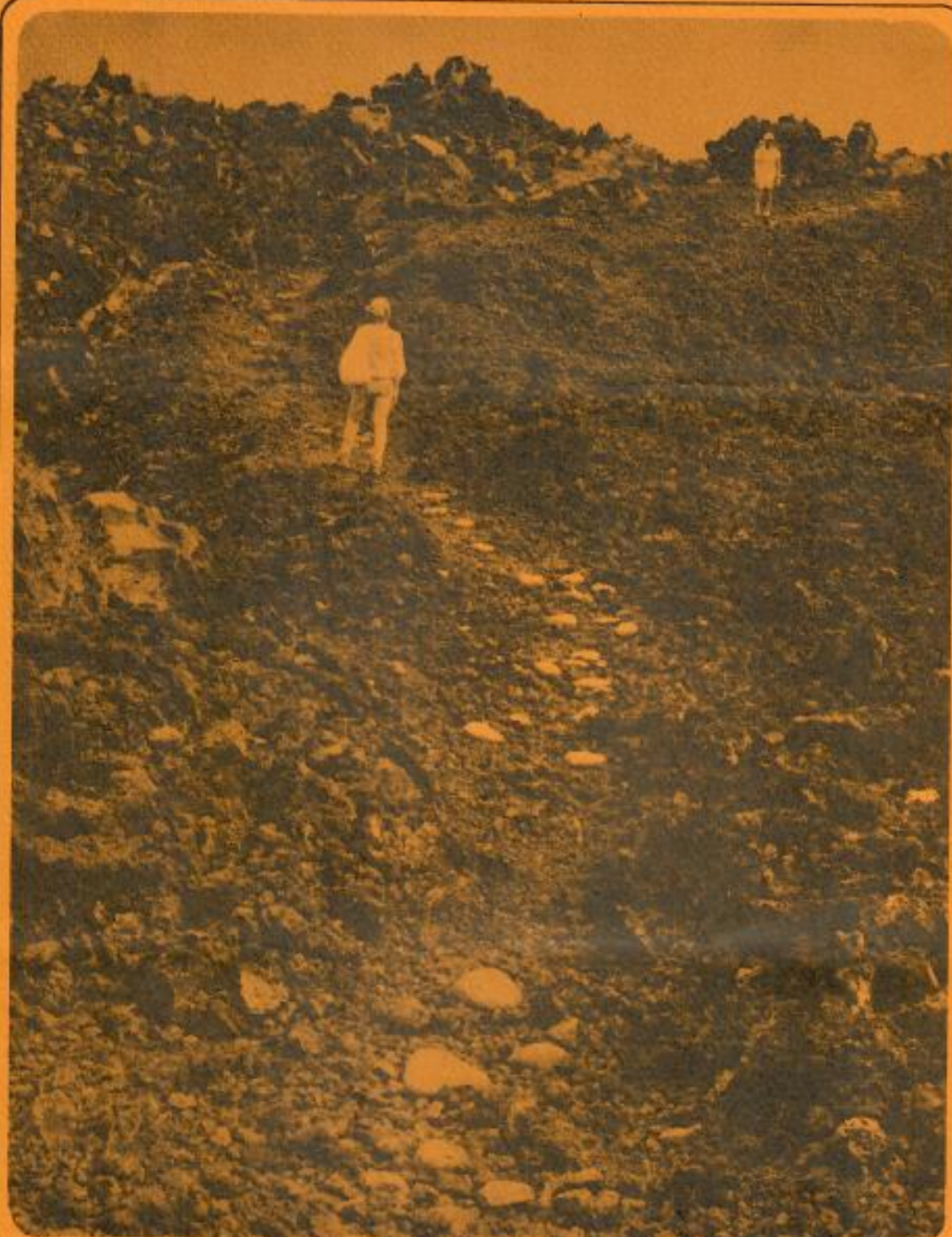
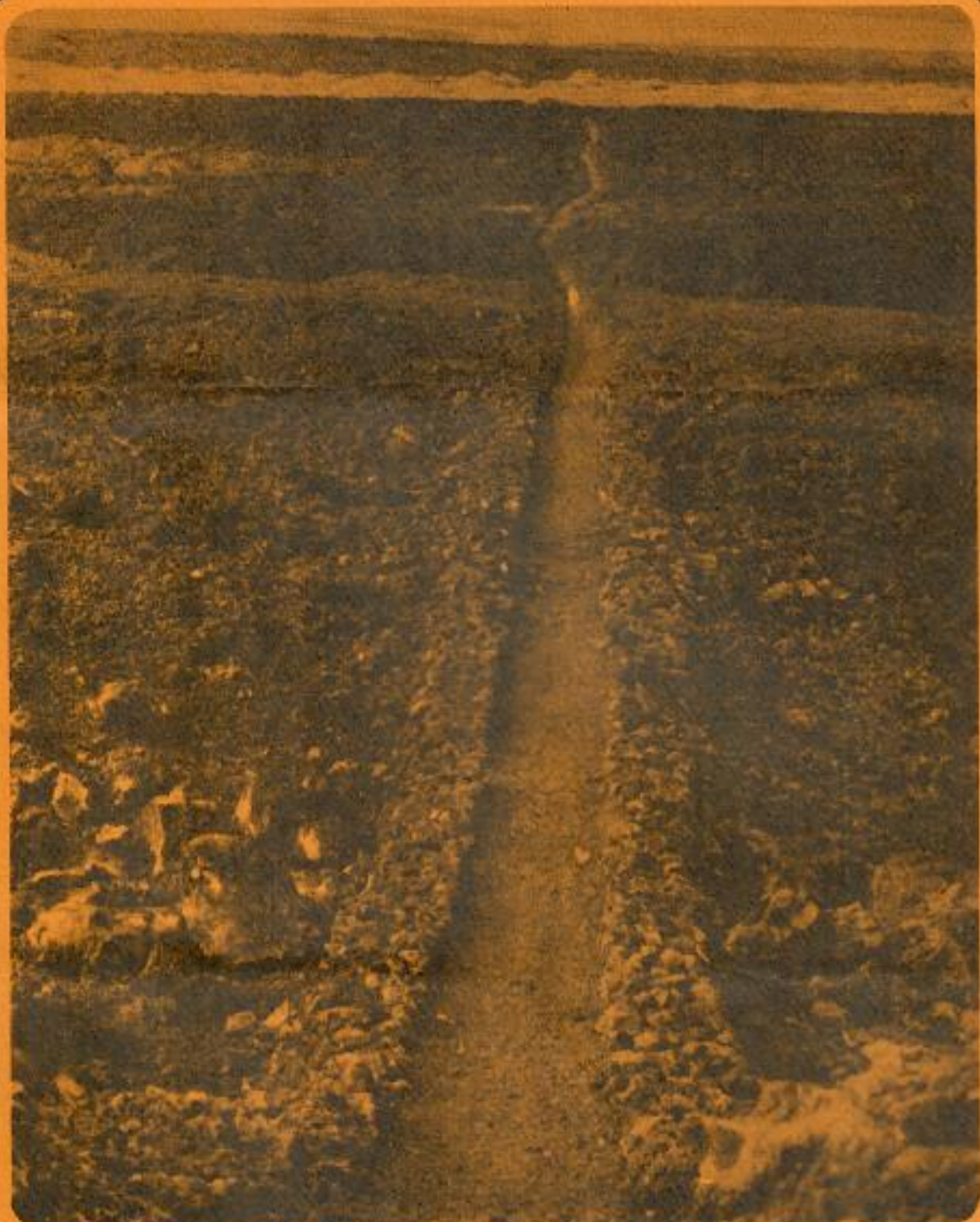


HAWAII ISLAND
FILE OF G. H. BALAZS



Section of an ancient Hawaiian foot-trail lined with "ala", steppingstones worn smooth by the ocean. The Ala Kahakai pedestrian trail system would contain large sections of such ancient Hawaiian trails which are historic sites themselves.



This distinctive trail, located inland of the Ala Kahakai, can be seen from the Queen Ka'ahumanu Highway. Called the "King's Highway," its traditional name is not known. Probably built over a more ancient foot-trail in the late 1800's, it was used to drive cattle from as far as Pu'uhue, North Kohala, to Kiholo, North Kona. This trail was part of Hawaii's highway system of old.



Hawaiian Trails For Hawaii's People

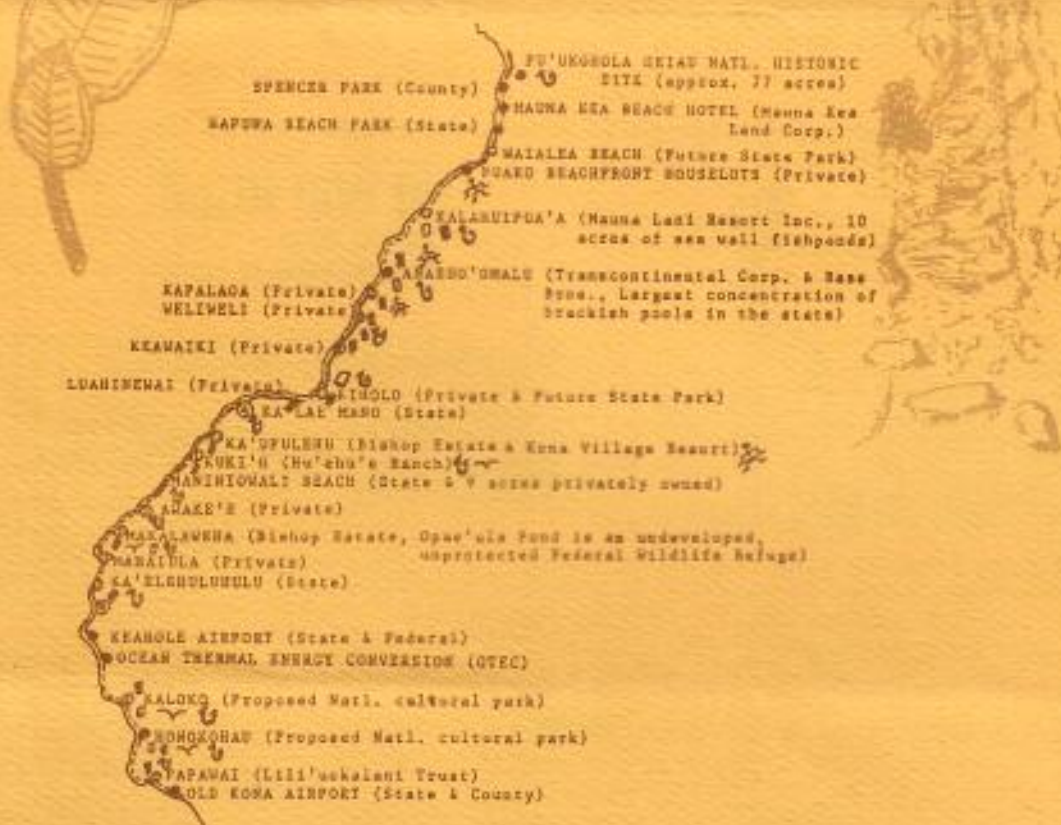
The "Ala Kahakai--Trail by the Sea", preserving the ancient Hawaiian trail system, would be a linear park, a narrow strip of land extending for miles and enabling a more expansive outdoor experience than possible in a conventional park.



Manini'owali Beach, also known as Kua Bay, North Kona. Pu'u Kuli, a prominent landmark, is in the left background. This beach is surrounded by over 3,000 acres of State-owned land and would be accessible through the Ala Kahakai trail system. Nine acres of beachfront property are privately owned.

The Proposed Ala Kahakai

Trail by the Sea



- Trail over public land
- Trail over private land
- Existing vehicular public access
- Vehicular public access probable in the future
- ⊙ Vehicular private access only
- ⊕ 4 wheel drive public access
- ⊖ Ancient Hawaiian fishponds
- Anchialina (brackish) pools
- ✓ Ponds frequented by endangered Hawaiian waterbirds
- ✪ Patroglyph fields
- ⊕ Historically significant



HAWAII ISLAND



Hawaiian Trails For Hawaii's People

The "Ala Kahakai--Trail by the Sea", preserving the ancient Hawaiian trail system, would be a linear park, a narrow strip of land extending for miles and enabling a more expansive outdoor experience than possible in a conventional park.



Manini'owali Beach, also known as Kua Bay, North Kona. Pu'u Kuli, a prominent landmark, is in the left background. This beach is surrounded by over 3,000 acres of State-owned land and would be accessible through the Ala Kahakai trail system. Nine acres of beachfront property are privately owned.

What is the Proposed Ala Kahakai Trail System ?

● Guaranteed rights of pedestrian public access along a continuous stretch of West Hawaii's coastline no matter what shoreline developments are approved. The State of Hawai'i owns much of the shoreline where Ala Kahakai would be located.

● Vast opportunities for residents and visitors to have healthful, outdoor recreation such as a variety of fishing activities, board and body surfing, swimming, snorkeling, diving, short or long distance hiking, picnicing, nature study and photography.

● Ala Kahakai would be a pedestrian trail. By restricting traffic along the trail to those on foot, less people would expend the extra energy to get to the beach, less trash could be carried in and thoughtlessly dumped, and there would be less car noise along the coast. Maintenance of the public trail could be a shared responsibility of governmental, private and volunteer community workers. Trail markers, trash receptacles and portable toilets would be among the required trail facilities.



The extensive Ka'upulehu Beach where the Kona Village Resort is located. Vehicular public access to Ka'upulehu is required by Hawai'i County as a condition to resort expansion.

● It is the maintenance and protection of fragile natural and historic resources while accommodating economic development along the West Hawai'i coastline where most of the Big Island's prime beaches are located.

● It would provide a means of educating people of all ages to ways of protecting, respecting and appreciating Hawai'i's unique historic and natural resources through organized trail programs.

● Ala Kahakai would need to be managed and maintained by an organization of governmental, private and public interests.

● Hawai'i's State and County governments first studied and highly recommended the establishment of Ala Kahakai in 1973.

Photos by Fred Comendant.



PERTINENT GOVERNMENTAL DOCUMENTS FOR FURTHER READING :

- County of Hawai'i, INVENTORY OF PUBLIC SHORELINE ACCESS, September 1979.
- Departments of Land and Natural Resources and Planning and Economic Development, NA ALA HELE (TRAILS FOR WALKING), March 1973.
- Department of Land and Natural Resources, PROPOSALS FOR PLANNING, COORDINATION AND DEVELOPMENT OF HAWAII'S STATEWIDE TRAIL AND ACCESS SYSTEM, 1978.
- Department of Planning and Economic Development, HAWAII TOURISM IMPACT PLAN, VOL. II WEST HAWAII REGION, 1972, p. 74.
- Department of Planning and Economic Development, STATE COMPREHENSIVE OUTDOOR RECREATION PLAN, 1975, p. 167.

The Ala Kahakai Trail System is a priority project of:

NA ALA HELE

P.O. BOX 1572

KEALAHEKUA, HI 96750

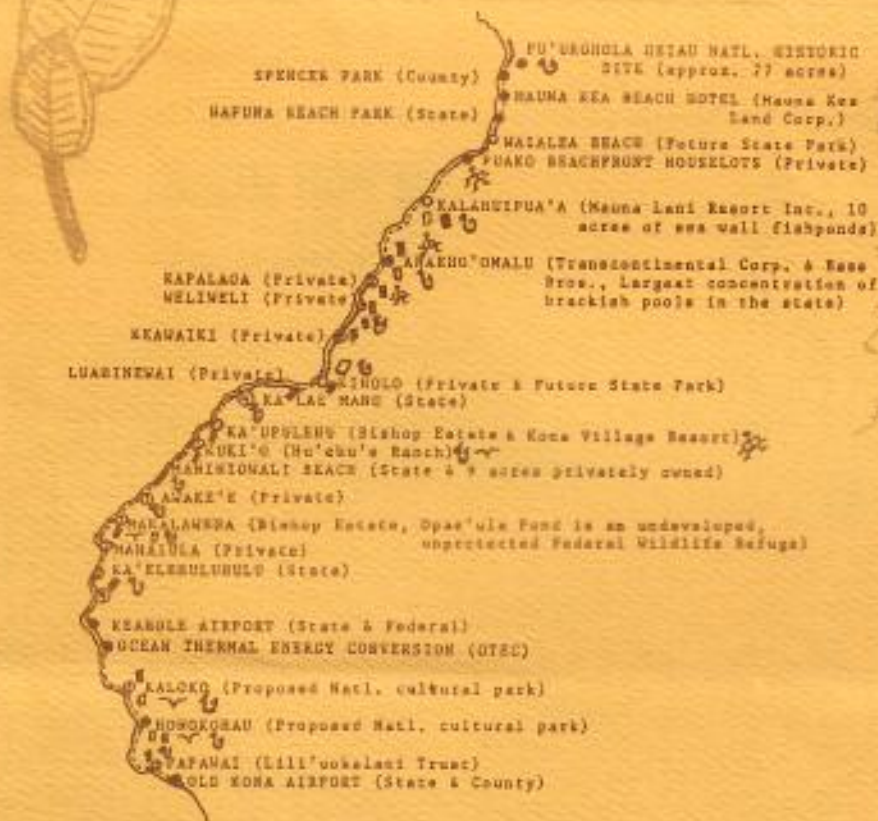


Kuki'o Beach, North Kona. When walking along the shoreline, one trespasses on private property above "the upper reach of the waves, usually evidenced by the edge of vegetation or by the line of debris."

The Proposed

Ala Kahakai

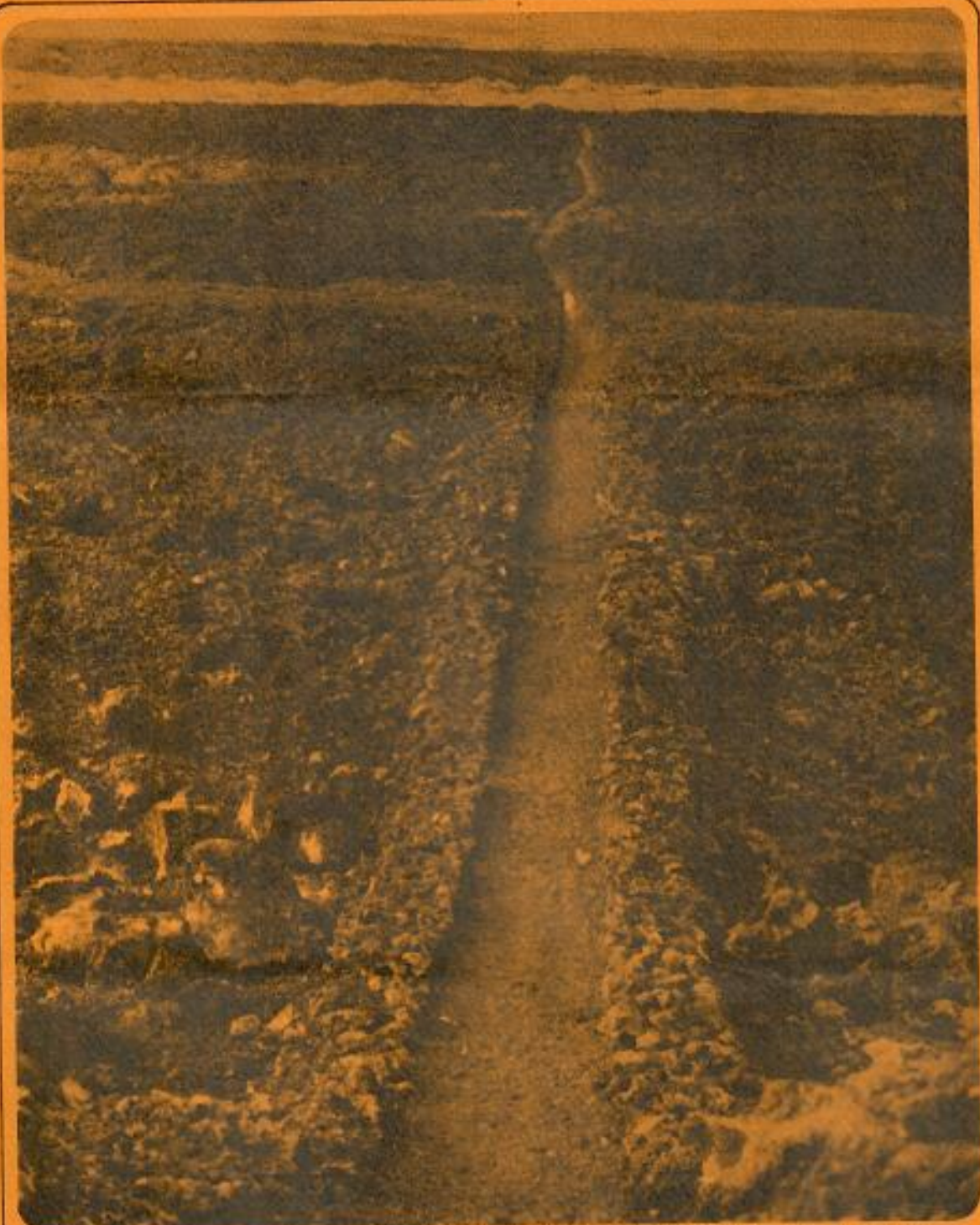
Trail by the Sea



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HAWAII ISLAND



This distinctive trail, located inland of the Ala Kahakai, can be seen from the Queen Ka'ahumanu Highway. Called the "King's Highway," its traditional name is not known. Probably built over a more ancient foot-trail in the late 1800's, it was used to drive cattle from as far as Pu'uhue, North Kohala, to Kiholo, North Kona. This trail was part of Hawaii's highway system of old.

Though you may be limited in the amount of time you can devote, just your membership will help the Na Ala Hele effort. To become a member, complete the form below and mail it with your dues to Na Ala Hele, P.O. Box 1572, Kealahou, HI 96750-1572. A membership card will be mailed to you.

NAME: _____

ADDRESS: _____

PHONE NO: _____

I can help in the following way(s):

Manual Labor (eg. land clearing, trail maintenance, fence building)

Trash Pick-Up

Food Preparation for Work Crews

Photography

Art Work (eg. sign painting and making, poster making, lay-out for printed materials)

Fundraising

Typing

Addressing Envelopes for Bulk Mailing

Telephone Calling

Letter Writing to Governmental Representatives

Grantwriting

Historical Research (including oral history)

Archaeological Survey Work

Aerial Survey Work

Mapping

Other _____

Please send me Na Ala Hele information mailer(s) to share with others.

November 9, 1982

Mr. & Mrs. Robert Hind
P. O. Box 1149
Kailua-Kona, Hawaii 96740

Dear Mr. & Mrs. Hind:

I haven't written to you for some time, so thought that I would like to take the opportunity to do so and to send the enclosed. Possibly it would be worthwhile for you to hand out a Xerox copy of the "turtles protected" notice when you issue permits for camping on your property. It might help alert people to problems of poaching in the Kiholo.

I haven't been over to the Big Island for about a year now. Hopefully, I can find the time and money to do more work at Kiholo.

Sincerely,

GEORGE H. BALAZS
Assistant Marine Biologist

GHB:ec

Enclosure

February 25, 1981

Mr. and Mrs. Robert Hind
P. O. Box 1149
Kailua-Kona, Hawaii 96740

Dear Mr. and Mrs. Hind:

I am writing to tell you that on Tuesday, March 3, and Wednesday, March 4, I will be presenting slide lectures in Hilo and Kona on the topic of "The Northwestern Hawaiian Islands." Following these talks, from March 5-8, I would like to carry out some field work on green turtles at Kiholo. I hope that this will meet with your approval. On March 4 I will telephone your house to talk to you about obtaining the gate key.

Best regards.

Sincerely,

George H. Balazs
Assistant Marine Biologist

mk



University of Hawaii at Manoa

Sea Grant College Program

Richardson Ocean Center • 2349 Kalaniana'ole Street • Hilo, Hawaii 96720
Telephone (808) 935-3830

Advisory Service

August 5, 1982

Mr. George Balazs
Hawaii Institute of Marine Biology
P.O. Box 1346
Coconut Island
Kaneohe, HI 96744

Dear George:

Got your note and newspaper clipping regarding the opihi picker. According to the Fire and Rescue Squad the body was never recovered.

I have a question. From time to time local residents and businesses (ocean front restaurants), without knowing the regulations, capture and keep green turtles as pets. If we do hear of any in captivity, would you be interested in tagging or measuring them before release? Please let me know. Also, is there anyone in Hilo who knows how to tag turtles if you can't make it over? What kind of data would you like to have recorded if turtles are found in captivity?

I've finally had a chance to read over your "intent to submit research proposal" on studying green turtles off the island of Hawaii. It looks like a valid research project since more information on the turtles' activities off the Big Island would be beneficial to local residents as well as marine biologists. More publicity on the "plight" of sea turtles is needed to discourage local residents from capturing them, as I still hear of picnics where turtle steaks are served. Can any press releases with photos be sent to our local newspaper on turtles with statements on current regulations?

Guess that's it for now.

Aloha,

Howard A. Takata
East Hawaii Agent

KONA VILLAGE® RESORT



P.O. Box 1299 / Kaupulehu, Kona, Hawaii 96740 / Phone (808) 325-5555 / Cable: 'Coconut'

August 6, 1982

Mr. George Balazs
University of Hawaii at Manoa
Hawaii Institute of Marine Biology
P. O. Box 1346
Coconut Island
Kaneohe, HI 96744

Dear George:

Thank you very much for the poster of the sea turtles. We presently have it displayed at our beach area where our guests can enjoy it and compare the turtles in the poster with those in the bay.

Thank you for your thoughtfulness.

