (Saturday)

Place: King Kaumualii School Cafeteria

Time: 2:00 - 3:30 pm

Contact: Jean Souza, 246-2860

Researcher Daniela Maldini speaks about Alaska's Orca.

[Sanctuary Advisory Council Meeting](#)

January 23 (Thursday)

Place: Honolulu International Airport

Time: 10:00 am - 3:00 pm

Contact: Amy Glester, 397-2655

[30th Meeting of the Sanctuary Advisory Council](#)

[7th Annual Sanctuary Ocean Count \(1st and 2nd Count Days\)](#)

January 25 (Saturday) and February 22 (Saturday)

Place: O'ahu, Kaua'i, and Hawai'i

Time: 8:00 am - 12:00 Noon

Contact: Chris Brammer, 397-2651 (O'ahu)

Jean Souza, 335-0941 (Kaua'i)

Chris Brammer, 1-888-55WHALE (Hawai'i)

Island-wide count of humpback whales and other marine mammals from various shoreline sites.

[Maui Lecture Series](#)

February 11 (Tuesday)

Place: Maui, Sanctuary Education Center

Time: 7:00 pm

Contact: Claire Cappelle, 879-2818

"Inside the Antarctic Convergence: Whale, Whaling, Seabirds and Exploration of the Southern Ocean" by Steve Zeff, Center for Whale Studies.