Sincerely,

Fred Duerr
Vice President and
General Manager

FD:en



An Army unit conducts maneuvers at the barren Pohakuloa Training Area on the Big Island. —Star-Bulletin Photos by Warren R. Roll.

Pohakuloa

By Llewellyn Stone Thompson
Big Island Correspondent

POHAKULOA, Hawaii — Pohakuloa Training Area, the largest military installation in the state, from the air looks like a barren, uninviting dust bowl, crisscrossed by lava flows and jeep trails.

It is dotted with scrub vegetation and volcanic cinder cones — 170 square miles of arid land bordered by three magnificent mountains, Mauna Kea to the north, Mauna Loa to the south, and Hualalai to the west.

A helicopter tour of the training area starts at Bradshaw Army Airfield, just off Saddle Road and parallel to it. The chopper flies northwest along the road until it reaches Pu'u Ke'ek'e, near one boundary of training area, and then turns south, passing over a string of pu'us — small volcanic hills.

Although not visible to the unaided eye, a training exercise is taking place below. The pu'us are under attack, as they have been hundreds of times before.

Cutting through the string of pu'us is the massive prehistoric Ke'amuku lava flow, two miles wide at points, and 20 miles long, stretching across the width of the training site. To the northwest, the flow forms one border of Kipuka Kalawamauna, an island of denser vegetation including several endangered plant species.

THE HELICOPTER follows the Ke'amuku flow for some distance as it enters the live firing impact area, the largest single portion of the 108,863-acre military installation. The impact area includes 85,057 acres, but only 51,000 acres are actually used for high explosives. The rest is used for military maneuvers.

The impact area is littered with junk — automobiles, refrigerators and other large objects placed on the lava by helicopters as targets and then blown up. Especially colorful are the bright orange remains of small drone aircraft used as targets.

Not visible from the air are the numerous duds, unexploded artillery shells, mortar rounds and other explosives. Some of the more exotic ordnance is so dangerous that even ordnance decontamination men are afraid to go near it.

As the chopper flies on, it passes over a large diamond-shaped track which surrounds a low pu'u. This is the tank target

range, the only one in the state, in which a silhouette moves around the diamond on a small train and is fired at by tanks.

Circling to the north, the chopper moves low over soldiers marching through a more wooded area, part of the habitat of the endangered palila bird. Here the men are allowed to maneuver, but not to fire their weapons, cut trees, dig foxholes, or build fires.

THE CHOPPER passes over a particularly steep-sided pu'u named oma'oka'ili, but better known to the men as "the big o" or "O, my aching ass."

Completing the circle over the massive installation, the chopper flies along the base of Mauna Kea, passing over the neatly aligned rows of the 170 buildings of the base camp, and kicking up a clouds of dust as it settles to ground once again at Bradshaw.

In a way, the camp in the training area is not unlike a hotel — it is run by a staff under Lt. Col.



Capt. Tom Voight of the 25th Division barks commands over a field phone.

Plays Key Military Role

More than 100,000 acres of the Big Island are set aside for the military. The Army, the Air Force, the National Guard and the Marines all use it and say they need its space, isolation, rough terrain and absence of population to train for defense preparedness. Conservationists and others are not convinced military training is the best use of the land, but for now it is staying that way and the Star-Bulletin's Big Island correspondent takes a look at what's there in this, the first of three articles.

Bob Bonthuis, for guests who use it temporarily.

The base camp of 170 buildings at an elevation of 8,200 feet on the winding Saddle Road, 36 miles from Hilo and 40 miles from Kawaihae Harbor, can house as many as 2,000 troops. Founded in 1866, it recently underwent a \$3.5 million renovation.

Lighter equipment and troops are flown to Hilo in C-141 Starlifters. Smaller C-130 Hercules aircraft can fly directly to the 3,700-foot Bradshaw Army Airfield adjoining the base camp. Larger equipment such as tanks are transported by sea to Kawaihae and then trucked to Pohakuloa or driven up "Lightning Trail" which parallels state roads.

THE BASE is staffed by 128 persons, military and civilian. About 90 percent of the staff lives in Hilo and commutes to camp, while others live in Waimea and Kona.

Payroll for the staff is \$175,000 per month, and more money is pumped into the Big Island economy by food and fuel purchases from Big Island vendors.

Water for Pohakuloa is a special problem. It receives 15 to 30 inches of rain a year, but most of the rainfall is seasonal.

Water must be hauled from Waimea about eight months of the year, at a cost of about \$15,000 per month. When 40- to 50-knot winds blow through the dry area, "the dust is unbelievable," Bonthuis says.

The local source of water is seven springs on Mauna Kea, which can provide up to 150,000 gallons of water on a good day, to be divided equally between Pohakuloa and state facilities in the area. On bad days, the water trickles down to 2,000 gallons a day, with none of it going to Pohakuloa.

In addition to its military tenants, Pohakuloa hosts other guests, some invited and some not.

CERTAIN PARTS of Pohakuloa are designated as hunting areas, but some hunters don't wait until the hunting season, Bonthuis says. Last year 40 to 50 poachers were picked up by military authorities and turned over to state fish and game personnel.

On the night of last July 13, six teen-agers armed with rifles and shotguns, attacked an ammunition storage dump lying alongside Saddle Road, for the purpose of stealing ammunition.

Two Army guards were wounded seriously in the attack. Both were treated at Tripler Hospital on Oahu. One has been released from the hospital but the other is still being treated in the hospital.

The six teen-agers were captured and released to the custody of their parents after the incident. The youngsters have been committed to the Hawaii Youth Correctional Facility on Oahu, Big Isle Family Court Judge John Olson announced to the press Jan. 31.

Since the attack, an observation tower has been erected above the open air ammunition dump. Lights have been installed at the four corners of the barbed-wire compound. Concrete reinforced culverts have been set up at the corners to provide cover in case guards come under fire, and sandbags are stacked up for the same purpose.

Senate Resolution Seeks Hunting Program Review

By Harry Whitten
Star-Bulletin Writer

A resolution asking the legislative auditor to audit the state hunter-safety training program was reported out of the state Senate Committee on Ecology, Environment and Recreation yesterday.

The resolution, introduced by state Sen. Neil Abercrombie, D-6th Dist. (Manoa-Waikiki), said a review is necessary to assist the Legislature in assuring that the intent of the 1974 act setting up the program is being met.

A.L. Ho, president of the Hawaii Rifle Association and a standing committee member of the National Rifle Association, read a statement in support of the resolution.

He said the association had lobbied for enactment of the program, wants it to be continued, but said it had produced minimal results so far.

"It has been our observation that the state administration has always shown but passive enthusiasm toward this program even after it was made a part of our statutes," he said.

"It took the state until the fall of 1978 before it appointed its first administrator in spite of numerous proddings by this organization."

HE SAID THE Hawaii Rifle Association has a membership of 700, that the National Rifle Association has 2,900 members in Hawaii; that there are 15,000 licensed hunters and an estimated 200,000 legal gun owners in Hawaii.

Susumu Ono, chairman of the Department of Land and Natural Resources, also read a statement in support of the resolution.

He said that since the start of the program in 1978 it has established a cadre of volunteer instructors and organized a statewide training program. To date 316 students were trained and certified to be instructors for other hunters, he said.

In February the volunteer instructors completed an academy on teaching hunter education courses, he said.

The Senate committee also approved a resolution asking the DLNR to submit progress reports on five state parks on the Big Island — Kiholo Bay, Kua Bay, Makalawena Bird Sanctuary, the Old Kona Airport and Hualalai.

The resolution also asks the DLNR to study how to restore and provide access to the King Umi Temple of Peace in Hualalai State Park.

Ono said he concurs with intent of the resolution and promised that progress reports on the state parks will be made to the 1982 Legislature.

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF STATE PARKS
P. O. BOX 621
HONOLULU, HAWAII 96809

DIVISIONS:
CONSERVATION AND
ENFORCEMENT
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

May 4, 1981

Mr. George H. Balazs, Assistant Marine Biologist
University of Hawaii at Manoa
Institute of Marine Biology
P. O. Box 1346
Kaneohe, HI 96744

Dear Mr. Balazs:

Thank you for your letter of April 13, 1981 concerning a proposed State Park at Kiholo Bay, North Kona, Hawaii.

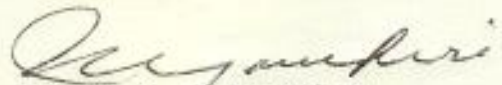
Though Kiholo is a proposed State Park, we do not have any development plans. The acquisition of the private inholdings will be required before a park can be realized, and we usually don't begin with detailed planning until acquisition is assured. As yet we have been unable to move the project to a sufficiently high priority to accomplish the land acquisition.

After acquisition, we would proceed with research and assembly of data on the natural and historical values and characteristics of the area, which are then evaluated in the light of the various public concerns before any management and development plans can be prepared.

So, we are as yet a long way from development plans for this proposed park. Your concern is timely however, as we appreciate receiving any authoritative data at anytime ahead of this planning process. You are pointing out a very interesting value concerning green sea turtles, and one that will need to be considered with great sensitivity during the planning process and ensuing management as a park. By law, we are responsible for protection and preservation of such resources as well as for public enjoyment.

Please keep us posted on your work in Kiholo.

Sincerely,


James J. Yamashiro
State Parks Administrator

cc: Milton Hakoda, S. Kamimura



DEPARTMENT OF PARKS & RECREATION

Herbert Matayoshi, Mayor

COUNTY OF HAWAII

Milton Hakoda, Director

April 2, 1981

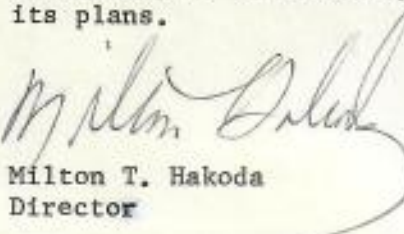
Mr. George H. Balazs
Assistant Marine Biologist
Hawaii Institute of Marine Biology
P. O. Box 1346
Kaneohe, Hawaii 96744

RE: Kiholo Bay

This is to acknowledge your inquiry of March 24, 1981, and to inform you that the Department of Land & Natural Resources, State of Hawaii, has plans for the development of a regional park in the Kiholo Bay area.

The County of Hawaii was initially interested in developing the area, however, in the 1960's, the State expressed an interest in the same area and the County subsequently withdrew its proposal.

May we suggest that you contact the Department of Land & Natural Resources, P. O. Box 621, Honolulu, HI 96809, for an update of its plans.


Milton T. Hakoda
Director

MTH:GM:ai



University of Hawaii at Manoa

Hawaii Institute of Marine Biology
P.O.Box 1346 • Coconut Island • Kaneohe, Hawaii 96744
Cable Address: UNIHAW

March 24, 1981

Mr. Milton Hakada
Director
Department of Parks & Recreation
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Hakada:

I am writing to inquire about any present or future plans that you may be aware of to develop a park or other public facility in the area of Kiholo Bay, North Kona. Since 1972 I have been periodically studying a unique aggregation of immature green sea turtles that resides at this location. The adjacent Wainanali'i Pond has been found to constitute critical resting habitat for the assemblage. Any plans for development near this unique ecosystem would therefore be of interest to me with respect to evaluating potential impacts on the turtles.

Thank you in advance for any information that you can provide on this important subject.

Sincerely,

George H. Balazs
Assistant Marine Biologist

CHB:md

UNIVERSITY OF HAWAII
Hawaii Institute of Marine Biology
Coconut Island • P. O. Box 1346 • Kaneohe, Hawaii 96741

April 13, 1981

Mr. James J. Yamashiro
State Parks Administrator
Division of State Parks
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Yamashiro:

As described in my recent correspondence with Mr. Milton Hakoda (copies enclosed), I am interested in determining the scope and status of any plan to develop the Kiholo Bay area on the Big Island. Any assistance that you can provide in this important matter will be greatly appreciated.

Sincerely,

GEORGE H. BALAZS
Assistant Marine Biologist

GHB:ec

Enclosures

cc: Mr. Milton Hakoda

Memo from
John Gage

August
1981

The turtle meat served
currently in CAYMAN is
light colored & somewhat
tough (a little like veal). Nick's
fishmarket served a tender
dark meat (wild?).

Twice I have seen a
sea turtle in Keahou Bay.
It is about 18 inches
across the shell from head
to tail.

J. Gage

Box 4309

Kailua-Kona 96740

Gage

FEB 28 76 5-6



National Park Service Photo by Don Roese

Columnist Russ Apple prepares to try out the new swimming cove on Halape's new shoreline.

Return to Oasis of Halape

HALAPE, Hawaii Volcanoes National Park—Still bleak and barren in the aftermath of the Nov. 29, 1975 earthquake and tsunami—two lives were lost here—this isolated and remote coastal hideaway has a chance to regain its reputation among hardy hikers as a favored oasis.

Our Dec. 6, 1975 column was a lament for Halape—the old oasis had been submerged as the land slipped and its coconut grove was doomed.

Trails to Halape were buried under tons of rock on Halina and other palis by the quake, and trails along the shore from Kalapana submerged by the sudden plunge of the entire coastline.

HALAPE ITSELF had slipped underwater ten or so feet and a new shoreline established inland of the grove.

Hala and kou trees, shelters, local paths, grass and rocks had been swept and left inland by the tsunami. Debris from the camps of the 30 or so hikers here when the early morning calamities struck also were

Tales
of
Old
Hawaii



By Russ and Peg Apple

scattered inland along with the people.

There were weeks when the debris and the stench of dead horses, fish and decaying land and marine vegetation made Halape a place to shun.

Process of nature, however, aided by park rangers, may return Halape to a backpackers' destination.

FIRST TO THE park rangers. Sprouted coconuts and kou seedlings are being planted in pockets of dirt and sand in lava fields. This is a historical process. Hawaiians packed them in first; CCC enrollees and park rangers have repeated the process in recent decades.

Only the modes of transportation have changed. Hawaiians walked them in or carried them in outrigger canoes. The CCC and the rangers loaded them on pack mules.

Today they come in a big box slung under a helicopter.

Shade will again become part of Halape's landscape. In time.

A SPOT on a brow of a hill overlooking the new shoreline is being considered for a new shelter.

Nature has done its part. Major change along the new shoreline is the addition of a crescent-shaped white sand beach fringing a swimming cove with a sandy bottom.

With that cove and some adult coconut trees, Halape will again be an Hawaiian oasis.

Big Island Disasters in 1868

By Russ Apple

IN COLD SCIENTIFIC language, William T. Brigham described the series of catastrophes which hit the Big Island of Hawai'i in 1868.

You name the disaster — the Big Island had one in 1868. Earthquakes, lava flows, land subsidence, wide cracks in the roads, tsunami and mud flows took their toll of life and property.

About 79 Hawaiians lost their lives.

Ten houses were destroyed by a mud slide; 108 by the tsunami. The big earthquake shook down 46 houses. Lava covered 37 houses.

If the big earthquake had hit a populated area, like the city of Boston of 1868, about 50,000 people would have been killed. Most of Boston would have been in ruins.

Brigham, the scientist who wrote the paper, is best remembered as the first director of the Bernice Pauahi Bishop Museum — but his directorship was long after 1868.

IN 1868, BRIGHAM was an experienced Big Island volcano observer. He knew the active volcanoes of Kilauea and Mauna Loa from personal study. He also had a number of friends on the Big Island in 1868 who wrote Brigham about their experiences that year. Brigham quoted liberally from their letters to draw his picture of what went on in both human and geologic terms.

Brigham's paper of the 1868 events was published in Boston in 1869.

Earthquakes began to shake the Big Island on Saturday morning,

March 28, 1868. They continued for more than eight months.

That's eight months of earthquakes that people felt, in contrast to ones only recorded by seismographs. Such instruments were not imported to the Big Island until 1912.

PEOPLE IN THE KONA district on some days felt 50 to 60 earthquakes. In the Ka'u district, the count was about 300.

At the summit of Kilauea volcano, and at the Kapapala area of Ka'u, the shocks were so constant that no

300 earthquakes a day!

count was attempted by the few people who stayed around.

Constant shaking so unnerved some residents that they took the next ship off the island.

Husbands who felt it was their duty to stay sent wives and children away for safety. People who tried to sleep were awakened every few minutes by the shakes.

That big earthquake came on Thursday, April 2, at 20 minutes before 4 in the afternoon.

People on Kauai Island, about 300 miles away, felt that one. So did the folks in Honolulu.

ON THE BIG ISLAND, it started a landslide of mud, sank the coastlines of the Puna and Ka'u districts about six feet, knocked down churches, and generated a tsunami which

washed inland and took out coastal villages.

In one instant, every stone wall fence in the Kona, Ka'u and Hilo districts was knocked flat. Almost every thatched house in Ka'u was overturned. A man found his horse flat under him. Others found it impossible to stand and sat on the ground and braced hands and feet to keep from being rolled about.

A man in Hilo town managed to stand but got "sea-sick."

In Hilo, cracks in the ground opened. One was about a foot wide. When it closed, one side was six inches higher than the other. Hilo's two rivers turned brown with mud. Bookcases loaded with books were thrown to the floor.

A CRACK NEAR the Volcano House opened 12 feet and stayed open. It closed the road to Hilo. On the Ka'u desert, the "Great Crack" appeared and ran for miles. It's still from 8 to 24 feet wide.

By April 2, only the Hawaiian manager and his Chinese cook still stayed at the Volcano House on the summit of Kilauea crater. The rest of the residents, staff and guests had long since fled.

The manager, who also was a judge, reported to Brigham that the ground at Kilauea rocked "like a ship at sea."

There were changes in the lava lakes within Kilauea crater. Within a few days, eight "lakes of fire" had been reduced to one. On April 7, a major lava flow hit the Ka'u district. It was quite a year!



at historic Kaupulehu on Hawaii's Kona Coast

Nestled on the fabulous secluded Kona Coast of the Big Island of Hawaii, Kona Village Resort is more than just a resort — it is an authentic recreation of the legendary Hawaii of Kaupulehu. It was here in 1801 that Pele, Goddess of fire, spewed forth her volcanic anger from Mount Hualalai chasing the natives from the coast. Incredibly, one small area around an emerald bay with coco palms and white sand beaches was spared by the lava which literally surrounded it. More than 150 years later, this enchanting location was re-discovered — and Kona Village Resort became what Kaupulehu had been — a touch of Paradise on Earth.

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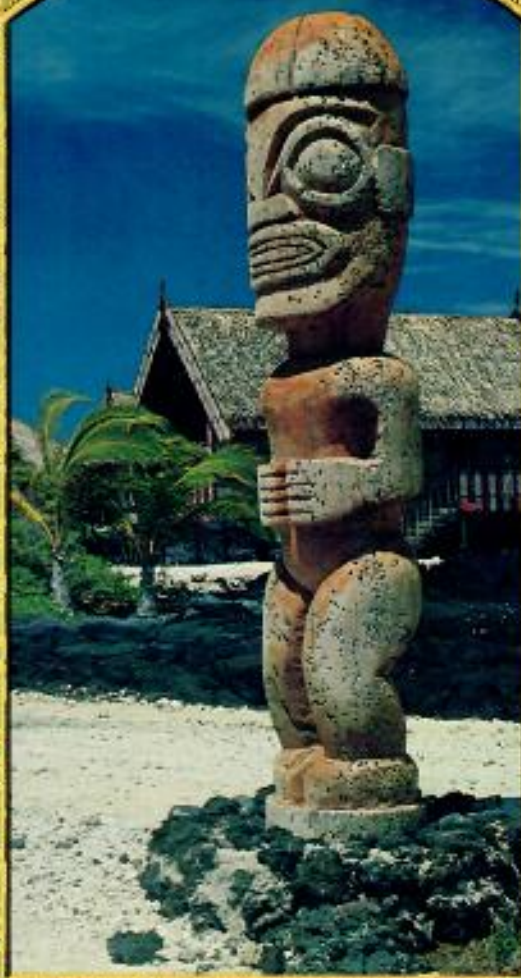
KONA VILLAGE® RESORT

P.O. Box 1299 / Kaupulehu, Kohala-Kona, Hawaii 96740

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**KONA
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HIDEAWAY RESORT
At HISTORIC KAUPULEHU
on Hawaii's Kona Coast





By Ed Sheehan

(Mr. Sheehan's essays, "Sheehan's World," are a feature of the Honolulu Sunday Star-Bulletin and Advertiser. He is also co-author of the stunning new book-experience, "The Hawaiians" and a frequent contributor to many Mainland newspapers and magazines.)



... I sat there, sipping and listening to mutters of sea among lava stones. Then the light came, almost apologetically, as if knowing it introduced harassments of day.

It came tenderly, separating sea and sky, etching the surf line, and I knew it wouldn't be an ordinary day at all. It would be a Kona day . . .

Maybe I shouldn't write about Kona Village at Kaupulehu.

We Hawaiian-types move daily in an enormous public



Accommodations are individual, thatched-roof hales (bungalows) styled after those found on the islands of



Wedding Plan . . . Ask about a Resort Wedding. Wedding/Honeymoon package brochures are available.

HONEYMOON PLAN . . . Strictly for honeymooners. Available year 'round, 5 days/4 nights. \$800 per couple includes round-trip Keahole-Kona Airport ground transportation, private, thatched ocean-view "hale"—breakfast, lunch, and dinner daily—flower lei greeting and welcoming rum punch—bottle of champagne in your room—use of all beach and recreational equipment (sailboats, outrigger canoes, snorkeling gear, and tennis courts)—11 x 14 line art reproduction of your "honeymoon hale"—additional nights at \$195. Oceanfront hale add \$20 per night. No refunds on unused portions. Sales tax and gratuities are extra.

Send for brochures describing **TENNIS, SCUBA** and **DEEP-SEA FISHING PLANS**. All special plans are available when reserved and paid in advance, subject to available space.

KONA VILLAGE RESORT IS CLOSED NOV. 30 THROUGH DEC. 17.

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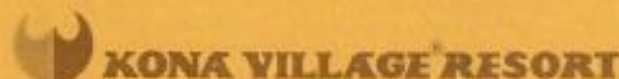
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KONA VILLAGE® RESORT

A FULL AMERICAN PLAN RESORT

Hawaii's hideaway resort, a long-ago South Seas Village, reborn on the beach at Kaupulehu (ka-oo-poo-lay-who).

Information & Rates Effective January 1 to November 30, 1980.

Accommodations

Eighty-one thatched-roof hales, spaced for privacy, stand on stilts beside ocean, beach, lagoon, and in gardens. They form a Polynesian village of huts like those of old Hawaii, Fiji, the New Hebrides, Tonga, Tahiti, Palau, Samoa, New Caledonia and the Marquesas Islands—with modern conveniences, of course. Sandy paths lead from all cottages to the crescent-shaped swimming beach.

On the Big Island of Hawaii . . . How to Find Us . . .

Kona Village has some 12,000 acres separating it from the world. But the small community itself clusters around a sandy beach and lagoons, just 6 miles north of Keahole Airport toward Kawaihae. It's close to Honolulu (150 air miles), yet seems centuries away in its remote setting at historic Kaupulehu, once a thriving Hawaiian village. Mileages to points of interest from our entry gatehouse on Hwy 19:

- To Hilo via Hwy 19 (Northern Route) 95 miles
- To Hilo via Hwy 19 and 11 (Southern Route) 130 miles
- To Waimea-Kamuela via Hwy 19 30 miles
- To Kailua-Kona 15 miles
- To Keahole Airport (Kailua-Kona) 5.5 miles

Transfer Options

Once in Hawaii, your Island carrier will fly you to the Keahole-Kona Airport. Then let us arrange for a SLIM HOLT HAWAII representative to meet your flight and deliver you to our village by the sea. Per person one-way rate is \$4.25. If driving is your pleasure, you may reserve a BUDGET rental car for the 5½ mile drive from the airport (turning left toward Kawaihae) to the resort entrance on Hwy 19, marked by a Hawaiian and American flag. Kona Village is a Budget Rent-A-Car station.

Exclusive Kaupulehu Plan (includes 3 meals a day)

Now, Kona Village Resort introduces the Exclusive Kaupulehu Plan. This plan allows guests full use of those services and/or amenities offered, as well as full use of all recreational equipment available, and all at no extra charge. The Kaupulehu Plan includes such items and

entertainment as: Flower lei greeting & beverages on arrival • Tennis • Sunfish sail boats • Snorkeling equipment • Fishing equipment • Surf boards & outrigger canoes • Surf mats • Golf putting equipment • Power launch rides • Ping pong tables & equipment • Beach towels, beach mats, backrests, and chairs • Scheduled guided walks viewing petroglyphs and historic shelter caves • Scheduled guided nature walks showing 100 varieties of flora and fauna • Thatched roof sun shelters • Oceanside freshwater swimming pool • Shuffle board • Hammocks • Weekly manager's "get acquainted" cocktail party • Weekly Kaupulehu Luau feast (authentic Hawaiian and Polynesian entertainment) • Weekly International Night Cuisine of the World • Weekly Paniolo Steakfry • Coffeemakers in every room • Volleyball • Picnic box lunches • Hawaiian/Polynesian library • Basket and palm weaving • Floral arranging and lei making • Coconut palm activities—husking and history • Island and Polynesian arts and crafts exhibition.



Optional Resort Activities (at prevailing rates)

Tennis lessons (group or private) by trained professionals of the Peter Burwash International Tennis Teaching System. Scuba diving from our own bay. Deep-sea charter fishing.

Our beachcomber haies are spacious and comfortable

They are furnished with either king-size or extra-long twin beds, dressing room, and bath. Haies are scattered along the shoreline, along our historic fish pond, or nestled in a garden setting. No television, radio or telephone to jangle your nerves. (Telephones are located at the main office.)

What to expect in shopping services

Like the entire village, the Island Copra & Trading Co. general store is thatched-roofed and airy. Its selections include film, sundries, swimwear, Hawaiian wear, and gift items.

What to bring besides a swim suit

Come casual and pack the same. Hikes call for comfortable shoes. Some evenings are cool, so bring a sweater or light jacket. There are no dress-up occasions, and aloha shirts or muumuis are always appropriate. Bring a raincoat if you wish, but we have only 6-8 inches of rain per year at Kaupulehu.

Dinner and Cocktails

Breakfast, lunch, and dinner are served daily at our oceanside New Hebrides longhouse, the Hale Moana (American, European or Hawaiian cuisine). The International Night Buffet is a weekly feature of the Hale Moana.

The spacious new Hale Ho'okipa Hospitality House, open to a lovely garden and lagoon, now offers the ideal setting for our weekly Kaupulehu Luau feast and weekly Paniolo Steakfry. Cocktails are available at the Shipwreck Bar at poolside or in the Hale Samoa longhouse. Entertainment nightly.



Daily Rates Include Breakfast, Lunch & Dinner (Full American Plan)

	Double Occupancy (two persons)
Moderate Garden-setting haies	\$165.00
Superior ocean-view haies	\$195.00
Deluxe ocean-front haies	\$215.00
Alli (Royals) ocean-front haies	\$250.00

Single occupancy: Deduct \$40 from above rates.

Suites

HALE MALUHIA (House of Peace). Deluxe ocean-front inter-connecting duplex on the beach with panoramic view from its 54-foot lanai.

Daily rate 4 persons, Full American Plan \$500.00

HALE OHANA (Family House). Superior garden setting inter-connecting duplex.

Daily rate 4 persons, Full American Plan \$390.00

NEW CALEDONIAN DUPLEX. Superior garden/lagoon setting. Two full haies connected by a common sitting room. Each has its own lanai overlooking Kaupulehu ponds.

Daily rate 4 persons, Full American Plan \$360.00

POND MARQUESAN HALES. Superior garden/lagoon setting. Individual bungalows, each with two private sleeping rooms separated by bath/dressing area. Open lanai overlooking Kaupulehu ponds. Sleep 5 (ideal for families.)

Daily rate 2 persons, Full American Plan \$195.00

Additional adult in room, add \$57 to above rates.

Each child 12 or under sharing room with two adults: add \$41 per day, Full American Plan. Crib charge \$12 per day.

Maximum 4 persons in one haie except where otherwise noted.

Rates subject to 4% sales tax and to change without notice. Gratuities are not included. No refunds on unused portions of the Full American Plan daily rates.

Deposit Information

Two nights' rental deposit covering the first and last night, as contracted for, is required within 14 days of receipt of confirmation of reservations and at least 24 hours prior to scheduled arrival. Cancellation notice must be received by hotel 14 days prior to confirmed arrival date in order to insure refund of deposit.

Christmas Policy

A minimum stay of 10 nights is required during the December 18 through January 1 period. Two nights' rental deposit covering the first and last night, as contracted for, is required within 14 days of receipt of confirmation of reservations and at least 24 hours prior to scheduled arrival. Deposit is refundable if cancellation is received at least 60 days prior to scheduled arrival date. Full prepayment is required 60 days prior to scheduled arrival date and is refundable at any time in the event of cancellation. Original deposit not refundable if notice is received less than 60 days prior to scheduled arrival, in the event of check out earlier than contracted for, unused portion of prepayment is non-refundable.

Honolulu, February 24, 1980 A-3

Sunday

Star-Bulletin & Advertiser



Did Dutch mutineers beat James Cook to Hawaiian Islands?

By JAN TenBRUGGENCATE
Advertiser Kauai Bureau

LIHUE — This month could be the 280th anniversary of the discovery of Hawaii by the Dutch.

That possible discovery, by the ragged remains of a doomed fleet, preceded that of Capt. James Cook by 178 years.

The discovery is not shouted from Dutch rooftops. It was not part of a proud voyage of discovery, as was Cook's. Nor did it return to Europe sparking details of the Pacific Islanders and their lands.

What got back to Europe was a note in a letter from an Englishman who'd been pilot on one of the Dutch ships. That Englishman, William Adams, was a well-treated captive of the Emperor of Japan.

Two Dutch ships, *Hope* and *Charity*, were limping across the Pacific. Theirs were skeleton crews, both because of their numbers and because they were starving. They had left the coast of Chile and headed northwest to reach the latitude of Japan.

It was November 1599, a year when longitude was very difficult to establish and latitude was also chancy. Charts were hopelessly inadequate.

They'd been going almost three months, wrote Adams, when, at 16 degrees north latitude, they sighted islands that were populated. The inhabitants, they feared, were cannibals.

The only islands that seem to fit these figures are the Hawaiian Islands.

There was a pinnacle, or "pinnesse," as Adams spelled it, on one of the ships. Eight men from the Dutch ships stole the ship's boat and made for one of the islands.

The ships' captains chose not to make a fight of it, since their crews were much too weak. They did, however, capture one of the natives.

A few days later, in a storm, the *Hope* was lost, along with the admiral of the expedition and the captive native.

The report of this Dutch landing party might be considered an isolated, perhaps fanciful account.

his side, and had a feather in his hat."

Eight men left a Dutch ship in a ship's boat, pulling for an island they knew nothing of, except that its inhabitants might be cannibals. It's quite possible one could have stolen a sword and cockily stuck a feather in his cap.

Seven men in a painted boat landed on the Big Island.

"The natives received them kindly," Ellis writes. "They married native women, were made chiefs, proved themselves warriors . . ."

Do the accounts of William Adams and William Ellis refer to the same group of men? It's a matter for conjecture.

The 1611 letter of Adams, born in Kent, long a master and pilot on British ships, explains that he wanted experience in the India trade and in 1598 hired on as chief pilot for five Dutch ships.

The ships headed across the Atlantic in late June, but by mid-September many men were sick and a number had died of an undisclosed illness. They reached the Straits of Magellan in April and were caught by winter in the Southern Hemisphere.

"We were forced to winter and stay in the Straights from the sixt of April until the foure and twentieth of September, in which time the most part of our provision was spent, in so much that for lacke of victuals many of our men dyed through hunger," Adams wrote.

The ships lost sight of each other late that year, and three of them were never sighted again. The *Hope* tried to land for food, but residents "would not suffer us to come a land, shooting greate store of arrowes at our men."

Things were critical. The captain decided to send a group of armed men ashore for food.

"At length three and twentie men landed with Muskets, and marched up towards foure or five houses, and when they were about a Musket-shot from the Boates, more then a thousand Indians who lay intrenched immediately fell upon our men with such weapons as they had, and killed all to our knowledge."

But for this:

William Ellis, the missionary anthropologist whose early accounts of life in Hawaii, Tahiti and other islands are highly regarded, gave an account that varies only by one number from that of Adams.

Ellis questioned Hawaiians about the visits of foreigners to Hawaii before Cook's arrival.

Ellis talks about two traditional visits: that of the high priest Paao and that of a small group of strangers with whom Paao's son Opiri could converse. Hawaiian tradition places Paao's arrival at about 1200 or 1300 A.D.

Then Ellis, in his journal published in 1827 and republished as part of *The Advertiser Historical Series* in 1917, cites a third account he said "is much more recent and precise."

"In the reign of Kahoukapu, king at Kaavaros, seven foreigners arrived at Kealake'kua Bay, the spot where Captain Cook subsequently landed.

"They came in a painted boat, with an awning or canopy over the stern, but without mast or sails.

"They were all dressed; the color of their clothes was white or yellow and one of them wore a pahi, long knife, the name by which they still call a sword, at

So bad was the crew's depletion, Adams wrote, "we had scarce so many men left as could winde up our Anchor."

The next day they met with the ship *Charity* and decided to try to save the voyage by selling their goods in Japan. They headed across the Pacific, disease-ravaged, starved, decimated, on Nov. 27.

At mid-voyage, the eight men deserted in the pinnace.

The *Charity* was lost, but the *Hope* finally found the coast of Japan — hundreds of miles from where the charts said it should be — April 11.

"Betweene the Cape of Sancts Maria and Japan, we were foure Moneths and twentie two dayes; at which time there were no more then sixe besides my selfe that could stand upon their feet," Adams wrote.

The men and the ship were taken into custody. Many years later, Adams convinced the Emperor to let the captain of the ship return to Holland, but he was killed en route.

In 1621, the *James*, returning to England from Asian waters, reported that Adams had died in Japan two decades after he'd arrived, and after he'd participated in the likely Dutch discovery of Hawaii.

Pele, Powerful Fire Goddess

IN VERY ANCIENT HAWAI'I, volcanoes on the Big Island were run by a firegod, the forest eating 'Ai-la'au.

In ancient, historic and modern Hawai'i, the goddess Tutu Pele ran, and runs, the volcanoes.

A stamp of Pele's foot causes an earthquake; a wave of her hand brings forth a lava fountain. Pele directs the course of lava flows to save the houses of her loyal followers and to engulf the houses of those who offend.

When and how did the switch from firegod to fire-goddess come?

Pele and her cosmogenic family run through Polynesian legend for 3,000 years. Pele's story, if not Pele herself, came to Hawai'i before or with the first settlers.

When she did come, Pele invaded the domain of 'Ai-la'au — the entire chain of Islands. 'Ai-la'au headquartered and lived on the summit of the Big Island's Kilauea volcano.

HAWAIIAN LEGENDS trace Pele's search for a home down the Island chain; from Ni'ihau to Kauai, to O'ahu and Maui, and on to Hawai'i. Pele stories and place-names are found on each Island.

Her headquarters, and where she would live, Pele decided, would be the summit of the Big Island's Kilauea volcano.

That was where firegod 'Ai-la'au lived.

Hawaiian god versus goddess; male firemaker versus female fire-maker.

Pele's reputation as a fiery wahine diety served her well.

Pele approached, postured for battle.

'Ai-la'au turned and ran, never to be heard from again. Pele won by

Tales of Old Hawai'i

By
Russ and
Peg Apple



default.

PEOPLE OF PUNA AND KA'U,

two districts downslope from Kilauea's summit, became Pele's people. Pele dealt with them most frequently. They suffered the most from her fiery temper.

Of all Hawaiians, people of Puna and Ka'u paid the most attention to the worship of the volcano goddess.

People of the Hilo and Kona districts of the Big Island did not ne-

Legends of the volcano deity.

glect the divine being who ran the Island's volcanoes. Pele punished Hilo by pushing lava flows over the district from Mauna Loa volcano; and Kona through flows from both Mauna Loa and Hualalai.

HAWAIIANS on the other Islands saw the works she left behind in her search for a suitable home. They hid from her thunder and lightning. They felt their Island tremble when

she gave a particularly harsh, warning earthquake to Big Islanders.

In about 1750, Pele reminded the people of Maui of her power. She returned to Maui to extrude a small flow from the lower flanks of Haleakala volcano. This was just enough to remind Maui Hawaiians that she was still around.

All Islands had priests and priestesses who specialized in ceremonies and offerings designed to propitiate Pele.

The closer you came to Kilauea's summit the more there were. Volcano's only permanent residents in ancient Hawai'i were Pele priests and priestesses.

PELE'S PEOPLE of Puna and Ka'u made pilgrimages to Pele's home whenever a family member died. A packet of your loved one's bones was deposited in the bosom of Pele—that is, tossed as close as possible to fountaining or flowing lava, or placed in a steaming fissure.

Your loved one's spirit would then join Pele's spirit assemblage and protect your family lands from harm.

This worked only for minor offenses against Pele; the goddess would overrule staff recommendations in cases of major transgressions.

Flower leis, sugar cane stalks, locks of human hair, fruits, fish, taro corms, dogs and pigs were Pele offerings. To be acceptable, food items were first cooked by Pele's heat in a steam crack.

Chefs for the cooking were Pele's priests and priestesses. They were permitted by Pele to sustain their human lives from a part of the cooked offering.



Volcano House is located only 29 scenic miles from Hilo, in the heart of the Volcano district. Set on the rim of immense Kilauea Crater, surrounded by unequalled natural grandeur, it is only an hour's trip via inter-island jet and car from Honolulu and Waikiki.



VOLCANO HOUSE

KILAUEA CRATER, BIG ISLAND OF HAWAII

For Reservations Call
SHERATON Toll Free

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Canada: (Eastern) 800-261-9393
(Western) 800-261-9330

OR WRITE TO:
VOLCANO HOUSE,
RESERVATIONS DEPARTMENT,
HAWAII VOLCANOES NATIONAL PARK,
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HAWAII VOLCANOES NATIONAL PARK

*Perched
on the rim of
Kilauea Volcano,
4000 feet above
the blue Pacific...*



There's a cool, invigorating mountain climate, misty ohia and giant tree fern forests, an extraordinary setting of volcanic landscapes, active craters, lava tube caverns and steaming vents... in the midst of these surroundings awaits the warm Hawaiian hospitality of Volcano House.



Country-inn style of Volcano House.



View from the restaurant.



Lava fountains leap skyward.



Awesome cavern of Thurston Lava Tube.



Tree fern jungle.



Lava seared trees along a hiking trail.

1/11/80

Call toll free for reservations (800) 325-3535

PRESENT RATE STRUCTURE -

VOLCANO HOUSE

one-night deposit
within 10 days to hold reservation

	<u>SINGLE/DOUBLE</u>	<u>ADDITIONAL PERSON</u>
STANDARD (10)	\$25/\$28	\$7.00
SUPERIOR (20)	\$31/\$34	\$7.00
DELUXE (8)	\$35/\$38	\$7.00

Hawaii State Tax - 4%. Subject to change without notice.

PALACE GROUNDS

This place at Hōnaunau was also the home of the ruling chief, the source not only of the kapus that regulated life but of the celebrations that enriched life.

His courtyard adjoined the pu'uhonua, and the ten or more thatched buildings that formed his palace were in the coconut palm grove. Lesser chiefs hurried from one hut to another waiting upon the chief, perhaps preparing fish taken from the royal fishponds nearby. The small beach was reserved as a royal canoe landing for the chief and his attendants, and the wooden image in the water warned others that it was for the use of royalty only.

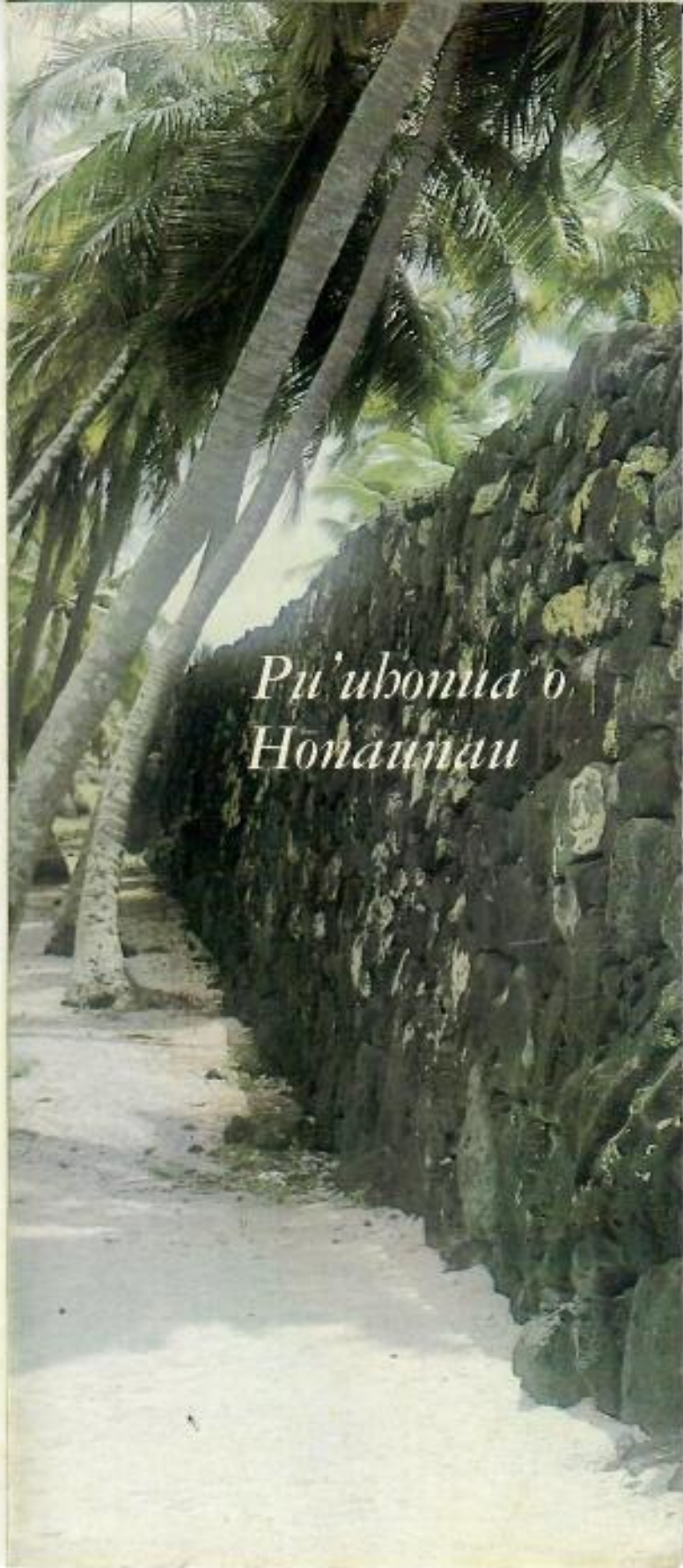


Here at the park, you can find many reminders of the past. Images of ancient gods (left), which once warned the people against intrusion on sacred ground, glare down from the courtyard of Hale-o-Keawe heiau (center). Here, too, you might see Hawaiians demonstrating skills of their ancestors — weaving mats, making nets, and fishing (above). Or maybe you'll see shellfish (right) harvested from the sea today as they were long ago.



THE GREAT WALL

A massive stone wall, which is still standing, separated the palace grounds from the pu'uhonua. It was built of stones formed from lava that once flowed here, and each stone was carefully laid, with no mortar to hold it in place. Altogether, it measures about 305 meters (1,000 feet) long, in the shape of an "L", 3 meters (10



*Pu'uhonua o
Hōnaunau*

PU'UHONUA O HŌNAUNAU: Place of Refuge of Hōnaunau

To the people who lived here in days gone by, the area was known as Pu'uhonua o Hōnaunau, meaning the place of refuge of Hōnaunau.

It was a sanctuary that provided the people with a second chance—a second chance

them. And to promote life, the seasons for fishing, for taking animals, and for gathering timber were all strictly controlled by the kapu to provide for all.

When a kapu was broken, whether it was the kapu of getting too close to the chief or of

Others who sought refuge here were the *noncombatants* during a battle. The object of war in those days was the extermination of the enemy, which included anyone who belonged to the opposing side. Those too old, too young, or

Life

That is what this place is about. Noncombatants in time of battle, defeated warriors, and kapu breakers could escape death if they could reach this sacred refuge. And from here came the call to life, for near the refuge lived the alii, or ruling chief, who proclaimed the great celebrations of life—festivities of thankfulness for rich harvests, successful battles, and marriages.

Here, you can learn about life in Hawaii before the outsiders came in the late 1700s. To them it was a delicate balance between a life-loving people in harmony with the land and powerful and vengeful gods who could take that life away.



for life itself. Who sought new life here and what had they done?

Some were *kapu breakers*—those who had broken the sacred laws, or kapu. The system of kapu in old Hawaii embodied the rules of life for the people. Under these rules a common person couldn't get close to the chief; couldn't walk in the chief's footsteps, touch the chief's possessions, or let his shadow fall on the chief's palace grounds. Everyday activities, too, were regulated by the kapu. Women couldn't eat the foods reserved for offerings to the gods; they couldn't prepare meals for men or even eat with



fishing at the wrong time, the penalty was the same—death. To break the sacred kapu was to offend the gods, and the people believed that the gods reacted violently toward an offender, most frequently with lava flows, tidal waves, famine, or earthquakes. So, to protect themselves from these catastrophes, the people pursued a kapu breaker until he was caught and put to death—or until he reached a pu'uhonua.

If he did reach a pu'uhonua, a ceremony of absolution was performed by the *kahuna* (priest), and the offender could then return home safely, usually within a few hours or by the next morning.

unable to fight could find safety in the sanctuary, for even in brutal war, life was preserved here.

Defeated warriors also came to the pu'uhonua, where they could wait in safety until the battle was over. Their allegiance would then be to the victor, and their life could go on.

No matter who came here or why, this was a place of sanctuary where all was forgiven. It was sacred ground on which life began anew in ancient Hawaii.

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feet) high, and 5.25 meters (17 feet) wide.

Stone by stone the people worked to build this wall, perhaps as a monument to Keawe-ku-i-ke-ka'ai, the ruling chief at that time—about 1550. They must have been a determined people to have moved stones weighing several tons.

In a way, the surface of the wall reflects life as it was when the wall was built. Just as life then was joyous, yet demanding, the wall of carefully fitted stones has some smooth and some rough places. Both ends reach for the sea, just as life, then, was tied to the sea for food and travel.

The Great Wall was both a barrier and a link. It separated the palace grounds from the pu'uhonua, the royalty from the commoners. But it joined the people together in the belief that there was hope for life in that place set apart by the wall—the pu'uhonua.

It was not the stone wall, however, that gave sanctity to the area, but the heiau, or temple, that housed the sacred bones of the dead chiefs.

HALE O KEAWE HEIAU

The religion of the people included the belief that the royal line of high chiefs had a special power—*mana*. It was a spiritual power found not only in their person but in their possessions and in the ground they walked on. Mana was determined by ancestry and rank, and after death it remained in the possessions of the chiefs and in their bones.

The Hale o Keawe heiau was built in honor of Keawe-i-keka-hi-alii-o-ka-moku, and his mana was in the heiau and protected

the pu'uhonua. After his death, his bones were placed in the temple, and the sacredness of the pu'uhonua increased, for by 1818 the bones of at least 23 chiefs had been placed there. The last deification was for a son of Kamehameha the Great.

This heiau, added at the end of the Great Wall in 1650, was the third one built here; the other two are within the walls of the pu'uhonua. The first must be studied further to determine its size and age; the second, 'A-le'ale'a, was built before 1550. Its huge stone platform was the foundation for thatched buildings and wooden images.

In 1819, Kamehameha II defied the kapu and abolished that system of religion, and all the



heiau and the pu'uhonua they protected ceased to function. The people were confused and uncertain about their future; and gone was the balance between life-loving people and the power and vengeance of gods who could take away life. Changes came quickly. People and ideas from outside this island world altered forever the old way of life.

Here at the park, you can find many reminders of the past. Images of ancient gods (left), which once warned the people against intrusion on sacred ground, glare down from the courtyard of Hale-o-Keawe heiau (center). Here, too, you might see Hawaiians demonstrating skills of their ancestors—weaving mats, making nets, and fishing (above). Or maybe you'll see shellfish (right) harvested from the sea today as they were long ago.

A WALK THROUGH THE PARK

Here is a guide for a walking tour of the park. The numbers correspond to the numbered coconut markers you will find along the trail. Your path over the ground ahead is yours to choose. You need not stop at all markers or follow them in sequence. You need not go far or fast to experience and "feel" the land of the Hawaiians who lived here.

Their lifestyle before 1819 was rigidly controlled by the *mana* (spiritual power) and *kapu* (sacred rules of life). Interwoven with these beliefs was the promise of sanctuary, which was fulfilled in the *pu'uhonua*—a place of refuge set aside by the *alii*, or chief. Keep these things in mind and you will begin to understand the Hawaiian way of life as it used to be.

As you leave the visitor center, prepare to step back over 200 years. Relax, enjoy the breeze, the sun or rain, the sound of the waves, and the charm of the area. Look around you. Perhaps you will see Hawaiians dyeing their fishnets, pounding poi, catching crabs, gathering sea urchins and preparing them for eating, fishing, carving, or weaving. Stop and chat with them. Learn of their feelings for this land and their ancestors.

To begin your tour, we invite you to listen to the three taped messages located on the rail along the walkway. Look at the tile murals as you listen to the recordings. The chant you will first hear is the *kumulipo* or creation chant.

1 Palace Grounds. Imagine the palace grounds with several grass huts scattered here and

there; the chiefs, hurrying about, waiting on the high chief; the warriors, clad in *malo* (loincloths), guarding the royal grounds. Because the chief lived here, this area was sacred, and commoners were not allowed to walk on or even cast their shadows upon these grounds—the penalty was death!

Look up and around you. Are these trees and shrubs familiar? Most native plants served more than one purpose. For example, the coconut was used for eating, fibers of the coconut husk were used to make rope, and the leaves were used for shade. Notice, too, that most of the coconut trees have been trimmed; however, people have asked that we leave some trees in their natural state, and this we have done. So, if you walk off the beaten trail, please be on the watch for falling coconuts and coconut fronds.

2 House Models. These models represent the different types of houses and show how they were built. The larger structure is the type used by the high chiefs, and the smaller is the kind used by the commoners for storage. *Ohia* wood was used for the framework. *Ti* leaves and *pili* grass were used for thatching.

3 *Kōnane* (Pronounced *kō-nāh-nay*). This stone was specially made so that you can sit and play a game of *kōnane*, an old Hawaiian "checker" game still played by many. (Rules of the game are available at the visitor center information counter.)

4 *Kanoa*. These stone bowls were carved out with stone tools. What were they used for? Maybe to hold the dye for dyeing nets and clothing; perhaps as a place to make salt or

to mash the *'awa* root in preparing a ceremonial drink.

5 Tree Mold. As the lava flowed to build this land on which you're standing, a tree fell and left a mold in the cooling lava. We do not know when this happened, but because everything has been built directly over the lava, it must have been long ago.

6 *Keone'ele*. This cove was the royal canoe landing. Thus, it was *kapu* (forbidden) to all commoners. The *ki'i* (image) standing in the water might have marked a *kapu* boundary. Today swimming is permitted here. However, because of the area's historical importance, we ask you not to sunbathe on this beach.

Nearby are Hawaiian canoes built in the old way; they're probably the only ones in existence. As in ancient times, the canoes are made of koa wood, with lashings of coconut fibers. No metal was used.

7 *He-lei-pālala*. This fishpond served only the royalty. Certain types of fish reserved for the chiefs were caught in the sea and placed in this royal fishpond for their use.

8 The Great Wall. Notice the large stones fitted together like a jig-saw puzzle in the dry masonry work. Also notice the height, length, and width of the wall. The Hawaiians probably used wooden rollers and levers of logs to get the stones in position. Built sometime in the mid-1500s, this wall separates the palace grounds from the *pu'uhonua* (sanctuary). Although repaired twice for the most part, this is the original wall. Please do not climb on the wall—we would like to save the wall and save you from getting hurt.

The Park

This Pu'uhonua o Hōnaunau, the last remaining historical site of its type, was set aside as a national historical park by Congress on July 1, 1961. Its 73 hectares (180 acres) are administered by the National Park Service, U.S. Department of the Interior. The Service's goal here is to restore the area as it appeared in the late 1700s. Until recently the park was known as the City of Refuge, a translation of the original name. The superintendent's address is Pu'uhonua o Hōnaunau National Historical Park, Hōnaunau, Kona, HI. 96726.

Pacific Ocean

Honaunau Bay



Keone'ele Cove

Private Property

10
Hale o Keawe Heiau



Visitor Center

'A-le'ale'a Heiau

Palace Grounds



Old Heiau

He-lei-pālala

Pu'uhonua



As you make your way through the park, take time to look around. Stop by a tide pool—maybe you'll see live coral (above) or other living creatures. Or try your hand at a game of kōnane (left). Rules for this old Hawaiian checker game are at the visitor center. And be sure to notice the different kinds of plants and trees here, such as the milo

We're Joining the Metric World

The National Park Service is introducing metric measurements in its publications to help Americans become acquainted with the metric system and to make interpretation more meaningful for park visitors from other nations.

Picnic Area

0 70 METERS

0 250 FEET

PU'UHONUA O HŌNAUNAU: Place of Refuge of Hōnaunau

To the people who lived here in days gone by, the area was known as Pu'uhonua o Hōnaunau, meaning the place of refuge of Hōnaunau.

It was a sanctuary that provided the people with a second chance—a second chance

them. And to promote life, the seasons for fishing, for taking animals, and for gathering timber were all strictly controlled by the kapu to provide for all.

When a kapu was broken, whether it was the kapu of getting too close to the chief or of

Others who sought refuge here were the *noncombatants* during a battle. The object of war in those days was the extermination of the enemy, which included anyone who belonged to the opposing side. Those too old, too young, or

Life

That is what this place is about. Noncombatants in time of battle, defeated warriors, and kapu breakers could escape death if they could reach this sacred refuge. And from here came the call to life, for near the refuge lived the ali'i, or ruling chief, who proclaimed the great celebrations of life—festivities of thankfulness for rich harvests, successful battles, and marriages.

Here, you can learn about life in Hawaii before the outsiders came in the late 1700s. To them it was a delicate balance between a life-loving people in harmony with the land and powerful and vengeful gods who could take that life away.



for life itself. Who sought new life here and what had they done?

Some were *kapu breakers*—those who had broken the sacred laws, or kapu. The system of kapu in old Hawaii embodied the rules of life for the people. Under these rules a common person couldn't get close to the chief; couldn't walk in the chief's footsteps, touch the chief's possessions, or let his shadow fall on the chief's palace grounds. Everyday activities, too, were regulated by the kapu. Women couldn't eat the foods reserved for offerings to the gods; they couldn't prepare meals for men or even eat with



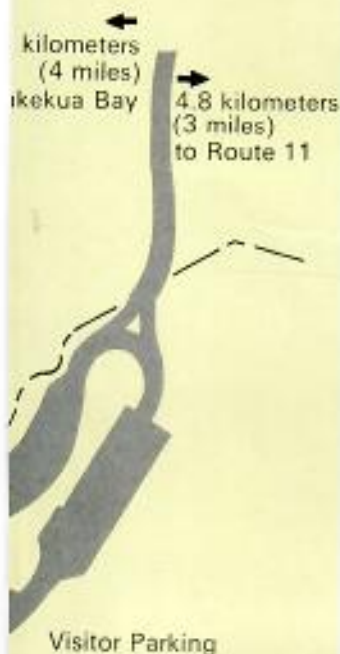
fishing at the wrong time, the penalty was the same—death. To break the sacred kapu was to offend the gods, and the people believed that the gods reacted violently toward an offender, most frequently with lava flows, tidal waves, famine, or earthquakes. So, to protect themselves from these catastrophes, the people pursued a kapu breaker until he was caught and put to death—or until he reached a pu'uhonua.

If he did reach a pu'uhonua, a ceremony of absolution was performed by the kahuna (priest), and the offender could then return home safely, usually within a few hours or by the next morning.

unable to fight could find safety in the sanctuary, for even in brutal war, life was preserved here.

Defeated warriors also came to the pu'uhonua, where they could wait in safety until the battle was over. Their allegiance would then be to the victor, and their life could go on.

No matter who came here or why, this was a place of sanctuary where all was forgiven. It was sacred ground on which life began anew in ancient Hawaii.



9 Hale o Keawe Heiau (Temple). [Reconstructed] The original Hale o Keawe heiau served as a temple mausoleum and housed the bones of 23 chiefs. It is believed that the *mana* (spiritual power) in the chiefs' bones gave additional protection to the place of refuge. The little wooden door at ground level is the only opening into this reconstruction. Food offerings were placed on the *lele* (raised platform).

10 Pu'uhonua. Now that you have entered the refuge area, what do you think it would be like to live here? To this sacred place came women and children, the aged and maimed fleeing the ravages of battle; defeated warriors and *kapu* breakers came seeking refuge. If you had broken a *kapu*, you would probably have had to swim from across the bay to get here. Once inside the *pu'uhonua* you would have been absolved by the *kahuna* (priest) and released—perhaps within a few hours—and free to resume a normal life outside the refuge walls.

The people in the *pu'uhonua* obtained food from the tide-pools. Look into them to see the many types of aquatic life.

11 'A-le'ale'a Heiau (Temple). At one time this temple platform probably had one or several grass houses on it. After the construction of Hale-o-Keawe heiau it may have been used as a recreation area. ~~If you walk across the top of this heiau and look down you will see No. 12.~~

12 Keoua Stone. A legend, retold by Mark Twain, says that this stone was the favorite resting place of Keoua, high chief of Kona. Note the six holes in the rock around this stone. They may have been made for posts to support a canopy for shade.

13 Ka'ahumanu Stone. As the legend goes, Queen Ka'ahumanu, favorite wife of King Kamehameha I, left him after a lovers' quarrel and swam for many kilometers to hide under this stone. Her little pet dog barked until Ka'ahumanu was found. It is said that the king and queen made up and "lived happily ever after."

14 Papamu (Same as No. 3). This is an original stone used in the game of *kōnane*, played with black and white pebbles. The object of the game is to be able to make the last move.

15 Old Heiau (Temple) Site. We believe this pile of stones marks the spot of the original *heiau*, which was abandoned after 'A-le'ale'a heiau was constructed. Further archeological investigation is necessary.

16 Petroglyph. There is a picture carved in the rock here. ▶ Can you find it? Perhaps it is the work of one who lived and served the *kahuna* within these walls, a *kapu* breaker, or one escaping the fury of battle.

17 Halau. A-frame structures such as these were used as work sheds and for storage.

We hope you have enjoyed your visit. Be careful of loose rock on your way back to the visitor center.

Mahalo a nui loa!

NATIVE HAWAIIAN PLANTS

Wauke. The sound of wooden mallets pounding the wauke bark on the wooden anvils echoed throughout the villages. Some say the women beating the bark into tapa cloth sent messages with the rhythm of the mallet. This plant is also known as the paper mulberry. Cloth beaten from its bark was

the finest in the Pacific islands.

Noni. This plant was used to treat a host of ailments. Its roots, bark, leaves and fruit were used for healing cuts, broken bones, and reducing fever, and for treating diabetes, heart trouble, and high blood pressure. Carefully smell a ripe fruit.

Milo. The wood from this tree was carved into vessels in the shape of calabashes for carrying, storing, and mixing things.



Nia. Every part of the coconut tree was used in the old days. From the husk came cord, mats, and brushes; from the leaves, thatch, baskets, and fans; and from the trunk, spears, posts, and drums. And the coconuts gave food and oil!

Hala. This unusual tree is also known as pandanus, screw-pine, or walking tree. Its thorny leaves were cleaned and softened for weaving. Skilled hands then made mats, sails for canoes, pillows, sandals, and balls. The fruit from the female tree, which is fibrous, made good brushes for decorating tapa cloth with natural dyes.

PLEASE HELP RECYCLE
(1 BROCHURE PER FAMILY)
MAHALO A NUI LOA!

Revised 1979

Sept 3, 76 SB

Kamakahonu's Restoration

KAMAKAHONU, Kona, Hawai'i — Kamehameha the Great chose this sandy beach area for his permanent palace grounds after he had secured his kingdom and could be more relaxed in governing it.

After 1812, when Kamehameha abandoned Honolulu for this more Hawaiian spot on the Kona coast, he let his appointed military governors run the Islands of O'ahu, Moloka'i, Lana'i and Maui. He himself ran the Big Island of Hawai'i, while Ka'umu-ali'i, a hereditary high chief of Kaua'i, ran Kaua'i and Ni'ihau. In 1810, Ka'umu-ali'i had recognized Kamehameha's overall authority over the Hawaiian chain.

Kamakahonu is a spot, a place name, along the beach which fronts Kailua Bay. Sailing canoes were in and out of Kailua Bay carrying messages and messengers, Island governors and their representatives, important chiefs, coming to petition the king, and delivering gifts and tax payments.

ROYAL SCHOONERS and foreign naval and merchant ships anchored offshore to conduct business with King Kamehameha the Great.

From north along the Kona coast a number of royal fishponds supplied king and court with fresh pond fish. Royal fishermen worked their canoes offshore in some of the world's best fishing waters.

Kamehameha himself was a devoted fisherman. Perhaps one reason he chose Kamakahonu for his declining years was its proximity to Kona's sheltered waters. Kona lies in the lee of Mauna Kea and Mauna Loa, two 13,000 feet high mountains.

While the trade winds are blocked by those two mountain masses, Kona gets a gentle day breeze off the ocean, and a night breeze from the cool mountain slopes.

MAUNA HUALALAI, 8,000 feet high, casts its early morning shadow on Kamakahonu. Hualalai's sacred summit was reserved for the gods, and it was good for the king to live



this close to a sacred high place.

Fertile royal gardens on the slopes of Hualalai fed the court, and nearby lands supplied the pigs and dogs for feasts. Kamakahonu had sufficient room for the royal residences and temple, and it was a good place to groom Liholiho, the royal son and heir, to succeed his father.

In early historic times, Kamaka-

Kamakahonu, on the shore of Kailua Bay, was important because of several historic events.

honu and the Kona coast supplied in quantity all the Hawaiian things Kamehameha the Great valued—pond and open water fish, meat and vegetables, landing spots for canoes, anchorages for larger ships, ideal weather for fishing and games, surfing in winter seas, room for his shipyards, warehouses, guest quarters and houses for his staff, and an absence of foreigners and foreign influences in excess of those he tolerated.

Honolulu by 1812, because of its harbor, had too many foreigners and too much business going on to suit the king as a residence

KAMEHAMEHA the Great enjoyed Kamakahonu for seven years, his last years.

At Kamakahonu in 1819 Kamehameha died. It was the scene of the complex affairs and ceremonies which prepared the king's body for burial. His son Liholiho was sent away from here immediately so he would not be ritually contaminated through association with the dead body of his father.

At Kamakahonu later in 1819 Liholiho returned to take the crown as Kamehameha II.

At Kamakahonu still later in 1819, Kamehameha II abolished the ancient Hawaiian kapu system and ordered the destruction of the Hawaiian temples. From then on Hawaiian women could eat with Hawaiian men and eat the same food as men.

THE DEATH of Kamehameha the Great, the crowning of Kamehameha II and the end of the kapu make 1819 an important year in Hawai'i's history and Kamakahonu a very important place. But history was not through with Kamakahonu.

In 1820, after a stop at Kawaihae to find out where the king could be found, the American missionaries from New England landed at Kamakahonu.

At Kamakahonu the Christian missionaries petitioned Kamehameha II for permission to stay. He granted them a one-year trial period to teach his chiefs how to read and write.

Then decades of neglect for Kamakahonu. People forgot what happened here, how important a place it is.

Today, however, thanks to the interest of Amfac and its King Kamehameha Hotel (rebuilt well back from the historic beach), the story of Kamakahonu is being retold. The Bishop Museum is restoring King Kamehameha's temple on a platform in Kailua Bay. Kamakahonu is regaining recognition as a historic place of Hawai'i.

To Study Polynesians Past and Present

Museum Team Off to

By Helen Altom
Star-Bulletin Writer

A Bishop Museum team left this week for the primitive island of Futuna with nearly 700 pounds of gear ranging from underwater diving equipment and shovels to a mini-oven and a breadfruit recipe book.

Anthropologist Patrick V. Kirch and his assistant, Thomas Dye, will spend about eight months on Futuna under a \$35,000 grant from the National Science Foundation.

Futuna is located between Fiji and Samoa. It is closest to Samoa in its culture. Its neighbor is Alofi Island and they are known as the Horne Islands. Alofi isn't inhabited but Futuna has about 3,000 Polynesians, called Futunians.

The anthropologists plan to investigate the agricultural systems on the islands to learn how the Polynesians — prehistoric and contemporary — adapted to island ecosystems.

IN AN INTERVIEW before departure, Kirch said, "We will attempt to explore the complex interrelations between environmental variability, population growth and socio-economic factors."

This is a new subfield of anthropology called "ethnoarchaeology."

Futuna is governed by the French. Kirch said he and Dye will collaborate with a French archaeologist from Paris who will work on Wallis Island.

Kirch made initial investigations on Futuna in 1974 as a doctoral research program for Yale University. He obtained radiocarbon dates which indicate Futuna has been settled since at least 300 B.C.

He said the early settlement sites contain abundant Lapita-style pot-

tery similar to that found in early Polynesian sites in Samoa and Tonga.

"With a little luck we may find an earlier site that will take the history back to 1,000 B.C.," he said.

Kirch and Dye flew to the remote island by way of Fiji, Noumea, New Caledonia and then to Wallis, where they expected to catch a small plane to Futuna.

Kirch said Futuna is "really primitive. There is no electricity, no water and there are no toilets."

The anthropologists have rented a small native house in the village for \$30 a month. They plan to eat mostly local food. They took corned beef and rice to exchange with the natives for taro, fish and poi.

KIRCH SAID THERE are two small stores which sell corned beef, sardines, rice, bolts of colorful cloth,

a few fishhooks and kerosene.

The people raise taro, yams, bananas and breadfruit, he said. (Hence his book on uses and recipes for breadfruit.)

He said the Futunians have thousands of pigs, which they feed taro and yams. "They're not much on fishing but they're big pig people," another facet of their life he plans to examine, he said.

He said Futuna "looks like a miniature Hawaiian Island... It's a very pretty place."

It has a small bay with an anchorage and a grassy place opened three years ago as an airstrip, he said. Mail is delivered by the small plane from Wallis or by ship, which visits every two months.

About 10 Frenchmen live on Futuna and one, a policeman, operates a radio, he said.

maybe they have turtles there.

Primitive Futuna Isle

"Life is pretty quiet, slow-moving," Kirch said. "There is no bar, although there is a bar on Wallis."

Besides their own research, Kirch

and Dye will collect samples of flora, fauna and marine life for study by other marine scientists.

"It's pretty much unknown,"

Kirch said. He brought back 160 plants from his last trip to Futuna including four species new to science, he said.

Priceless treasures

By Samuel Crowningburg Amalu
Advertiser Columnist

The autumn leaves of their lives have already fallen and now the cold wintry snows of their evening hours lie gently over the hills and valleys of their days. But their lives have been full, and gentle have been the hours that they have lived.

They did what they most wanted to do — to search into the past and to bring that past back to life so that yesterday may live again for us and equally as well for them who love and know that past so very well. They are fountains of wisdom from whose bounty we can sip for decades and centuries to come and be constantly refreshed.

Only four of them are left to us. Each is a vast storehouse of lore and knowledge that none of us can afford to lose.

Four of them: Theodore Kelsey, Kenneth Emory, Mary Kawena Pukui and Charles Kenn. These are the greatest treasures that we have today in our possession, treasures that we shall never be able to replace or to find again if by great misfortune we lose them. And because we must be selfish and think first of our own great needs, we must guard ourselves against any possible loss by either neglect or default.

We all have an obligation to our future to drink as much as we can from the fountains of wisdom and of knowledge that these four people represent. Fail to do this while we can and we shall lose things more precious to us than all the jewels of Araby, for the gems they represent are priceless.

Theodore Kelsey has the rare ability of translating Hawaiian into English without adding an iota of fol-de-rol or even the merest suggestion of poetry to his translations. He digs down somehow into the Hawaiian and finds the basic etymology of the word or the phrase.

At first, one can find this disconcerting because he does not give you the meanings that you seek but only the meanings that are intrinsic in the word he is translating. I have read and even pored over his translations of the various creation chants or kumulipo—works that only too often defy translation primarily because so much of the terminology is archaic and almost lost.



Kenneth Emory

But somehow Theodore Kelsey evokes the true meaning of those chants. I recall once asking him to translate a short prayer from the liturgy of the holy order of Kane. I had known only the poetry of the prayer. I had lost myself in the heroic measures of the prayer.

Then I read the Kelsey translation and for the first time really understood what the original composer of the prayer had wanted to say. It was a revelation and outside of Theodore Kelsey there is no one else in the world who can do this exact and precise type of translation.

I cannot estimate enough how precious a gift this is nor how great a loss to all of us it would be if this ability to transliterate were no more with us. Theodore Kelsey is still strong, still with all his wits about him, and we would indeed be fools if we did not in pursuit of our own selfish ends take full advantage of him.

Theodore Kelsey is a priceless treasure and we dare not ignore or neglect him.

of Hawaii: 4 people



The World of sammy amalu

Kenneth Emory first of all is an academician. In the twin disciplines of anthropology and archaeology in Hawaii, he very certainly has no peer. And what never fails to amaze me is that he has been able over the long years to absorb so much true and deep comprehension of Hawaiian things and incidentally of the Hawaiian methodology of thinking.

What is truly astonishing is that he has been able to do this and never once depart from the severe limitations of his academic disciplines. Kenneth Emory has forgotten more about Hawaii than most people have ever known.

In the past, I have called him a ghoul for insisting on inspecting the graves and burial caves of my ancient people, but I think that at long last I have come to understand what high motives pursue him to these unseemly ends.

He seeks knowledge merely for the sake of seeking it, and in this he has been most successful.

My greatest regret, of course, is that Kenneth Emory ever associated himself with a museum. He is a painstaking genius and the Bishop Museum always needed him much more than he ever needed it. It limited him to the academy and made it impossible for him to calculate fantasy or to scale the impossible, for the true secrets of Hawaii's past lie both in fantasy and in the impossible.

But this does not make Kenneth Emory any less a priceless treasure for all of us. He is a deep fountain of great wisdom and if we would be wise we would indeed drink of his wisdom and preserve it for ourselves and for our posterity.

It is a miracle that anyone can do this and survive. Kawena does it and thrives. For her it is not enough merely to know or to remember the Hawaiian way of doing things, she actually lives it every day of her life — without disparaging the Christ on the one hand and without turning away from the fiery Pele on the other.

I envy Kawena for the simple reason that she is able to live in two worlds — the past and today — and neither lose herself nor her reason for being.

Yes, indeed, she is a fountain of knowledge and of understanding that flows on and on without stopping. We would be fools not to drink of her.

So now at last we come to Charles Kenn, who is easily the most profound and certainly the greatest storehouse of knowledge about Hawaii, her people, and her past. There is simply no one to compare with him; he stands alone upon his pinnacle. Discuss any phase of Hawaiian history and culture, Charles Kenn knows that subject not merely well but expertly and with infinite detail.

No one alive today so knows and understands the ancient theology and religion of Hawaii: the disposition of the deities, the intricacies of the lore and knowledge of the ancient priesthood, the kahuna.

Discuss the history of pre-European Hawaii, and Charles Kenn is without peer. It is almost as if one opens a window and looks into the past when you sit and talk with Charles Kenn about Hawaii's past.

The priesthood and temples live again. The chiefs again gird themselves for battle. The valleys again ring with the cries of a dead yesterday, an almost forgotten past. The hills echo with voices that are no more. This is the most amazing of men, and each day that passes without learning more and more from him is a day lost to us forever.

Drink from the fountain that is Charles Kenn. The waters of his vast river of knowledge are too precious for us to lose without even a struggle.

Three men and one great lady. They cannot be replaced. They are more precious than gold or jewels. They are Hawaii.



Mary Kawena Pukui

For once Kenneth Emory is no more, that will be the end of it. There will never be another.

And now there is Mary Kawena Pukui, perhaps one of the most astonishing Hawaiians who has ever lived.

I have long followed her career and her works with nothing less than awe. We have no greater expert than she in the specific field of Hawaiian antiquities.

She is Hawaiian, and she understands the Hawaiian way of thinking and of doing things. Yet she has managed to live with great success in the Western world, using all the accoutrements of Western culture and methodology without once losing or alienating her own native Hawaiian feeling for life. She has lived successfully with one foot firmly implanted in the academy of scholastic thinking and with the other foot just as firmly implanted in the heiau and grass huts of her fathers.

Her Vitality Stems

On a quiet Manoa street is a gate with a sign, "La'i Aloha" (Hawaiian for "quiet or peaceful love.")

Walk through the gate and you enter the world of Mary Kawena Pukui.

Mrs. Pukui is regarded by many as the foremost authority on Hawaiiana and the Hawaiian language. She has produced more than 52 works on Hawaiiana and has translated countless Hawaiian documents and records.

She is 79 and no longer strong, but Mrs. Pukui is still working.

THE FAMED teacher, scholar, author, lyricist and translator, emeritus associate in Hawaiian culture at the Bishop Museum, still jots down useful recollections of her past whenever she is hit by one of her "brainstorms."

"My main role at the Bishop Museum was scribbling down my brain-

storms," she said. "Whenever I remembered something, I wrote it down, or we recorded it before I could forget it."

The work which Mrs. Pukui considers her major contribution taxed her physical and mental resources to the utmost.

The Hawaiian Dictionary, compiled with the help of University of Hawaii Prof. Samuel H. Elbert, required nearly four years of seclusion in a cottage in Punahou.

IN ADDITION to writing down all the Hawaiian words she could remember, she had to recall the various ways she heard them used in order to capture the exact definitions.

The work completely exhausted her, and her family had to nurse her back to health.

But the dictionary, published in 1971, stands as a uniquely valuable accomplishment, enriched by Mrs. Pukui's encyclopedic

knowledge of island culture.

It was a vast improvement over earlier efforts of Mrs. Pukui and Elbert, the English-Hawaiian Dictionary, published in 1964, and the Hawaiian-English Dictionary, published in 1957.

MRS. PUKUI was born in Haniumalu in the Ka'u district of the Big Island to Mary Pashana Keali'i-kanaka-'ole and Henry Nathaniel Wiggin, a sugar plantation employe from New England.

Mary Abigail got her Hawaiian name from a dream of one her aunts: Kawena-'ula-o-ka-lani-a-Hi'iaka-i-ka-poli-o-Peleka-wahine-'ai-honua, meaning "The-rosy-glow-in-the-sky-made-by-Hi'iaka-in-the-bosom-of-Pele, the earth-consuming woman."

Her father gave her to Po'ai, her maternal grandmother, to be raised, according to the ancient Hawaiian custom of hana'i. Her genealogy shows her to be descended from kahuna, masters of various arts and crafts, she said.

Po'ai instructed her granddaughter in the Hawaiian language and in ancient chants and customs of the Hawaiians.

Since there were no children her age to play with in the area, Kawena spent much of her time with Po'ai, establishing a very close relationship.

Po'ai died when Kawena was nine and she returned to live with her parents. Her father refused to speak Hawaiian at home, although he spoke it fluently, Mrs. Pukui said, because he wanted her to speak English well.

"WHEN I WAS a child, Hawaiian was looked down on," she said. "Many of them said to my father that he was not right for letting me live with my grandmother."

The family moved to Oahu because Wiggin wanted a better employer, so Mary's schooling continued in Honolulu.

When she attended Kawaiahao Seminary, students were not allowed to speak Hawaiian. It was a boarding school, and students were allowed to leave the grounds once a month, but if they spoke Hawaiian, they lost that privilege.

After graduating from the Hawaiian Mission Academy, she married Kaloli'i Kapukui, who shortened his name to Puku'i, and had a daughter, now Mrs. Pele Suganuma. (Mr. Pukui died more than 30 years ago.)

MRS. PUKUI said one of the most rewarding experiences of her life was adopting children.

Although her husband was opposed, Mrs. Pukui asked her father to adopt a girl for her and named her Patience.

"Once he (her husband) saw the baby, he fell in love with her," Mrs. Pukui said.

That girl, now Mrs. Patience Bacon, is of Japanese ancestry. The Pukui's second adopted daughter, Mrs. Faith Uki-shima, is Hawaiian-Japanese.

"When I was born, I was the only child of foreign blood in my family," Mrs. Pukui said. "Now there is not one full-blooded Hawaiian. You know what my family called me, and still calls me to this day? 'Haole.'"

UNIVERSITY PRESIDENT EMERITUS —

Gregg M. Sinclair, 84, president emeritus of the University of Hawaii since 1955, started his career there in 1928 as an assistant professor of English. From 1936 to 1940 he was director of the Oriental Institute, a predecessor of the East-West Center. He became president of the University in 1942.



from Two Cultures



Mary Kawena Pukui

ABOUT EIGHT years ago, Mrs. Pukui said, Richard Paglinawan of the Queen Liliuokalani Children's Trust approached her for help in a case his social workers were having trouble with. Mrs. Pukui agreed and helped solve the case.

"I thought maybe I'd go (to the Center) for three or four weeks but I ended up staying," recalls Mrs. Pukui.

She is still helping the organization with her

unique talent: helping Hawaiians solve identity or family problems, often by using ancient Hawaiian methods such as ho'oponopono, which involves a meeting of conflicting parties.

One of her books, "Nana I Ke Kumu" (Look to the Source), is a counselor's guide to Hawaiian problem — solving methods.

BUT ONE person's life can be spread only so far.

Some time ago her family removed her phone number from the directory because there were too many requests.

"It was just impossible," she said. "I was getting phone calls to name cats, name children and even to translate a letter into Hawaiian to be sent to a woman who could not even read Hawaiian."

There is little to regret in her life, Mrs. Pukui said.

When she lived with her grandmother in Ka'u, she remembers, people would give them fish just for the sake of giving, and her grandmother too, often gave away food with no thought of getting anything in return.

This was part of the Hawaiian way of life, Mrs. Pukui said.

"I'm happy I came in just at the tail end of that (way of life)" she said. "I got to see both sides."

Work at Historical

By Dave Shapiro
Big Island Bureau Chief

MAHUKONA, Hawaii — The State is running far behind schedule on its \$500,000 Lapakahi Historical Park restoration project at North Kohala.

Now six months into the 18-month project, there has been little significant work on an interim planning report for the park that was supposed to be completed in the first three months.

As a result of the planning delay, ground work at Lapakahi has moved slowly.

State officials are beginning to feel they may have to ask the U.S. Economic Development Administration, which put up \$400,000 for the project, for an extension of time.

The problems were outlined in a critical quarterly progress report submitted to the State Parks Division in December by Paul Rosendahl, project archaeologist.

Rosendahl is an employe of the Bishop Museum, which has a contract with the State to do the archaeological work at Lapakahi.

He submitted an even more critical report last month, but State officials refused to accept it.

The State, which must send a copy of the report to the federal government, complained that it contained too much criticism of the State and not enough about the progress being made.

Rosendahl agreed to rewrite the report to expand on some of his points, but he said he will not remove any of his critical comments.

The project is part of a 10-year plan to create a 140-acre historical park at Lapakahi, site of a Hawaiian settlement that dates back to pre-historic times.

Existing work is centered at the ancient fishing village of Koaie, where many structures and other facets of the old Hawaiian life style are well preserved.

Acting Gov. George R. Ariyoshi has tied the project to attempts by the Kohala Task Force to create jobs for workers being laid off by the shutdown of Kohala Sugar Co.

Most of those being hired at Lapakahi are laid-off sugar workers.

The current 18-month Lapakahi project began in October.

The first three months were to be devoted primarily to developing an interim planning report that would be used as a basis for initial restoration work.

The rest of the project includes site clearing, removal of exotic vegetation, replanting of native plants, stabilization and restoration of archaeological sites, such as walls, housesites and canoe sheds.

The end result would be a master plan that would identify themes and concepts to be followed in developing the historical park.

The main problem has been the lack of work on the interim planning report.

In his December progress report, Rosendahl said the report was to be based on field research already done by the University of Hawaii.

But he said he has been unable to get all available data from the University. He said the data he received raises more problems and questions than it has answered.

ROSENDAHL SAID it will take five to nine months to complete the interim planning report after he gets the rest of the University's data.

Workers hired by the State have cleared much brush from Lapakahi, but there has been little stabilization or restoration work.

A major difference of opinion has developed over priorities.

Rosendahl contends that archaeological planning must come before anything else, to provide the proper interpretive framework for developing a meaningful historical park.

JEAN MARTIN, State parks archaeologist and project coordinator, said she sees no reason why preliminary replanting and site stabilization cannot be done while planning continues.

Miss Martin agreed with many of Rosendahl's criticisms, particularly on research data provided by the University.



ANCIENT SETTLEMENT—The fishing village of Koaie is the focus of a major historical park planned at Lapakahi, North Kohala. The site adjoins Mahukona Beach Park.

Park Is Behind Schedule

But she did not concur with his timetable for finishing the interim planning report.

"We're well behind what we planned, but we're starting to get organized and work out some of our problems," she said. "I think we should have general planning pretty well done in three months."

Miss Martin said a nearly full work force is at Lapakahi, with two general work crews and an archaeology crew on the job.

She said the State is getting some help on planning from the U.S. National Parks Service, which super-

vises a similar historical park at the City of Refuge in Honaunau.

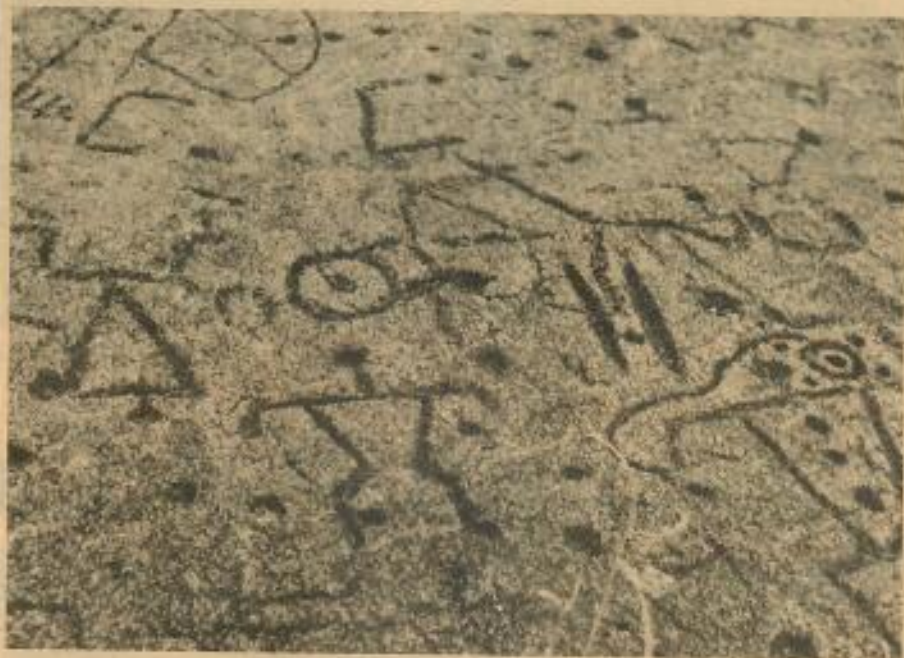
She said a major problem has been her absence because of health from Lapakahi for several weeks.

She said this should be alleviated by the recent appointment of Seiso Kamimura of the State Parks Division's Hilo office to coordinate work until she can return.

"I think it's just a matter of looking at the positive aspects of what we have, instead of the negative aspects of what we don't have," she said.

June 23 - September 7, 1975

a's 200th Anniversary



Puu Loa petroglyphs. Each Saturday Park Ranger John Haanalo leads walks to this largest concentration of petroglyphs in the State. Many carvings are of unknown meaning. Meet at the trailhead, eight miles beyond the Waialeale Visitor Center at 2:00 p.m.



*Kiliana Jones
Hawaii Volcanoes National Park
Hawaii 96718*

UNIVERSITY OF HAWAII

Marine Programs

MEMORANDUM

28 February 1974

TO: Mr. George Balazs
Junior Marine Biologist
Hawaii Institute of Marine Biology
Coconut Island
Kaneohe, Hawaii 96744

FROM: ^{DN/A} D.K. Noborikawa *D.K. Noborikawa*
Budget Officer
MARINE OPTION PROGRAM

RE: Information on Waiaka Ilio Bay.

Waiaka Ilio Bay

I talked with my grandmother the other evening and she does not know of the place you mentioned. She said they didn't go down to that area very often there was no fast, easy way to get there as there is now.

But do not despair! We have some people in Hilo who are doing a study on marine parks and will be in the Kawaihae area. And possibly some students in the Hilo MOP program know of your bay. The person to contact is:

MR. Chick Durbin
Hilo Marine Option Program
Life Science 21
University of Hawaii, Hilo
Hilo, Hawaii 96720

If you need any help, please call on us again.

cc: Chick Durbin

HAWAII PUBLIC LIBRARY, HILO, HAWAII

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Historic Stones

Halei Hill

The Naha Stone, the larger of the two located in front of the Hawaii Public Library, is the "big stone" in Hawaii's historic past. Its weight is estimated to be three and one-half tons. Legendary records indicate that it was brought by double outrigger canoe from the island of Kauai to the Pinao Temple area, which is believed to have been in the immediate vicinity of Wailuku Drive and Keawe Street, on the site of Kulana Naauao. It has been in other locations since that time, but was returned upon completion of the present building.

It served to test any claims that the royal blood of the Naha family flowed in the veins of newborn males. The validating process included placing the newborn infant upon the venerable stone. If he remained silent, he was a Naha; if he cried, he was not.

About 220 years ago King Kalaniopuu of Kohala invited the young Kamehameha to return to his birthplace from Hilo, where he had been living for some years, to join the royal household. During the feast celebrating his return prophecies were made by kahunas, priests and priestesses concerning the great future of the young man. Kalaniwahine, the high priestess, agreed with the prophecies, but added that there was one great task before Kamehameha, "the overthrowing of a mountain." She added that the time was propitious, if he returned to Hilo immediately. The trip was made and before the high chiefs of Hilo, the prophetess Kalaniwahine, the princess Ululani and the assembled people he moved the stone, even though not a member of the Naha family.

At that time Chief Keaweokahikona chose the young Kohalan as his "chief man in battle." In later years, gathering high chiefs and the greatest warriors to his standards, Kamehameha embarked upon the long series of conquests which made him king of the entire group of islands and made his name revered for justice, equity and high statesmanship.

The smaller stone, standing beside the Naha Stone is said to have been an entrance pillar of the Pinao Temple.

2 Men Trac

By Pierre Bowman
Star-Bulletin Writer

Edwin H. Bryan Jr. and Lee S. Motteler are up to 4,000 and still tabulating.

Together, they're creating a "Guide to Place Names in the Hawaiian Islands."

They've been working on their enormous project for 2½ years, starting from the extreme northwest end of the Hawaiian chain, toward Midway Island.

Bryan and Motteler have worked their way through the tiny, unpopulated northwest Islands, past Niihau and through Kauai, attempting to identify each geographic feature which has a name.

OFTEN, PLACES HAVE more than one name. Bryan and Motteler want to record them all.

They expect their work to be the definitive place-name reference for the Islands and figure they'll eventually tally 20,000 entries in their book.

Standard place-name references now in use include the University of Hawaii's "Gazetteer of the Territory of Hawaii," published in 1935 and listing 8,000 names; "Hawaiian Islands" by the U.S. Board on Geographic names, published in 1956 with about 7,250 listings; "Atlas of Hawaii," published by the University in 1973 and indexing names for its maps with a count of about 2,000; and last year's "Place Names of Hawaii" by Mary Kawena Pukui, Samuel H. Elbert and Esther T. Mookini, with about 4,000 listings with definitions.

"Our game is to tell you where the place is — and get them spelled right," Bryan said in an interview.

IN A SENSE, HIS whole life has been a preparation for the current work.

Bryan has been at the Bishop Museum since 1919. He is 77.

Together, Bryan and Motteler are the entire staff of the Pacific Scientific Information Center at the Bishop Museum.

The center is two large rooms in the museum, filled with file cabinets crammed with data and ranks of broad, shallow drawers stuffed with thousands of maps.

Bryan says he worked at every job at the museum except telephone operator and was set to retire in 1970.

"They said it was time for me to quit and play golf. I said I don't play golf. So instead of quitting altogether, I asked the director to have a couple of rooms," he said.

SINCE THEN, THE CENTER has enjoyed space in the museum, but is not actually part of the organization.

"Our No. 1 job is geography," Bryan said. "Our No. 2 job is to answer foolish questions, and that doesn't stop the museum from asking them."

As Bryan shows a reporter around the center, it is obvious that he is a natural-born collector of stray facts.

Perhaps he has a computer in his genetic back-



Lee S. Motteler, left, and Edwin H. Bryan Jr.

ing 20,000 Hawaiian Place Names

ground, because unlike many packrats, Bryan can put his finger on everything.

During World War II, he worked for the U.S. Army, helping them with Pacific geography.

At the end of the war, he rescued 70,000 aerial photos of Pacific Islands and 15,000 maps of the same area.

THEY HAVE HELPED FORM a hard core for his work, which includes an extensive place-name survey of Micronesia.

"This is one of the best collections of geographic information you'll find anywhere in the State," Bryan said.

Eventually, he hopes the center and its material will become part of the museum.

In the current project, place names are gathered from every available source. Records of land transactions are an important reference.

Then the listings are published in mimeographed form and sent to persons with expert knowledge who

live in the involved places.

The place names for the northwest Islands, Niihau and Kauai have been published, and Motteler and Bryan are awaiting comments, corrections and additions from experts on Kauai.

THEY'VE RECEIVED ONE copy with corrections of Niihau already.

Bruce Robinson, a member of the Robinson family which owns Niihau, went over the place names with a Niihau resident, red penciling deletions and corrections.

Then he told Motteler that there are records on Niihau which show 4,000 place-name references in Hawaiian.

Bryan and Motteler had hoped to complete their survey in time for next year's celebration of the U.S. Bicentennial.

Now they think it will take longer, because the two-man operation at the center means that the team does

everything, including cutting stencils for the mimeograph.

Both men confess they'd be delighted if someone would like to volunteer clerical services.

Some History Should

For those who don't already know, Hawaiian petroglyphs consist of marks or images incised into a rock surface through an abrasive action.

There are thousands of cup-like hollows into which umbilical stumps have been placed to secure or insure spiritual strength, thousands more of the human figure, and yet thousands more that may or may not have esoteric meanings that generally defy classification or explanation.

There is no knowledge of when petroglyphs were first made but it is generally accepted that they were carved intermittently until about the 19th century. No one knows exactly what they mean but their dominant function is probably commemorative.

There is a wide range of the quality of design and skill of execution: some are quite crude, many are

A first inclination would be to celebrate the occasion but the way things are that would be a serious mistake. Malefactors and various kinds of opportunists would surely move in like jackals and leave their mark.

It's best to keep the site uncharted in order to deter the kind of deterioration taking place at other petroglyph sites.

What is happening to these culturally significant forms is appalling and shows something about the idiocy of some humans.

There is no way to explain the drive that causes some people to vandalize, others to be carelessly neglectful, and still others to disdain these ancient expressions. Sadly, where the sites are most clearly marked and easily accessible for the sake of the public, the public has done the most damage.

The Arts

By Ed Stasack



without artistic merit, and some are beautiful beyond description.

These finest are among the great artistic achievements of the Hawaiians and have additional importance, significance on some intangible emotional level.

ON JAN 4 A NEW GROUP OF petroglyphs was "discovered" on the Big Island. Clearly, this is not the first sighting of these ancient images at this particular spot, but it's the one we are paying some attention to now.

The discoverer is Greg Owen who works regularly for the fence crew at the Volcano National Park. He found a second group two weeks later accompanied by a friend, Samson Kaawaloa. It is surprising that no one has reported them before now; they are in an open place not far from the volcano.

THERE ARE THREE MAIN WAYS in which the images are being harmed: cutting new forms over old ones; scratching or cutting into the rock in a misguided attempt to bring out old, difficult to see lines; and using improper techniques to make molds for purposes of making reproductions. All of these practices should be forbidden by law.

There are other forms of damage being done. Many apparently harmless activities, when done by great numbers of people, will be destructive. Chalking, making rubbings, taking impressions, and even great numbers of people walking on them will do them harm.

In other words, the sites should be totally protected. Until proper security can be worked out the best protection is isolation. Take down the signs and the arrows and let the kiawe grow.

There are probably other petroglyph sites which people like Greg Owen will "discover". They ought to be seen because they are just as much worth seeing as the material culture housed in museums. Truly, the petroglyph fields are museums without walls. None have been erased so that we see the successful and the aborted, the beautiful and the dehumanized, and some occasional elevated spiritual expressions mingling together in special harmony with the lava environment.

Could we be so foolish as to let their true artistic, archeological, and historical value go unrecognized?

Stay Hidden



A lush shelf of petroglyph carvings like this one lies hidden inside this Big Island cave.

—Photo by Greg Owen.

Shoreline

SELDOM IN THE HISTORY of the Legislature has there been more public lobbying for a single piece of legislation than for the Shoreline Protection Bill.

The Council of Presidents formed last year has pulled more than 100 community organizations together to demand tighter controls on shoreline development.

Original requests for separate shoreline administrative agencies have given way to a bill, now near final enactment, putting protective responsibility on existing government agencies, primarily the county planning departments.

In a graphic last-minute effort to dramatize the case, one advocate went to the State Capitol last week with a map and pictures of Oahu — showing the shoreline areas where

A description of present and potential Oahu shoreline development disasters has been presented to the Legislature in support of the Shoreline Protection Bill.

development disasters have already occurred, or could in the future.

The creator of the map was Steven D. Gendel, an insurance salesman who has worked for months on behalf of the shoreline bill — one of many unpaid volunteers.

Highlights of his presentation are condensed on this page.

The Star-Bulletin does not agree with shoreline protection advocates who contend there is no such thing as good development, and want all development stopped.

BUT GENDEL'S EXAMPLES — such as the view-blocking Makaha Surfside Condominiums that create a 1,000-foot wall where a beach park was intended — constitute an inventory of areas of present or potential concern.

He and the Council of Presidents hope for a final bill from the Legislature that will put strong controls on beach development until the State completes and adopts a Coastal Zone Management Plan several years hence.

Open shorelines are a limited and diminishing resource of great public value. Acquisition for public park use is often a preferred use. Where this can't be afforded or where hotel resort or other development is considered desirable, it ought to be tastefully handled with heavy emphasis on preserving and enhancing Oahu's natural beauty.

Summarized here is the list of areas that Mr. Gendel described to the Legislature as presenting present or potential public policy questions. The numbers in each case

are keyed to the numbers on the Oahu outline map accompanying this article.

1. QUEEN'S BEACH. Proposed high rise resort between highway and beach could block view and public access, increase offensive sewer plant smells and traffic overload, add to water pollution.

2. KAMEHAMEHA SCHOOL RETREAT with lovely tall coconut trees now being developed for private homes, instead of a desired park.

3. KAPOHO POINT. Had been eyed as a city park but now being advertised as fee simple lots on Kailua Bay. 17 acres.

4. KANEOHE STREAM OUTLET, next to Kaneohe Beach Park. Potential park area lost. Parks Department succeeded in getting a foot-path.

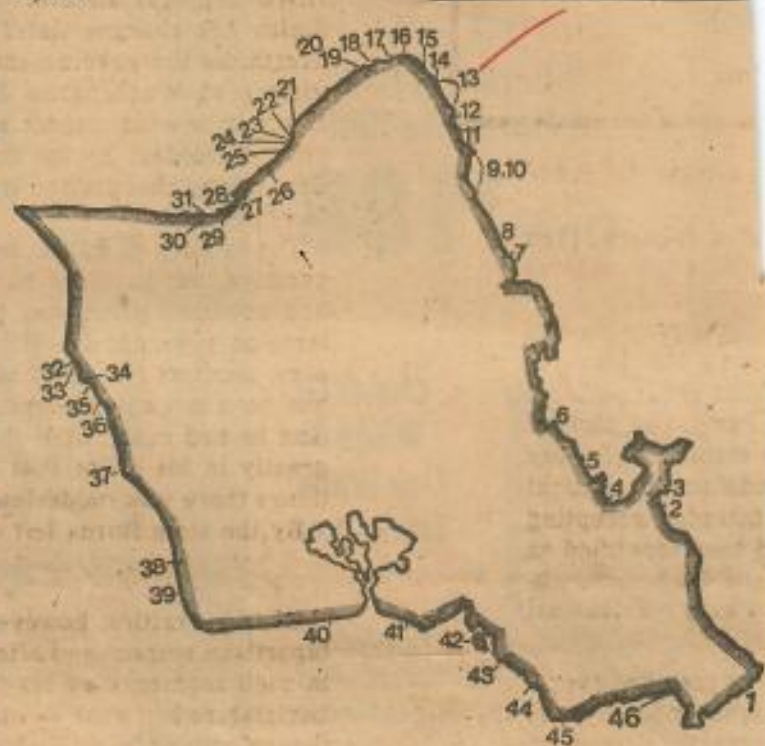
5. HEEIA POND. State seeking as a park area, but not yet acquired. Developer planned a large marina.

6. KAHALUU POINT. Lots zoned H-1 for hotel.

7. PUNALUU. H-1 hotel zone. 70-foot high hotel proposed masks of road.

8. PUNALUU. Seven and 9-story condominiums built due to a zoning mixup in an area intended to be limited to 2-story cottages. Adjoining land is still zoned for high rise as part of the old mistake.

9. KAKELA BEACH. Owner considering hotel resort. City wants for a park.



Development

10. **POUNDERS.** Body surfing beach. City seeking for park.

11. **LAIE BAY.** General plan shows H-1 for hotel on oceanfront portion near Laie Point.

12. **HUKILAU BEACH.** City parks department would like a 30-acre park including lovely Kalanai Point which leads to Goat Island. Developer proposes expensive cluster condominiums and a park of 5 acres.

13. **MALAEKAHANA BAY.** Approximately 1.3 mile of beautiful, sandy beach, one of the prettiest unspoiled beaches on Oahu, with area including the adjoining Hukilau Beach. Zoned residential. Cluster condominium construction imminent. An ideal park.

14. **KAHUKU.** Site of a proposed Kahuku Regional Park. Owner would prefer development.

15. **KAHUKU GOLF COURSE.** City has a year-to-year lease. Would like permanent acquisition.

16. **KAHUKU.** Another proposed beach park. Site of a World War II airfield.

17. **KUILIMA HOTEL CABANAS AND TOWNHOUSES.** Local surf fishermen complain access to the beach is blocked for them in areas like this. Hotel and condominium development. Beach lost to the public.

18. **KAWELA BAY.** Zoned for resort, with only a small area for park. Access and views will be restricted.

19. **FORMER WAIALEE BOYS HOME.** State land. Could be a beach park. Aquaculture farmers want it.

20. **VELZYLAND SURFING BEACH.** Much of area zoned R-6 and could be developed. Access and view blocked by houses. Through a loophole in the law, a 10-foot high rock wall and one large building built in 1974 were not required to meet the 40-foot shoreline setback. They intrude on a previously unspoiled beach.

21. **SUNSET BEACH.** Supermarket proposed across from fire station. Could be a visual intrusion.

22. **PUPUKEA BEACH PARK.** Units for sale on mauka side of highway may create a visual intrusion.

23. **WAIMEA BAY POINT.** Two structures appear to include 12 rental units and exceed the intent if not the letter of the zoning ordinance.

24. **WAIMEA FALLS RESORT.** The shoreline protection advocates originally wanted a zone extending inland 1,000 yards. The present bill sets a 100-yard limit, which will affect only a portion of this resort.

25. **PROPOSED SITE for a Surfing Hall of Fame and restaurant.** Could be a park.

26. **LANIAKEA SURFING POINT.** When present residential leases run out, this would be an ideal hotel resort site.

27. **PUAENA POINT AND KAWAILOA BEACH.** Ideal addition to Haleiwa Beach Park. Owners considering hotel development with a private marina.

28. **HALEIWA SMALL BOAT HARBOR.** Grows larger in connection with each effort to "storm-proof" it. Some residents question whether it can ever be made a wholly safe harbor.

29. **HALEIWA SURF CONDOMINIUMS.** Originally proposed as a huge development that would have doubled the population of Haleiwa-Waiialua. No access to beach provided. Buildings create a cement wall blocking the ocean view from Waiialua Beach Road. The "wall" could be extended if adjoining large parcels are developed.

30. **KAIKA POINT.** Beautiful basically undeveloped area. Sought for condominiums, and almost lost for the park now planned there.

31. **MOKULEIA BEACH.** Condominium development in progress.

32. **MAKAHA SHORES CONDOMINIUM.** Six-story structure on beach. Eased restrictions sought to

Questions

build similar structures on adjoining land.

33. MAKAHA SURFING BEACH. Hui once sought adjoining houses for a hotel.

34. MAKAHA BEACH CABANAS. A 9-story condominium creates a visual wall to a beautiful bay. A 1970 permit for an adjoining 16-story unit is still technically in effect because piles were driven. A shoreline law might bring this under review.

35. MAKAHA SURFSIDE CONDOMINIUMS. Erected despite bitter protests of residents, they create a visual wall blocking a view of the ocean for 1,000 feet along Farrington Highway. Area had been sought to create a park extending from Wai-anse High School to Lahilahi. The park in front of the condominiums is little used by area residents who feel unwelcome.

36. WAIANAE SMALL BOAT HARBOR. Some opposition from local residents that its 300 berths are intended to spur development. Only 62 boats are based there now.

37. MAILE COVE CONDOMINIUM. Area had been sought for Maile Beach Park. Adjoining lots available for further condominium construction.

38. ALICE KAMOKILA CAMPBELL HOME. An attractive beach area with coconut trees. Urban zoning denied in 1974, but resort plans remain pending. Not open to public.

39. BARBERS POINT DEEP WATER HARBOR. Harbor sought to supply the industrial park and possibly a resort on the Campbell home site.

40. ONEULA BEACH. A beautiful City park here could be expanded. Considered by owners for resort, marina, condominiums and residences.

41. SAND ISLAND PARK. Size a matter of dispute, with much of island sought for industrial use. A sewage treatment plant diminishes park attractiveness.

42. KEWALO LANDFILL AREA. Committed to industrial use. Also has park potential.

43. ALA WAI MARINA. The subject of design, size, usage and pollution controversies.

44. KAIMANA BEACH HOTEL. A 21-story proposed addition would affect views of Diamond Head in an area intended to be preserved as scenic zone.

45. DIAMOND HEAD LIGHTHOUSE AREA. Once proposed for hotel development, residences there now are proposed for eventual addition to public park area but acquisition costs are prohibitive.

46. MAUNALUA BAY. Proposed site of a harbor for 1,100 boats. Surfers say this would destroy several surfing areas.

Subspecies.

A subdivision of a species; a variety or race; a category (usually the lowest category recognized in classification) ranking next below a species. It commonly designates a group of more or less unstable distinguishing characters, connected with some singular group by individuals with intermediate characters. In vertebrate zoology especially, large numbers of such subspecies, characteristic of some particular geographical area, are now recognized and named.

~~Drawn~~
A92.101 Archaeology of Oahu .. McAlister J.
B442 Bishop Mus. Pub.
~~no. 104~~ site 38.3A Pukoua Pond
xerox DU622
A41927
P79-79

DU625 Hawaiian Antiquities *Malo*
~~M2532~~ *Jau* check page 97-8, 209
xerox?

~~Drawn~~
~~P27~~ Beneath Hawaiian Sea Knowlton, W.
H70980 *children's book - novel (fiction)*
nothing of special interest

Q4666 Juries of the U.S. Ernest
C5076 *xerox of reference section* Not in my 8/8

~~Drawn~~ Notes on the flora and Clum, E. L.
AM101 fauna of Lehua and Kaula
B446 Islands
V.11

~~no. 21 (21)~~
~~1936~~ *xerox pages 4-5 per notes*
xerox

~~Pac~~
GR300 Regents of the South Seas Alpers, Anthony
A5
~~1974~~ *circled page 74*

~~Pac~~ Imiti: wayy through Paradise, Eggenston
DL870 *xerox p 117-118*
E371 *Shog T*

~~Pac~~ *xerox*
N7410 Polynesian Art. Dadd Edmund H
DL *most fishies listed are of pearl shell - bones & wood*
mentioned twice (paleolithic) (page 305) but nothing
specific

P364 *Tortoise shell was extensively brought and*
carved with tools

Hawaii
GR 385

67

Folk tales from Hawaii, Beckwith, M.W.
*The Story of Eternal Fire - about a child named
Luce because she held the vegetable patch*

Hawaii
GR 385
B43

Hawaiian mythology, Beckwith, M.W.

Hawaii

DU 624.5
C87

Life in old Hawaii Curtis, Caroline

"Naiwai the Old Maker"
xerox p 203 & 205

Hawaii

DU 622
A4
1923

Herald of Lanai in, Emory Kenneth
All about Hawaii

V. 49 p 130
xerox 7

Hawaii
N5310

E454
1938

Notes on wooden (mag)

*I don't know what you wanted here.
Nothing on turtles*

Hawaii
DU 620

p 21
V. 67 No. 5

Oahu's Surrounding Petroglyphs
in Paradise of the Pacific

p 9-11, 26

no mention of turtles

Hawaii

DU 28
E56

South Sea Lore

1944

*no on index
7/23-8/1*

Pac
GR 380
A53

Myths & Legends of the Polynesians, Anderson, J.C.
nothing in glossary or index

Pac
DU 570
E46

Hawaii
DU 624.5
E4
1969

Polynesian Researches, Ellis, W.

3 volumes NO INDEX

1831-2-53

Look up Fort note page 327
1 Cf. the tale of Hāhōnūiaero and the turtle
which fished up Santa Anna

~~Pac~~
GN 471
56 Fl 6

The *Ships of the Pacific*, 1904 C.E.
London 1924
(Tales at San Cristobal)

Xerox p. 89, 72-3, 327, 132, 3, 4, 295 See Hawaiian mythology

~~Law~~
GR 385
L 35

Legend of Kaula and other Hawaiian
Legends (text and translation) Honolulu

~~Michigan~~
1534
no 2

1936 Spear, Laura and Mary Kūwera
not indexed - can find little kupua
Pukui
See Hawaiian mythology

Hawaiian) *Shards and Sheet Gold* Not at Dawn
Pacific
Berkeley

~~Law~~
AM 101

misc by Kahōkūkamoana

Chilford

84473

transcribed by I. G. ~~W~~ in his collection

V-47

of legends relating to Nani, Kaula, Nani

Jul 6 22

A4 p 127-130

~~Hamilton~~

~~RL 261~~

Concei *Legend* 8(12) 657-754

9274

1948

Summa of fishes, Amphibians and Reptiles
Schlumberger & Rucke 8 pages xeroxed

~~T1 55~~

Scientific American Aug. 1968 Vol 219 no. 2

~~SX X 54~~

Experiments in 120 breathing page 66

Kylosa g. a.

SH 171
R 45
1965 ✓

The principle Diseases of Lower Vertebrates
Rout. Press N.Y.
Rickerback - Kenke H and Khan E.

GR 383
~~W 45~~
1964

Hawaiian Legends of Old Honolulu

William D. Westcott

*No turtles in appendix or index. 277 pages -
to many to "scan"*

GR 385
K 35

The Legends and Myths of Hawaii

Hing Kalanui *no numbered index or appendix*

*2 drop pag 32 Food Taboo 507 pages again to long
to "scan"*

DA 510
B 70 ✓

Explorers of the Pacific Beck, P.H.

Bishop Mus. Spec. Pub. 43 - 1953

"Cook's 3rd voyage page 31 - and 91

Beck appear to be land turtles (page 91 for sure)

Beneath Tropic Seas
(One find)

Babe, Waller 1926

Hawaiian Collection - Petroglyphs

Petroglyphs of Kau - DU 622 A4 1922
(IN - all about Hawaii) p49-58 Baker
also 1931 ed. p62-67 also 1920 ed p49-52

1st Cook discovery in Petroglyphs.

(IN - Paradise of the Pacific, v. 68 no 11
p26-29 Nov. 1956) - DU 620 P21

petroglyph of ship Discovery Charlot

Hawaiian petroglyph sources, 1825-1867.

HAWAII

GN 799

P4 C69

HAWAII GN 799 PAC 69

Closed Shelves Hallen

Hawaiian Petroglyphs GN 799 PAC 66

GN 799

PAC 66

P 72

COX

Kilalowe was here. (IN - Paradise
of the Pacific v 68 no. 3 p9-11
March 1956 DU 620 P21

EMORY

Oahu's fascinating petroglyphs
(in Paradise of the Pacific v. 67 no. 5
p9-11, 26 May 1955) EMORY

no mention of turtles but

figures at left bottom corner of p10
look like turtles or possibly birds.

✓ The pictured ledge of Kawai
(In-all about Hawaii v 24 1898
p 119-125 DU 622 A4 FARLEY

✓ Interesting Hawaiian discovery:
more pictured rocks. (In-all about
Hawaii. v 26 1900 p 126-128
DU 622 A4 1900 p 126-128

✓ History of the Hawaiian or Sandwich
islands. Boston, 1843. p 83-84.
DU 625 J38 JARVES
also page 75, also 1847 ed p. 45
same call no. fish & fruit

✓ Stone age art in Hawaii (IN-
Paradise of the Pacific v. 64 no 11
p. 30-31 Nov. 1952 Johnson

~~NOT there~~

DU 622

A4

1904

p 179-194

✓ Rock carvings of Hawaii: some
possible traces of prehistoric Hawaiians
(In-all about Hawaii v 30 1904 p 179-194
DU 622 A4 Nothing
Judd
also

✓ GN 799 P4J83 16p. - similar article
Annual 1904

GN799
P4M29

✓ Petroglyphs of Hawaii Xerox
GN799 P4M29 0.48p. McBride
page 40 has detail appears to be a
turtle petroglyph.

✓ Notes on Petroglyphs in Hawaii
Hawaii
(In Historical Review. 1962-68 V.2
no. 10 leaves 419-426. DU 620
H31 Matsukawa

✓ Probable early Indian Visitors
(In all about Hawaii v41 (1915)
p 160 DU 622 A4

✓ Notes on Hawaiian petroglyphs.
(Occasional papers of the Bernice P. Bishop
Museum. Directors report for 1909.
A M 101 B 448 v.4 no. 4
p 33-71. "animals" Stokes

✓ The Picture rocks of Naalehu
(In all about Hawaii v 32 1906
p 164-169. DU 622 A4 1906
no animals or fish Westervelt

GN4

P32

#15

✓ Anaehoomalu: viii, 179p.
Pacific anthropological records, no. 15.

GN4 P32 no. 15 Barrera

presence of turtle pelagophytes mentioned
but no specific localities

HONU - green turtle

e'a - hawkbill

Turtle

sea turtle

HUA - (egg)

✓ LUAHIWA - LANAI sea turtle petro.

✓ KA'U - HAWAII sea turtle petro.

✓ Anaehoomalu - Hawaii sea turtle petro.

→ Turtles

✓ Hawaiian Legends of old Honolulu -

William D. Westervelt, Tuttle Co. GR 385
W 45
1964

→ Turtles

✓ Hawaiian Legends of Ghosts and Ghost

Gods - W.D. Westervelt, Tuttle Co. GR 385
W 35
1964

* Turtles

The Legends and Myths of Hawaii GR 385

by King Kalakaua with appendix K 35
with page #'s 1888a

substant
said

Turtle paper & The Polynesian Family System in Kau

Hawaii by Handy and Peck

H 724

H 3435

1972

~~alps~~, Legends of the ^{south} sea 76 copy of it

Polyphemus in Culture History

BM → 1956

Ed: Highland

556-557

~~Backout~~: Hawaiian Mythology anything on
turtles

Plant:

≠ Du 510
P64

Du
629.113

B62

Surveys Hawaiianana ???

From notes and title files

1. American Polynesia and the Hawaiian Chain
Bryan, E. H. Jr. (1942)
Tongg Pub. Co. Honolulu, Hi. 253 pp
2. The Amphibians and Reptiles of the Hawaiian Islands
Oliver and Shaw (1953)
Zoologica
3. Animals of Hawaii
Turkie, Spencer (1941) Hawaii AL 345
Long Pub Co. pp 45-51 H 3745
4. The Big Island (Blew and arrow turtle nesting in Hilo Bay)
Annon. (1973)
East/West Network Inc.
Destination Hawaii Vol 1 No 4. June 1973
5. Birdlife among Lava Rock and Coral Sand - Chronica of a scientific expedition to little known Islands of Hawaii
Wetmore, Alexander (1925)
Nat. Geo. Vol XLVIII No 1 Jul. 1925
6. Commercial Fisheries of the Hawaiian Islands
Cobb, J. (1901)
U. S. Comm. Fish Fisheries Report
Vol XXIII for 1903 Part II

7. Dampier's Voyages 1679-1701

Captain W. Dampier (1652-1715) (1906)

PAC 6420

D15 1906a

8. Discovery of the Pacific Islands

Sharp, Andrew (1960)

OAC Da 19548

9. Fishing Lore

Karaulalia, A.D. (1902)

Ka Hupapa Kuokoa

10. Green Sea Turtles in French Frigate Shoals

Amerson, A. Benion Jr. 1971

From the Natural History of French Frigate

Shoals in ATOL Records Bull Dec. 20, 1971 No 150

11. Handbook for Pacific Marine Turtles

Widzell W and Travis, W. (1972)

12. Hawaii goes Fishing "Turtle Hunting"

Mac Kellan, Jean Scott (1968)

13. Zoogeographical Results of the Whitney South
Sea Expedition.

Burt, C.E. & M.D. (1932)

Bull Amer. Mus. Nat. Hist.

14. Log of the Schooner "Ali" on a fishing Cruise
in the North Pacific 1882

Correll, James (1934)

15. Marine Turtles Sleep on Hawaiian Sands

Mellen, G. (1925)

Bull N.Y. Zool. Soc.

16. Narrative of the U.S. Exploring Expedition

Wilkes, Chas. (1845)

V. 5 During years 1838-42

Pac 215 W66

17. Natural History of Hawaii

Bryan, Wm. Alanson (1915)

The Hawaiian Gazette Co. Ltd.

QH 196 A1B7

18. The Natural History of Kauai Island, Northwest

Hawaiian Islands.

Ely, C.A. & Clapp R.B. (1973)

Atoll Research Bull No. 171

19. Peres and Saucages

Hurley, Frank (1929)

G.P. Putnam & Sons Pac 20740 1485

20. Report on Hawaiian Marine Turtle Populations

Hinrichson, J.R. (1969)

ZOO N55 20

21. Reptiles of the Pacific World

Loveridge, Arthur 1945

22. Turtle Rock and the Lohia Stone -

Melaki's Mysterious Instability Stone

Ressencourt Eugene (1962)

Haun GR800
R47

23. Voyage Round the World by Captain Cook
Rogers and Stephen Courtney in 1708-11
Ken, Rose (1814)

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Booth 81 - Scrimshaw
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Polynesian Spotswans -
Kings Alley Scrimshaw



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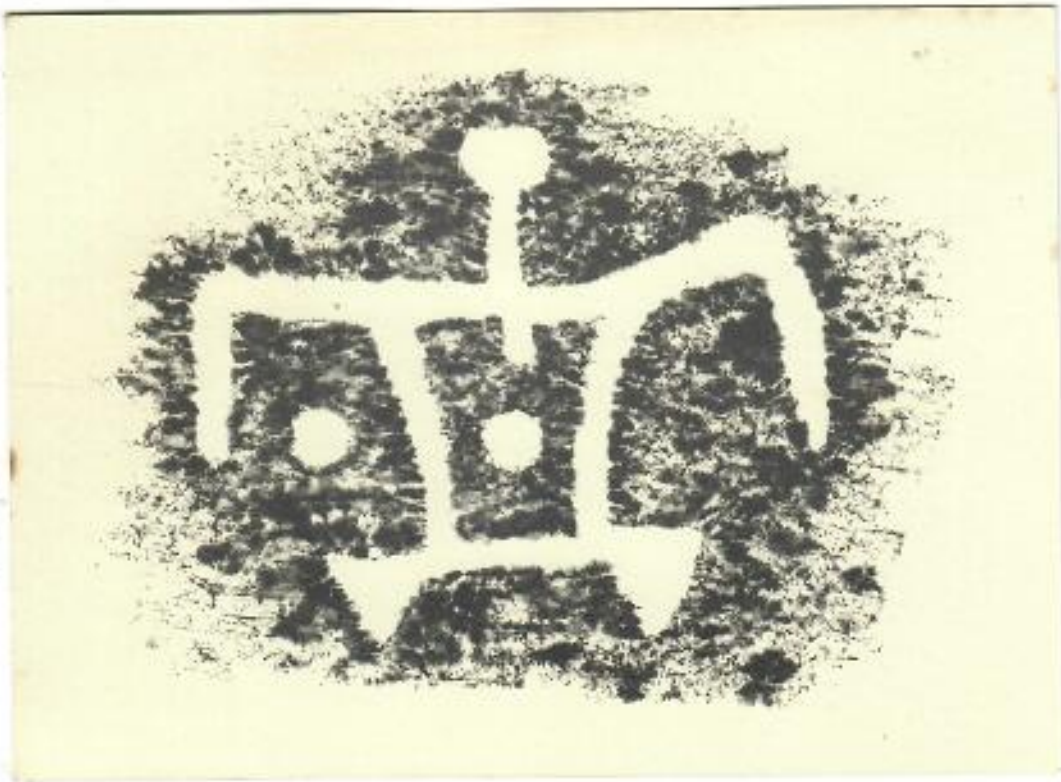
ala Moana

Shipping Center

What to do with
Brochures?

Press for local
meeting

J



Turtle
Hawaiian Petroglyph
Puuloa, Hawaii



Rubbing by Barbara Decker, Copyright 1978

For Your Safety

When you are on the shore, be alert for unexpected high waves; don't turn your back to the ocean. We ask you not to climb on the Great Wall—for your own protection and to preserve the wall. If you leave the trail, watch for falling coconuts and coconut fronds.

The snarling faces of the Kīi, images of the old gods of Hawaii, struck fear and awe into the minds of the people. Set on poles above the palisades of temple compounds, they warned against intrusion onto sacred ground—even chieftains passed between them in fear and respect. The Kīi are wood-sculptured representations of the gods, or sometimes of the same god in his different roles.

CITY OF



REFUGE



Defeated warriors, noncombatants, and kapu breakers escaped death if they reached the sacred land at Honaunau ahead of their pursuers.

This was no game of prisoner's base. The object of war in old Hawaii was extermination of the enemy, including any women, children, and old folks of the opposing side found during the heat of battle. Wars were part of the politics and human ecology of Hawaii before 1819. Non-combatants of both sides and vanquished warriors sought sanctuary in Hawaii's places of refuge.

A man or woman who broke a kapu, a system of do's and don'ts, could escape the death penalty and all punishment by entering the sacred ground of a place of refuge.

All who sought refuge were admitted—those from any part of the island or from another island. There was no trial to establish their guilt or innocence. War refugees stayed until the conflict was over, kapu breakers until they were purified by the priests—usually after a few hours or overnight. When they left, the protection went with them, and they were free to return home in peace.

The Refuge at Honaunau

The City of Refuge is more properly called the Place of Refuge at Honaunau, or in Hawaiian, Pu'uhonua-o-Honaunau. Located on a 6-acre shelf of ancient lava that dips into the Pacific, the refuge forms a rough square. The ocean bounds it on the north, west, and south; the Great Wall, on the south and east. There is not even a trace of tradition about when the refuge at Honaunau was first established.

While there were at least five other refuges on the Island of Hawaii, and one in every major district of the other inhabited islands of the Hawaiian chain, the one at Honaunau is historically the most important. It is also the only one which has lasted almost intact.

The place of refuge itself, adjacent palace grounds, royal fishponds, nearby stone platforms on which stood the houses of important chiefs, and temple structures are all within the National Historical Park.

The Great Wall

Although religious sanctions were the prime force in keeping a pu'uhonua going and enforcing its protection of refugees, evidently some degree of physical protection was needed. The great wall which forms the inland boundaries of the Place of Refuge at Honaunau was built about A.D. 1550. Tradition indicates that the wall was built by Keawe-ku-i-ke-ka'ai, a ruling chief of Kona, who lived about that time. The heiau (temple) 'A-lea-lea, whose large stone platform still stands inside the pu'uhonua, is also attributed to this chief.

The great wall averages 10 feet in height and is about 17 feet in width. One leg of the wall starts at Honaunau Bay and extends more than 600 feet to the corner; the other leg runs from the corner toward the open sea and is about 400 feet long. Its seaward end has been battered by tidal waves and once probably extended almost to the sea.

Hawaiian masons laid their stones without mortar. In the great wall, the best or flat face of each stone was set outward. Lacking metal tools or wheeled vehicles, the workmen apparently used wooden pry bars, carrying sticks, rollers, and skids to move the stones. The largest stone in the face of the wall is 6½ feet high, more than 5 feet wide, and 2 feet thick. It weighs between 4 and 6 tons.

Legends tell of secret passageways in the great wall. Examinations of the wall have revealed that sections do have honeycombed interiors—evidently to save time and material in building—but the hollows are small, disconnected, and separated from the outer surface by at least 3 feet of solid masonry.

Temples Gave Protection

A pu'uhonua is a sacred refuge established by a ruling king. It operated in conjunction with a heiau, whose gods protected the place of refuge and whose priests ran it. At the Place of Refuge, the ruins of the first temple stand close to the sea. Most of the stones from its platform were used, about 1550, to build the second temple, 'A-lea-lea. This is the large temple platform inside the great wall. When the third temple was built, 'A-lea-lea may have been used for recreation by the king and chiefs.

The gods of the Place of Refuge were the spirits of dead chiefs—spirits who could lead the souls of men to safety or destruction. Upon death, certain chiefs underwent a process of deification. After 1650, Chief Keawe became the major deity.

The Hale-o-Keawe

The third temple was built about 1650 and was in use until 1819, when the kapu system of do's and don'ts was abandoned and the practice of the old religion forbidden. The pu'uhonua which the temple protected ceased to function in that year.

The third temple was called Ka Iki 'A-lea-lea (the small 'A-lea-lea), but was better known as the Hale-o-Keawe, or the House of Keawe. It was built in honor of King Keawe-i-Kekahi-ali-i-o-ka-moku, who reigned in Kona about 1650.

Upon Keawe's death, his bones were placed in the temple and he was declared a god, becoming the major deity of the pu'uhonua. From time to time the bones of other important chiefs who were declared gods were added to the temple. Their combined supernatural power kept the place of refuge sanctified and inviolate.

The last deification of a chief took place in 1818 for a son of Kamehameha the Great. By that year, the bones of at least 23 deified kings and chiefs of old Hawaii were inside the thatched temple. Each was in an individual container. In addition to the bones of chiefs-made-gods, the bones of certain other selected male members of the ruling family were honored by burial there. These lesser chiefs were not considered gods, and their bones were heaped "like firewood" in a corner.

No bones of women were permitted to rest in the Hale-o-Keawe, since women were considered inferior.

Royal Mausoleum

King Kamehameha the Great united the Hawaiian Islands into one kingdom about 1800. Because the bones of his ancestors and relatives were deposited there, the Hale-o-Keawe was not destroyed in 1819 along with the other temples. However, the bones of the deified chiefs

and kings were removed in 1829 and the temple was razed, leaving only the stone platform. The National Park Service has restored the temple, but cannot return the deified bones to their place of honor because their present location is uncertain.

During the period when the Hale-o-Keawe was the only temple structure standing in Hawaii, it was visited, described, and sketched by Europeans. Some items from the temple are now in museums.

Palace Grounds and Villages

Honaunau is the traditional seat of the kingdom of Kona. There the kings and their courts occupied the best dwelling areas on the inland side of the Great Wall, at the head of Honaunau Bay, and along the shore to the south. Homes of the common people—those who did the work and served the court and priests—were on the opposite shore of Honaunau Bay and inland from the chief's homes.

All houses were one-room structures of wooden framework covered with thatch. Commoners had small, crudely built huts, usually one to a family, which were used for storage and for shelter during the infrequent storms. A chief's establishment consisted of several houses, each used for a specific purpose. A king might have 10 or more houses.

Men wore loin cloths and women, skirts. Women made the cloth from bark. Feather cloaks and helmets were made by men only and were worn by chiefs on state occasions and into battle.

Taro, from which poi was made, sweet potatoes, breadfruit, bananas, and yams were cultivated; birds were hunted; and pigs, dogs, and fowl were raised for food. Fish provided the main protein in the diet. Fish and meat were cooked by steam-roasting in earth pits. All food, for both men and women, was prepared separately by the men, and the sexes ate apart.

Land transport was by foot, but the chief means of travel was by outrigger canoes.

The Park

City of Refuge is 111 miles from Hilo and 20 miles south of the resort center of Kailua-Kona on the Island of Hawaii. The park is open all year.

Thorny vegetation introduced in the last century covers much of the park's 180 acres. The National Park Service plans to remove some of these undesirable plants and restore native vegetation to the area. Originally the Honaunau area was largely barren lava, with shady groves of coconut, pandanus (hala), and kou along the coast. Pili grass, used for thatching houses, grew in soil pockets. Several native medicinal plants still grow in the park. Coves, cliffs, tidal pools, and associated marine life are

easily visited along the shoreline.

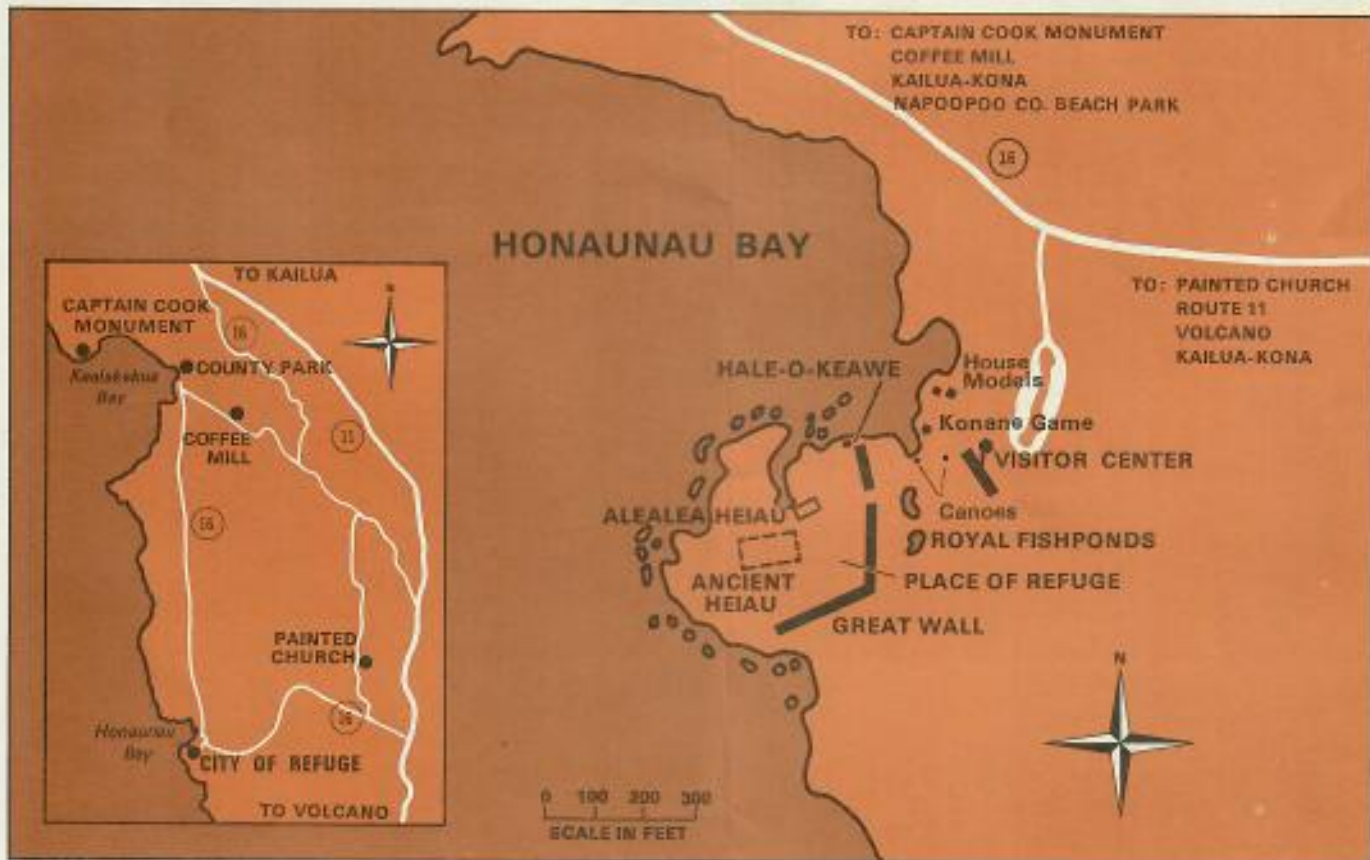
Cultural demonstrators in native costumes on the palace grounds can be seen carving a canoe, thatching a grass hut, or fishing as the ancient Hawaiians did. Visitors are encouraged to participate in the ancient Hawaiian games of Ulu Maika and Konane.

Puukohola Heiau National Historic Site is currently being developed by the National Park Service on the northwestern shore of Hawaii. The heiau, or temple, was built late in the 18th-century by Kamehameha the Great. He had been told by a kahuna, or Hawaiian priest, that he would not achieve his dream of conquering the islands of Hawaii until that heiau was completed.

How To Get There—Where To Stay

Airlines make scheduled flights from Honolulu to Hilo and Kailua-Kona several times daily. Unscheduled steamship transportation from Honolulu to the island of Hawaii is also available. Taxis meet all planes and ships. "U-drive" cars may be rented in Kailua-Kona or Hilo.

The Hawaii Visitors Bureau, a nonprofit organization with offices in Honolulu, Hilo, Wailuku, and Lihue, and at 209 Post Street, San Francisco, CA 94108, will supply information about trips to and through the Hawaiian Islands. Overnight camping is NOT available within the park. But information on camping can be obtained from the Hawaii Visitors Bureau.



Administration

City of Refuge National Historical Park is administered by the National Park Service, U.S. Department of the Interior. Address inquiries to the Superintendent, City of Refuge National Historical Park, Honaunau, Kona, HI 96726.

National Park Service

U.S. DEPARTMENT OF THE INTERIOR

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, park and recreation areas, and for the wise use of all those resources. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

Ka'u man nabbed on drug charges

A 22-year-old Pahala man was arrested and charged with promotion of detrimental drugs Friday morning by Ka'u police executing a search warrant.

Larson Mondina was allegedly in possession of about 15 ounces of dry marijuana. Police also recovered 292 practice ammunition charges and may also file theft charges.

A Ka'u police spokesman said yesterday that Mondina had not been connected to other drugs seized as a result of the raid. The haul included two vials containing a powdery substance believed to be cocaine, 70 marijuana plants up to four feet in height, and 113.5 grams of dry marijuana and marijuana seeds.

Hilo police yesterday released pending grand jury action a 41-year-old man held since Friday on assault charges after a dispute at an Iiwipolena Street home.

The man allegedly stabbed a 52-year-old man in the left arm with a knife. The victim was treated and released at Hilo Hospital for a deep gash that severed an arm tendon, a police spokesman said.

The suspect may also face harassment charges stemming from a dispute with a 25-year-old man at the assault scene.

A 38-year-old woman was arrested and charged with obstructing government operations Friday morning on Waiuanuenue Avenue. The arrest apparently came after police took a 2-year-old girl in the woman's care into protective custody.

Three 16-year-old girls were arrested and charged with promotion of a detrimental drug Friday morning after being found in possession of a small amount of marijuana. The three were arrested on Kawili Street at 7:58 a.m.

Hilo police are investigating a burglary and car theft reported Friday morning on Pookela Street. Two carburetor kits, 12 tires and a 1976 Datsun pick-up were taken.

HAWAII TRIBUNE HERALD FEB 2, 1986

Turtle killing is investigated

State conservation enforcement officials are investigating whether to prosecute two Hilo-area men who allegedly dissected a green sea turtle at James Kealoha Beach Park on Friday afternoon.

Hilo police said federal authorities might also consider prosecution under endangered species regulations.

The two suspects, aged 41 and 51, were found by police with a green sea turtle shell measuring 3½ by 2½ feet. The turtle carcass had been disposed in the sea.

The turtle was found with a University of Hawaii tag, according to police.

West Hawaii residents volunteer their time to aid national parks

They're called Volunteers in the Parks. They can be seen in the national parks sporting a volunteer's vest or period dress. Last year, 12,000 people across the nation volunteered time for the National Park Service — that contribution equals about \$4 million.

In today's austere economy, the National Park Service

is trying to save money by asking people to donate some free time to help with office or library work, to serve as park interpreters, greet visitors and give talks, help as cultural demonstrators, do gardening or maintenance work.

The Volunteers in the Parks program was created by the U.S. Congress in 1970. Since then, all Hawaii national parks have accepted volunteers in many different lines of work.

At Puukohola Heiau, a national historic site, retired public health nurse Ella Ackerman of Puako has been a devoted volunteer for more than five years, according to the park service. Ackerman works twice a week, and "has straightened out and maintains a first-class library." She also doubles as a park interpreter. Through voluntarism, she is doing much to relieve the burden on the American taxpayer, according to the park service.

At Pu'uhonua o Honaunau National Historic Park, Andrew Kaiawe served as a volunteer cultural demonstrator for almost two years before he was hired as a part-time demonstrator.

Lyle Gomes also worked for years during his summer and school vacations as a volunteer cultural demonstrator until he was hired as a part-time cultural demonstrator.

Many members of the community also volunteer their time for special events, such as the annual three-day cultural festival at Pu'uhonua o Honaunau and the annual

two-day cultural festival at Pu'kohola Heiau.

Last year, volunteers contributed about \$25,000 worth of time to Pu'uhonua o Honaunau and about \$3,400 to Puukohola Heiau.



ANDREW KAIWE DEMONSTRATING FISH TRAP MAKING. PHOTO COURTESY OF PU'UHONUA O HONAUNAU

Park volunteers add that 'extra'

"Volunteers-in-the-Parks" is what they're called. They can be seen in the national parks wearing a volunteer's vest, or in period dress. Last year, the National Park Service had 12,000 volunteers whose contributed time totaled about \$4 million nationwide.

In this period of an austere economy, the National Park Service is striving toward cost-cutting by asking people to donate their free time and help out with office and library work, as park interpreters greeting visitors and giving talks and helping as cultural demonstrators, gardeners, as part of the maintenance work force, natural resources management and in other positions.

"Many people do not realize that the Volunteer-in-the-Parks program has been in existence since 1970, when Congress passed the Volunteers in Parks Act.

As a result, all national parks in Hawaii accept volunteers in many different lines of work," said Jerry Y. Shimoda, superintendent of the Pu'uhonua o Honaunau National Historical Park.

At Puukohola Heiau National Historic Site, Ella Ackerman of Puako, a retired public health nurse, has been a devoted volunteer for over five years.

"She goes in to work twice a week and has straightened out and maintains a first class library. She also doubles as a park interpreter and is doing a good job. Mrs. Ackerman is doing much toward relieving the burden on the American taxpayer through volunteerism," Shimoda said.

At Pu'uhonua o Honaunau, Andrew Kaiawe worked as a volunteer cultural demonstrator for almost two years before he was hired as a part-time demonstrator. Lyle Gomes also worked for years during the summers and school vacations as a volunteer cultural demonstrator until he was hired as a part-time cultural demonstrator.

"Both men have contributed much toward the park's program, and they've also benefited by learning to do different



A VOLUNTEER-IN-THE-PARK — Lyle Gomes strips the bark from ohia sticks which will be used in the re-thatching of the

Hale o Keawe temple at the Pu'uhonua o Honaunau National Historical Park.

native crafts. They can be seen in their malo, on the Palace Grounds at the park, doing cultural demonstrations," Shimoda said.

Swami G, as she is known, leads a group of volunteers into the coconut grove at

Pu'uhonua o Honaunau every Wednesday to hand pull the weeds and use them as mulch around the coconut trees.

Many community people also volunteer their time during the annual two-day cultural festival at Puukohola Heiau and

the three-day cultural festival at Pu'uhonua o Honaunau.

Last year, the volunteers at Pu'uhonua o Honaunau contributed about \$25,000 worth of time and about \$3,400 at Puukohola Heiau, Shimoda said.

Sunday Travel

The Sunday Star-Bulletin & Advertiser

© by Honolulu Advertiser



Ilima, daughter of Kalani Honua's administrator, Sheila "Pau" Bright, poses in her snorkeling mask by the retreat's Japanese-style spa and rainwater pool.

Retreating to your

If you and your friends are looking for a thrifty Neighbor Island escape but don't want to spend time at a hotel with tourists, try the Big Island's Kalani Honua Culture Center and Retreat in Kalapana.

It has all the modern hotel comforts, including a complete Japanese spa, and only costs \$18 a night. But what makes Kalani Honua special is that you can do almost anything there or nearby.

"Kalani Honua" means "harmony of heaven and earth."

The 20-acre retreat, which features four two-story lodges, was carved out of an ocean-front jungle three years ago and opened for business a year and a half ago. It was the dream of Richard Koob, who founded the retreat with Earnest Morgan and Dr. Trina Nahm-Mijo.

They had spent 10 years working in remote communities of the state, developing summer programs in art and dance. They wanted a non-profit facility to generate and host their own and others' programs.



Jay Hartwell
staff writer

For instance, this summer Kalani Honua will hold five summer camps.

From June 19 to July 2, there will be one- or two-week sessions of intensive language training with native French, Spanish, Hawaiian and Japanese speakers. From July 10 to 30, there will be a one-, two- or three-week camp for children, ages 9 to 12, or 5 to 8 with a parent.

From Aug. 1 to 6, there will be a performing arts camp for teenagers and college students studying dance, drama, music and voice. From Aug. 7 to 20, an intercultural dance festival will be held. And from Aug. 21 to 27, there is a camp for those who wish to study internal Chinese martial and healing arts.

The program prices — which include tuition, meals

and lodging — range from \$289 a week for the language institute to \$150 a week for the keiki camp.

In other months, the retreat has held natural healing and rebirthing seminars. On May 28 and 29, it will combine Hawaiian herbs and massage with Keith McDaniel, Alvin Alley Dance Co. soloist.

Others groups have brought their own weekend retreat programs.

Last month, the Hawaii Agricultural Leadership Foundation of Hilo held a conference for area farmers. Handicapped groups have visited, along with musicians' and artists' groups.

Area residents also use the facility for weekend parties or wedding receptions, when it won't interfere with other programs, and a group of Buddhists arrived last Halloween for a full moon ceremony.

If you like, the Kalani Honua staff also can arrange day classes in basket-weaving, lei-making and natural history, as it did for a group of Mainland senior citizens who came there as part of a weeklong

Big Island fantasy



Kalani Honua's director, Richard Koob, stands in front of the office.

Elderhostel program that was coordinated by the University of Hawaii at Hilo.

The staff and management of Kalani Honua are young, in their late 20s or mid-30s.

Mary Bergmann has been manager of Kalani Honua for a year. She helped build the retreat before its opening.

"I thought I'd just stay for the summer, but I fell in love with the place and the living out here," she said. "It's really nice to see people come out and enjoy Kalani Honua."

Unlike rainy Hilo, which is an hour's drive away, the Kalapana area is known for its sunshine. And because it's relatively undeveloped, staying at Kalani Honua, which is off Highway 137 between Pahoa and Kalapana, is almost like roughing it.

At night, you can see all the stars and hear the noises of the adjacent jungle of guava, ohia and hala trees and 50-foot-high coconut palms, which infrequently shed fronds that come crashing to the ground. The only other sounds come from Kalani Honua's koa wind chimes, which ring like soft temple bells in the breeze.

Although there is a telephone at the retreat, there is no direct electricity. Instead, a quiet generator runs 2½ hours each day to charge up 12-volt batteries for the lodge lights and appliances.

And the non-biting red ants, which used to be a problem in

the area, are now under control.

If a large group wishes to stay there, it can rent a lodge for \$170 a night. A lodge's eight bedrooms and four bathrooms accommodate 25 people comfortably.

The price also includes use of a gas kitchen — and some lodges have two. Or a menu plan is available.

There is a tennis court. A spa — which includes hot tub, sauna, shower, massage room, exercise equipment and rain-water pool — is available at no extra cost.

There are also bike and running trails, and the area has plenty of sites for the explorer. The stone walls of an old Hawaiian-language school, Kama'ili, still remain nearby. A short drive away, there are also steam vents, the Thurston Lava Tube, Lava Tree State Park and Hawaii Volcanoes National Park. And, for ocean swimmers, Kehena Beach is a mile away.

For more information, write: Kalani Honua, Box 1231, Pahoa, HI 96778, or telephone, 963-7828.

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Prepared by the staff of the Honolulu Advertiser

Honolulu, May 8, 1983



A view from the retreat's rainwater pool looking toward the four two-story lodges.

Hawaiian
Fishing and
Farming on the
Island of Hawaii
in A.D. 1778

by T. Stell Newman

Appendices by
Edwin Murabayashi
Donald Kelso

DEPARTMENT OF LAND AND
NATURAL RESOURCES

DIVISION OF STATE PARKS

over -

30—Hawaii Tribune-Herald, Wednesday, August 22, 1984



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SEA TURTLE SIGHTING REPORT

(Please return to: George H. Balazs,
Hawaii Institute of Marine Biology;
P. O. Box 1346; Kaneohe, HI 96744;
Tel. 247-6631) 946-2181

Observation made by: Terri Nofield

Address & Tel. No. (optional) 1750 Stokes st. #29 408-275-1827

Date: 8-9-83 Time: 10:45 Location Lat & Long

out of Honokohau Harbor

KONA COAST
SKIN DIVER

Observation made from: _____ shore;

boat; or while _____ skin _____ SCUBA diving.

Estimated size (shell length): 3-5'

Turtle seen on: surface; or at depth of

approx. _____ ft. Distinguishing

characteristics (species I.D. if known, long
tail, shell color, tags, injuries, etc.):

Other comments: we saw 3

THANK YOU FOR YOUR COOPERATION

Sol beach book - HIG 9/1 - 10/1/04
Palyukh - ENDRY - MAP. aerial photo - Time
Hawaiian Translation - RAW - MAP

~~Survey of a former marine turtle nesting area on the Island of Lanai~~
(Survey of a former marine turtle nesting area on the Island of Lanai)

Poli - Bay - Bosom - LAP
Hua - Egg

(Marine turtle nesting area survey on the Island of Lanai, Hawaiian Islands)

- ① Time of year ^{visited} important
- ② Wind blown sand -
- ③ erosion - red earth under sand
- ④ Kiawe vegetation - changed, - when?
- ⑤ Newer road to beach - when?
- ⑥ Mine sand?
- ⑦ Turtles offshore - ^{people} ~~remember~~ ^{amoral} ← SIZE adventure TAG RETURNS notes
- ⑧ Fishing turtle from Maui
- ⑨ Basking turtles seen? amoral letter
- ⑩ Seal seen - when?
- ⑪ Sol = ^{Father God} when last seen nesting? ^{sp. turtles, mule.}
- ⑫ Petroglyphs on LANAI - rubbing? xerox?
- ⑬ How often Polihua visited now? Fishing - GLASS BALL searching.

⑭ Section from Translation - quote. problem same as other areas in world

- (30) Plastic junk - Bottles - 2 light bulbs
- (31) Note about shipwreck beach
all rocky Turtles offshore by
Red wood post stump Cement Barge.
- (32) algae washed ashore.
- (33) Mud/Sand mixtures in wave washkapiki-Pop.
- (34) What are ^{big visible} wrecks from - (2) of them.
- (35) one Turtle seen offshore Polihua
(size?)
- (36) Two fishermen - one apt -
see turtle offshore something.
- (37) Other sand beaches on Lanai -
some along Kamoku - NAHA -
HUALOPE -

- (38) Contact Gay (by phone) Lawrence [True stories of the
Island of LANAI
page 53]
- (39) Other Turtle pictures in Hawaiian Is.
1973-1974 Ancient Hawaiian Moon
- (40) Call Stasch, Cop, Emory about turtle Petroglyph
Calendar related to fishing; farming
- (41) Notes in Gay Book
Eunio Kubio Hawaiian Civic Club
P.O. BOX 7132 (Hono 96821)

"Year had 12 months based upon moon"
"right of each month named for the
phases of the moon. New moon commenced
each month with Hilo
Ma healani - Full moon
MUKU - No moon

Hawaiian Calendar
Turtles lay? →

Months

~~Makal~~
pages 1

by J. Halley Cox with
Edward Stasoch
Bishop Museum
pub - 60

Hawaiian Petroglyphs Book HBS

Turtle Cave, Kaunakakai, Kau - 2.5 miles
NNE of Pahala between Wood valley road and
volcano Hwy, in Puhea Gulch - Human
figures made on "Turtle Rock" inside cave -
Ref - Baker 1922 p 54 - "Petroglyphs from Kau"
Hawaiian Annual for 1922.

also Kahilipali Point, Kahilipalini,
- Turtle petroglyph - Kau

for terrain description of Lanai -
see Pacific Coast Pilot.

Photo-Drawing of Lanai - Randy.

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Hala Cultural Experience	\$26.00 per person	_____
Kona Historical Experience	\$26.00 per person	_____
Mauna Kea Observatory Experience (minimum 4)	\$50.00 per person	_____
Helicopter-Limousine Adventure	\$275.00 per person	_____
Kohala Coast Adventure	\$135.00 per person	_____
Pele's Spectacular	\$240.00 per person	_____
Helicopter Excursions		
Waipi'o Valley	\$91.35 + tax pp	_____
Volcanoes Deluxe	\$259.62 + tax pp	_____
City of Refuge	\$1.00 admission	_____

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Weiskopf-Morrish Course	— Opens Fall 1989	_____
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	\$25.00 1/2 hour	_____
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TOTAL _____

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Mauna Kea Adz Quarry Yields Insights

Digging into History

By Helen Ahonn
Star-Bulletin Writer

A surprising remnant of the prehistoric Hawaiians—a lock of human hair—was found by a Bishop Museum archaeologist investigating the Mauna Kea adz quarry.

Among other significant discoveries of Patrick McCoy and his team were extremely rare rock paintings, a group of petroglyphs, about 40 religious shrines and a large quantity of bird and fish bones.

McCoy, who spent the past two summers exploring the 12,400-foot-high quarry, said the hair "was a real surprise . . . a very unusual find."

He was startled to see it under a slab at the base of a shrine that his crew chose to map in detail. But he said, "Preservation up there is excellent because the climate is so dry and cold."

HE SAID THE strand was four to five inches long and reddish brown, although it may have changed color over the centuries.

McCoy believes Hawaiians worked the quarry as long ago as 1100 A.D. or even earlier. Radiocarbon dates range from 1400 to 1650 A.D. but he has samples of material which he believes will date the site much earlier.

"It also looks to be abandoned before 1800, which is interesting," he said, noting that no historic artifacts such as metal or glass were found at any sites.

It would be understandable if the Hawaiians stopped working the quarry after the introduction of

metals, he said. But why would they do it before?

"I can't explain it but it's significant," he commented. "Perhaps it was because of political disruptions or for social reasons."

The adz quarry, where ancient Hawaiians manufactured stone tools, is the largest in Polynesia and possibly in the world.

IT WAS DECLARED a National Historic Landmark in 1969 but little was known about it until McCoy's investigation.

His research was funded with a \$38,000 grant from the National Science Foundation and \$7,500 each from the Cooke Foundation and the National Historic Preservation Act program.

The NSF also gave him \$7,000 for laboratory analyses of the "literally tons of material" that he collected.

McCoy took 11 persons on the past summer's expedition, including Fiorenzo Ugolini, University of Washington soil scientist, who is collaborating with the archaeologist.

"There is a lot of potential in the soils for an understanding of climatic conditions on Mauna Kea going back considerably in the past," McCoy said.

HE SAID THERE were periods when the Hawaiians didn't go to the quarry "for at least a few years," possibly because of wet and cold conditions. "There may have been a snow cap on the mountain all year long . . ."

McCoy said the quarry covers 7 1/2 square miles with sites from the 8,800-foot elevation up to Lake Waiua.

He counted 17 rock shelters, most of which are at the 12,000-foot level because it has the best quality basalt and the greatest amount.

"They were very selective," he said. "They actually mined the material. Huge pits were dug out below the surface. A lot of work was involved. It was tremendous."

"This is one of the things we can really appreciate now—the difficulty of heavy work at that elevation," he added.

Among his more exciting discoveries was one panel of pictographs, or rock paintings, which he said are extremely rare.

HE SAID THEY are the only examples of rock art that he knows of on Mauna Kea. "But unfortunately they aren't very distinct." One appears to be a shark and another an octopus, he said.

A single group of petroglyphs, primarily of human figures, also was found.

Although he expected to find religious shrines, he was amazed at the large number. He said the construction is very simple, with a series of stones placed in a vertical position. "They really stand out," he said.

He also was surprised to find preform adzes and waste flakes on some of the shrines, indicating that a portion of manufacturing activity took place there.

The group collected coconut sennet, tapa cloth remnants, pandanus mat fragments, a wooden fire stick and other perishable items preserved by the climate.

ters. "This stuff was sort of a clue to the length of time they were spending there beyond adz-making."

For instance, he said, the pandanus was probably used to repair mats or baskets.

He believes the people stayed there a week or two at a time during the summers. "It was definitely a seasonal thing because of the climate."

"They did bring up a fair quantity of fish and birds and prepared foods—poi, dried bananas and opihi in the shell."

He said the opihi probably was "a pupu—a delicacy," but birds apparently were an important part of the adzmakers' diet.

Alan Ziegler, museum vertebrate zoologist, is examining the bird bones, including remains of the dark rumped petrel, Hawaiian crow, nene and Hawaiian duck.

"FROM THE NUMBER of bones there was clearly a large colony of petrel on Mauna Kea when Hawaiians were exploiting the mountain," McCoy said. "Today they are very rare."

All of the birds except the petrel were taken to the site from the settlement below, he said. He said bones of a flightless rail and a number of small forest birds also were found.

McCoy said the quarry was a big production center that probably produced more tools than the coastal people needed.

"They must have been trading with other areas on the Big Island or possibly with other Islands," he said.

MCCOY SAID A lot of plant material was found in the rock shelter.

1/15/76 Old hair in rock



HAWAIIAN WORKSHOP—Jay Aiu explores a small workshop with a low wall used by early Hawaiian tool makers on Mauna Kea.—Bishop Museum Photo.

He believes the adzmakers were a select group of very skilled craftsmen. "But they obviously had a lot of failures. We were finding all the rejects—the garbage," he said.

HE SAID IT will take some time to analyze his findings and coordinate data from other scientists studying the birds and soil. The California Academy of Sciences also is studying the fish bones.

Although his field work is completed, he said, "We could work up

there for years. We have really just begun . . ."

He will do a planning study for the State Department of Land and Natural Resources concerning the site's research potential, proposals for future work and measures to protect the prehistoric quarry, particularly with expanded activities on the mountain.

He believes a small portion of the quarry should be open to the public and the rest closed for research. "It's very fragile," he said.

Net Fishing Tradition

by Cathy Blackburn, CZ News

Fishing played a major part in the daily lives of early Hawaiians. While men were out with their nets, women waded along the reefs collecting edible plants and small fish to put into the calabashes tied to their waists. Often their children tagged along behind, occasionally adding to the collection with small fish, shellfish or *limu*. This method of catching fish by hand in shallow waters was called *haha*.

With the Hawaiians' vast knowledge of the sea they devised many other ways of gathering fish which included: spearing, noosing, trapping, line and hook fishing and numerous variations of net fishing.

Netting was the most diversified and productive style of fishing. The best netting twine was made from *olona* (*Touchardia latifolia*) fiber which was separated in the running waters of a stream and scraped with an oyster shell or turtle rib, then spun into cord (*hilo*). Mesh gauges (*haha*) made from turtle shell, bone, ivory or wood were used to regulate the size of the meshes (*maka*) which were made in a somewhat complicated process of looping and knotting using the netting needle (*hi'a*).

The Hawaiians used different types of nets including gill nets, seine nets, hand nets, scoop nets, dip nets and bag nets.

Gill nets (*'upena ku'u*) ranged in

length from 27 feet to 92 feet and were from 6½ to 10½ feet deep. There were fine ropes (*'alihu*) threaded through the top and bottom edges, the top rope having wooden floats (*pikoi*) attached to it and the bottom rope having stone sinkers (*pohaku*). These nets were stretched at high tide across fish runs in shallow waters. At night one or two people walked back and forth along the length of the net picking the fish out from the mesh as soon as they were caught. The net could also be left overnight and the fish caught by the gills could be gathered in the morning.

Seine nets (*'upena paloa*) were made like the gill nets but were much longer. Variations of the seine nets were named after the types of fish they caught. One example is the *o'io* net which Beckley wrote about in 1883. This net was used primarily in deep water by the reef. Fishermen went out in canoes, and when the lookout (*kilo*) saw the *o'io*, the canoes followed the school to a sandy-bottomed fishing ground (*ku'una*). The canoes would drop their nets directly opposite each other and paddle in a semi-circle to grab the dropping end of the other canoe's net while still laying their own. With this method, the two nets would form a circle around the fish. The head fishermen, when satisfied with the laying of the nets, would give a signal for all the men to jump into the water and start beating it with their hands or paddles to drive the fish into the mesh.

Hand or scoop nets were small bag nets which were supported by a wooden frame and used by one person to scoop the fish from small ponds or crevices in the reefs.

A dip net (*'upena 'aki 'ik'i*) was a net around three feet square, tied at the four corners to arched ends of two crossed sticks and hung from a rope tied to the crossing of the sticks. The weight of the fish would bring the sticks closer together.

Bag nets in general had an enclosure into which the fish were driven and then cords could be drawn to close the net. Often it would take great numbers of people to hold the ropes down to the shore bottom and



Hawaiian fisherwoman and scoop net
Ray Jerome Baker photo (S. Tom collection).

splash and disturb the *limu* so as to chase the fish away from the ropes and into the nets which would then be drawn to shore.

Eventually, the fish were distributed among the *ohana* (relatives by blood, marriage or adoption) who participated in the catch by the *haku* (elder male of the senior group of the *ohana*). This method of distribution proved to be quite efficient in that if one household needed *poi* or bananas, they would take fish to the household of the *ohana* that had *poi* or bananas and trade. This manner of barter provided them with all that they needed.

Hawaiians were careful not to waste their fish, least of all let it spoil. They prepared it raw with salt (*kahunahuna*), mashed raw fish by massaging it with the fingers (*lomi*) or (*ia lomi*), baked or broiled it, or broiled it in *ti* leaves to produce *laulau*. They preserved fish by drying it partially (*ia maemae*) or thoroughly (*ia malo'o*). Small fish were cleaned, generously salted and then laid on smooth, clean stones to be baked by the sun. Preserving fish would allow the *ohana* to keep a supply for when there would be *kapu* against fishing or when food was scarce.

Knowledge of the locations of secret fishing grounds, fishing techniques, and the making of their fishing equipment as well as the honoring of the strict *kapu* (conservation laws) were passed on from generation to generation, allowing the Hawaiians to become among the best fishermen in the world. ★★★

New CZ Editor

Deborah N. Lee has joined the staff of Coastal Zone News as its editor, coming from a former position as assistant editor of the *Economic World* Japanese business magazine. She is a resident of Hawai'i and has attended the Kamehameha Schools and the University of Hawai'i, where she received a degree in journalism.

She succeeds Ray Tabata, Marine Advisory Specialist, as editor. Tabata will be devoting more time to other extension projects in the UH Sea Grant Marine Advisory Program. Staff members at Coastal Zone News include: Pat Gilman, reporter, Cathy Blackburn, staff artist, and Janie Patch, researcher/reporter.

Hawaii's Tropical Fish Industry

The capture of Hawaiian reef fish for commercial aquarium fish markets is an industry of important economic value to the State of Hawai'i. Based on catch reports turned in to the Dept. of Land and Natural Resource's Division of Fish & Game by collectors, 85,000 to 100,000 individual fishes are caught each year, of which the majority are exported to the U.S. mainland. In fact, the average value of the tropical aquarium fish industry to Hawai'i is approximately \$250,000 minimum wholesale value, exceeding the catch value of another important local marine game fish — *mahimahi* — known also as dolphin, which was worth \$145,010 in pounds sold during fiscal year July 1975-June 1976. The effect of the aquarium fishery is much greater, however, when related industries are considered, such as fishing gear and supplies, airfreight, boats, and fuel.

Several years ago it was questioned locally whether or not reef fish populations were being depleted by such fishing. However, due to the lack of data at that time, no meaningful answer could be produced. To answer such questions, current Waikiki Aquarium director Leighton Taylor, then with the Hawai'i Cooperative Fishery Research Unit of U.S. Fish & Wildlife Service (Dept. of the Interior), submitted a proposal for a study of the reef fish population to the University of Hawai'i Sea Grant College. For the past three years, he has been working on this study with



Reef-collected fish are sold for aquarium in pet stores like this.

Photo by Ray Tabata

Dr. Ron Nolan, a research ecologist and president of ORCA, Ltd. (Ocean Research Consulting and Analysis). Their findings are presently being prepared in a report entitled, "The Impact of Commercial Aquarium Fish Collection upon selected reef fish populations of the Kona coast of Hawai'i." The article will soon be submitted to *Fishery Bulletin*, a journal published by the National Marine Fisheries Service.

The main finding of the study, said Taylor, is that "at current collecting levels, by responsible collectors, there is probably no threat to the most popular species taken by commercial collectors." This opinion is based on fish censusing (see *CZNews*, July 1977 "Fish Transecting Explained") along permanent transects in areas heavily collected and areas lightly collected along the Kona and Kohala coasts of the Big Island.

About 250 different kinds of fish are presently collected in island

waters — 75-80 percent off the west coast of O'ahu, and the rest off the Kailua-Kona area on the Big Island of Hawai'i.

There are few regulations to limit catch volume, species or size. The young of four fish species may not be taken: the *oama* (young *weke*), *moi-li'i* (young threadfin), *hinana* (transparent young of the o'opu or goby), *hahalalu* (young opelu). In addition, freshwater game fishes may not be taken.

In certain areas collecting is prohibited, such as at Hanauma and Kealakekua Bays, in Honolulu and Hilo Harbors, and around Coconut Island in Kane'ohe Bay. A Fish & Game permit is required if a small mesh net (finer than one-half inch net mesh) is to be used to collect fishes and invertebrates. For those who intend to sell their catch, a commercial fishing license is also required from the Division of Fish & Game.

(Cont., Tropical Fish, P. 6)

CLIP and MAIL

CZNews welcomes all questions, suggestions and comments. Selected questions will be answered in a special column in future issues of CZNews.

If you have a change of address or know a friend who would like to receive CZNews fill out the name and address section and "clip & mail"

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Tropical Fish (Cont. from p. 5)

However, while concern has been voiced over the catching of tropical fish for aquariums, Taylor points out that the same question needs to be asked about the use of gill nets, which he describes as having a greater potential to deplete reef fish populations — due to the number of fish taken in each catch, and the number of sport or commercial fishermen using this method. There is no control over what kind of fish is caught, whereas in the aquarium fish type of catch, fishes are selected and caught individually. Furthermore, he adds, there is very little information available about the effects of gill-net fishing on Hawaii's reefs.

Hawaii supplies only a small part of the Mainland fish demand for tropical aquarium fish. The great majority of tropical fish are imported from foreign sources, such as the Philippines, Singapore, the Red Sea,

CZ People (Cont. from p. 2)

He added that Hawaii's real property tax law taxed the Halekulani on a dual rate which made the hotel pay for the maximum development value on its property. As buildings were taxed at a much lower tax rate than land, he considered this equivalent to penalizing the hotel for being a low-rise development. Now, since the law was changed by Act 139, 1977, the hotel will pay its "fair share" of taxes, based on the density of its development.

That is the only way to pay with some equity, Lee believes, and he decries those who say that the hotel has gotten a "break", since he points

and from Africa. However, in many foreign areas the collectors are not as regulated or as responsible in their treatment of the fish populations or their environment. Sometimes they use potassium cyanide to aid them in their catch, which damages the fishes' habitat, and which may cause fish to die slowly after purchase. Since collecting is hard work, Taylor adds, Hawaii's reef fishermen tend to be more skillful and careful in not damaging reef fish habitats (such as by carelessly breaking off coral heads) or overfishing an area. Thus, the quality of Hawaii-caught fishes is probably higher than the quality of foreign-caught fish, he estimates.

Some day the commercial aquaculture of tropical aquarium fish may be developed in Hawaii, and the Hawaii Aquaculture Planning Program (administered by the Dept. of Planning and Economic Development) is now examining cultivation potential. ★★★

out, it was "penalized" for a long time for not developing to its maximum (highrise) density.

Lee notes that between economic pressure on the hotel to compete in high-rise, high-density Waikiki, and the restrictions of the Special Design District ordinance, the hotel is in a predicament, being "forced" to develop on one side, but unable to do so because of the ordinance restrictions. The hotel is studying options to improve its situation.

Lee prefers, instead of restrictions and penalties on development in Waikiki, that government give incentives to builders to come up with projects that will complement the community. ★★★

"306" (Cont. from p. 1)

how well DPED's interpretation of the CZM interim boundary, in their opinion, met the intent of the 1977 Hawaii Coastal Zone Management Act (Act 188); whether CZM guidelines are needed; and what form the guidelines should take, if needed, and their relation to the inventory of State and County laws prepared by DPED.

The two-hour afternoon meeting was summarized by SCF chairman Aaron Levine as demonstrating a common viewpoint shared by County planning directors on the CZM problem. The directors believe the inland boundaries of the SMAs (Shoreline Management Areas) provide an interim CZM boundary until they are amended.

Dr. Daniel Mandelker, DPED legal consultant for CZM, stated his opinion that Act 188 is ambiguous and that it is up to DPED to interpret the law, while considering the intent of the Act. This interpretation can mean any interim inland boundary, reasonably within the law, and does not mean that the entire state has to be within the coastal zone. He also pointed out the apparent contradiction between the Federal Office of Coastal Zone Management which insists that Hawaii have an interim boundary set immediately, and the Hawaii State Legislature, which has allowed two years to determine the permanent boundary.

Hideo Kono, DPED director, said that it seemed apparent that all parties sought the best CZM program possible for Hawaii, and that if it can be achieved in conformity with the federal program, thereby bringing in federal funds, so much the better. However, if the federal program were not the best for the State, Hawaii will turn down the funding. He added that the CZM law clearly defines the permanent coastal zone boundary to be the amended SMA. He stressed the importance of the current CZM 306 document as a preliminary draft to get all community input as soon as possible, so as to determine an acceptable consensus.

The draft does not necessarily represent the DPED position, he pointed out, and is a step to help Hawaii's CZM program move forward to qualify for funds to achieve its goals — to keep Hawaii's coastline in a condition to be proud of in coming generations. "If we make a mistake in our coastal zone, we'll have to live with a blight," he cautioned. ★★★

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COASTAL ZONE NEWS
c/o **Sea Grant / Marine Advisory Program**
252-B Spalding Hall
University of Hawaii
Honolulu, Hawaii 96822

Dear Editor,

In your July issue, I found Janie Patch's explanation of fish transects most valuable. To those concerned with CZM, it offered a contrasting view of methods employed by both state and private individuals. The Marine Option Program (University of Hawai'i) appears to have a distinct lead in effective data accumulation. I'd be interested in learning if the State plans to, as effectively, check MOP's technique. Good work, MOP and MAP (Marine Advisory Program)!

Vern Hinkley, Hilo, Hawai'i

Ed. note: John McMahon, Director of the Marine Option Program replies that MOP and the State Dept. of Land and Natural Resources Division of Fish and Game are in constant contact with each other, and as a matter of policy MOP makes its information available to Fish and Game. Neither the State nor MOP has yet tried to check out its technique against that of the other in the same area, he said, noting that such an effort would face some built-in difficulties that would make interpretation of statistics intricate. Kenji Ego of Fish and Game adds that when MOP implemented its fish transect techniques, they were designed partly by Fish and Game, and he therefore sees no need for the State to check out MOP techniques, that the State helped develop.

Dear Editor,

From whom does the Board of Land and Natural Resources receive information or recommendations to

designate a Marine Life Conservation District? Are recommendations from individuals acceptable?

Edward G. Jones, M.D., Kaunakakai, Moloka'i

Ed. note: Public input is the main determinant in the process of creating all Marine Life Conservation Districts. It begins with public-initiated remarks, via letters, petitions, or by various groups or individuals. Requests are either sent directly to the Dept. of Land and Natural Resources, or come in indirectly, via State legislators. If the Board of Land and Natural Resources decides that sufficient public interest has been shown, it will direct a study/survey of the area by the Division of Fish and Game. Public meetings may then be held to informally present information regarding the establishment of such a district and its necessary regulations. Based on the input of these meetings and other recommendations, the Division of Fish and Game then drafts a regulation, which is presented at formal public hearings to determine the public's official stance. The final draft of the regulation must then receive Board approval and be signed into law by the Governor.

Dear Editor,

I have just recently begun receiving the **Coastal Zone News**. This morning the July issue came in the mail — obviously too late for me to take advantage of the Ka'ena field-trip or possibly attend the HCZM meetings. The CZM questionnaire results mentioned include "more timely notice." I'd like to re-emphasize that. Overall, I think you're doing a good job.

Kenneth Ly, O'ahu

COASTAL ZONE NEWS is published monthly by the Sea Grant/Marine Advisory Program, University of Hawaii, and the Department of Planning & Economic Development, State of Hawaii.

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New names may be added to the COASTAL ZONE NEWS mailing list by writing to:

COASTAL ZONE NEWS
c/o Sea Grant/Marine Advisory Program
252-B Spalding Hall
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Honolulu, Hawaii 96822

Dear Editor,

I enjoyed your article on Honolulu Bay (June 1977 issue). Having personally enjoyed all aspects of the beauty and recreational opportunities (including camping, shoreline walking, bodysurfing, snorkeling, and boat launching), I thoroughly agree that the Bay should be a marine preserve. Honolulu has tremendous *mana* (divine power) and deserves proper and rightful respect.

Lindbergh Alan Marzo, O'ahu

Ed. note: We are reprinting this letter as part of it was accidentally left out in the last issue.

Readers are encouraged to write letters to the editor expressing opinions and viewpoints on Hawaii's CZM Program. Rules:

- * Letters must be signed.
- * Normal word limit — 100 words. Shorter letters get preference. In some cases, only excerpts may be printed to allow more letters to be published.
- * Typewritten, double spaced letters desired.
- * Mail letters to COASTAL ZONE NEWS.

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COASTAL ZONE NEWS



Vol. 2, No. 4 August 1977

CZM '306' Submission Status

by Deborah Lee, CZNews

The Department of Planning & Economic Development (DPED) is currently drafting the Hawai'i Coastal Zone Management (CZM) Program "306" Submission Document. DPED is moving closer towards a final version which it plans to submit for review to the National Oceanic & Atmospheric Administration (NOAA) of the U.S. Dept. of Commerce this October.

The "306" Document will describe the overall process by which the State will carry out the intent and purposes of its management program. NOAA approval of the document will allow Hawai'i to receive funds provided under Section 306 of the National CZM Act.

CZM advisory committees in Hawai'i began their review of the draft document in June, and late last month DPED, in a series of meetings with the different committees, received their comments on the draft. This month DPED is sponsoring a CZM workshop to promote dialogue between the various advisory groups on issues raised during the review process. The workshop format is expected to allow advisory committee members to participate more actively in drafting the next version of the Hawai'i CZM Program Document.

At the July 21 meeting of the State-wide Citizens' Forum, Hawai'i's four County planning directors and DPED director Hideto Kono gave their views on what they believed constituted the CZM interim boundary now in effect;

(Cont., '306', p. 6)



Beautiful beach scene near Makana on Maui.

Photo by Ray Tabata

Kane'ohe Sewage Outfall to Move

by Pat Gilman, CZNews

Sewage in Kane'ohe Bay will be redirected from its present discharge locations to about a mile off Mokapu Peninsula by early October this year. A vast improvement in the Bay's environmental condition should result.

The move is in compliance with water quality regulations set in 1966 by the Federal Water Pollution Control Administration (now the Environmental Protection Agency, EPA). The regulations require the State to adopt these water quality standards, which the dumping of sewage violated.

The EPA is taking advantage of this opportunity to fund an extensive study of the Bay before and after the outfall is moved and record the results directly related to sewage in the Bay.

Dr. Steve Smith, Associate Director of the Hawai'i Institute of Marine Biology (HIMB), and the project

director, is coordinating extensive studies of the Bay's zooplankton, phytoplankton, and benthic (ocean bottom-related) communities (i.e., fish, crabs and corals). In addition, the project also includes lab studies of the chemistry of the Bay's water.

Most of the \$600,000 in funding for the three-year project has come from the EPA, which considers it a "model project." State support is provided by the Hawai'i Office of Marine Affairs Coordinator. Six senior researchers are involved in the study with overall staff numbering about 20.

This is an environmental experiment on a scale that environmental

(Cont., Kane'ohe Bay, p. 7)

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- * Aquarium Industry p. 5
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- * "208" Status p. 2
- * CZ People p. 2

"208" meeting coming in Sept.

by Mel Koizumi, Dept. of Health
"208" staff

The "208" Technical Committee on Water Quality Standards has reached a critical point in its efforts to refine Hawaii's present water quality standards (Chapter 37-A, Public Health Regulation). This point was reached at the Department of Health's Water Quality Management Seminar on June 30 and July 1 when the scientists and engineers working on the committee presented their philosophies and research findings to an audience of 180 scientists, government officials, business representatives, and citizen group representatives at the Ala Moana Hotel.

This seminar provided the committee an opportunity to present technical information on the ecosystem approach to developing standards. The committee presented several recent reports which will provide the basis for Hawaii's revised water quality standards.

The first is the Interim Classification of State Waters which identifies and describes all waters in the State of Hawaii (excluding groundwater). It includes some 31 separate aquatic systems — from ditches and flumes to waters of the open ocean — all of which will be included in the "208" Plan.

The other important product is the list of water quality parameters. Parameters are measures (such as temperature, salt content and oxygen level) which indicate "water quality." There are actually separate lists of parameters for inland waters, marine waters, and bottom types. While these lists are still being reviewed and revised, some of the possible parameters were presented at the seminar; the entire list will be available in the very near future.

Parameters for the inland waters will include distinguishing and representative biota (living organisms other than plants) in addition to the usual chemical, physical, and geophysical considerations. With regards to marine waters, the committee has generally decided that the water-column parameters will be used to monitor the short-term, day-to-day water quality changes; the benthic (ocean bottom-related) para-



The Halekulani Hotel on Waikiki Beach.

Photo by Camera Hawaii

meters will be used as long-term measures of constant, repeated stresses to the entire marine system. The list of marine water column parameters includes twelve physical and chemical considerations and the marine benthic parameters include measures of certain biota as well as of chemical and physical factors.

From this point, the committee will develop numerical values or ranges of values to form the standards. In order to accomplish this task, all available water quality information is being evaluated to determine baseline conditions for each system in the Classification. Recognizing the little amount of data available the committee will propose interim standards with strong recommendations for extensive data-gathering programs to improve the baseline information.

The committee is now also viewing **beneficial uses** for each aquatic system. While water quality has traditionally been based on a use concept, the "208" Technical Committee is attempting to designate uses based on the ecological responses to the uses, which is thought to be an essential consideration for developing effective water quality standards.

The draft standards as proposed by this committee will be the subject of some thirteen **public informational meetings** to be held at selected places throughout the State beginning September 26, 1977.

The proposed standards will also be reviewed for their economic and social impact and institutional implications before a final draft is presented at public hearing.

Further information on specific public meetings may be obtained by calling Tish Uyehara, DOH, at 548-4362. ***

CZ People Halekulani's Randy Lee

Randy Lee, president and general owner of the distinctive low-rise Halekulani Hotel on Waikiki beach, is one of Hawaii's coastal zone people in the resort area of Waikiki. A member of Hawaii's Coastal Zone Management Statewide Citizens' Forum, Lee regards the goals of the CZM Program as excellent and necessary to protect Hawaii's coastal area for all. Though some people (especially in Waikiki) will have to make adjustments towards that end, he said, such compromises for the sake of preservation and conservation of the coastal zone will be necessary.

He believes the CZM Program has far better chances of accomplishing its goals than does the Waikiki Special Design District (C&C of Honolulu Ordinance No. 4573) which was set up in April 1976 to control development in the area.

He asks, "Who are we controlling? With the exception of the Halekulani and a few other low-rise parcels of land in the district, no one is really controlled by the Special Design District plan."

Lee believes that this design district does not accomplish what it was intended to do, coming as it did in 1976, after most prime Waikiki property had already been developed with high-rise projects. Unless the "large buildings are razed, there is nothing left to down-zone," he says. However, he does not argue with the intent of the Waikiki Special Design District ordinance, which was basically to guide the development of Waikiki.

(Cont., p. 6)

Commercial Fishery Outlook

by Deborah Lee, CZNews
(First of a series)

Fishery industries in Hawai'i can be divided into high seas (or pelagic) fishing, carried out in the open ocean, and nearshore fishing (up to 100 fathoms). Under pelagic fishing, Hawai'i has two major types of commercial operations, the long-line fisheries and the live bait fishery. The primary fleet is made up of the *aku* boats, which as a live bait fishery is solely concerned with the capture of *aku* (skipjack tuna) using bamboo pools, lines and a small anchovy baitfish called *nehu*. In this method, *nehu* is an absolute essential ingredient in successful catches. However, the use of this baitfish imposes certain limitations upon the *aku* fishery for which solutions are being sought.

Another method of high seas fishing is the long-line (also known as flag line) method, where a long main line with many branch lines and baited hooks are set adrift. The same fish species taken with this method, such as *ahi* (yellowfin and bigeye tunas), *ahipalaha* (albacore) and *kawakawa* (little tuna), are sometimes taken occasionally by trolling. *Mahimahi* (dolphin genus *Coryphaena*) and *ono* (wahoo) are also caught by this long-line method.

Billfishers use the long-line method for several varieties of marlin, sometimes for swordfish (which is not a marlin) and sailfish.

The second type of fishery industry in Hawai'i, besides the pelagic fisheries, is the nearshore (up to 100 fathoms) fishing. This type of fishing is land mass-related, bottom-associated, and is further classified into three areas: shallow water, mid-water and deep-water. Mid-water species like *akule* (bigeyed scad) and *opelu* (mackerel scad) are very important compared to other nearshore varieties. In fiscal year July 1975-June 1976, 746-857 pounds of *akule* were caught, valued at \$442,211. *Opelu* caught in the same period amounted to 291,337 pounds, and \$231,236 in value. They represent the next most important fish catches compared to the largest and most valuable *aku* and *ahi* catches, the amounts of these catches are determined from reports submitted by commercial fishermen that indicate

amount and type of fish caught and dollar value received for the fish.

Most commercial *aku* boats in Hawai'i are based at Kewalo basin, O'ahu, with some at Maui and at the Big Island of Hawai'i.

Fishing has a relatively small impact on Hawai'i's economy. It is not very large as an industry, and has not experienced much expansion in the last several decades. It should be able to expand, however, for several reasons — one being that the local population consumes a lot of fish.

There are signs, however, that the industry is shrinking slowly. Although the State Division of Fish and Game reports it is selling more commercial fishing licenses (a measure of industry size), this is because more people are buying smaller 18-24 ft. vessels, for "weekend" fishing. So although the number of "commercial fishermen" is apparently increasing, the total number of commercial fishermen for which fishing is the primary occupation is decreasing.

Vessel registration figures further indicate that the number of "commercial" fishing boats is increasing, while in actuality the number of active *aku* boats is decreasing, for example, from about 30 in 1951 to 14 at present. Old ships wear out or sink (the average age of a ship is 33 years) and not many new boats are being built. Only one bait boat, the Anela, has been built in the last 20 years; Anela joined the fleet in 1971.

However, concurrent with this

decline in number of vehicles and fishermen operating, there does not seem to be a corresponding decrease in the size of the *aku* catch (besides normal seasonal fluctuations), which indicates that either efficiency of fishing methods is increasing, or that since there is less competition among the ships that remain, they are able to get larger shares by dividing up the same total catch. Furthermore, with less competition, boats spend less time going after the baitfish they need.

Hawai'i's *aku* fishery has great potential for expansion as the *aku* resource is very large. But it has a "hold-full" of problems to solve first, such as the need for new ships, training, facilities, and new fishing grounds and markets.

Fishing now has a relatively small impact on Hawai'i's economy. The fishing industry is worth about \$12 million (including the local tuna cannery) and some 500 jobs. If fisheries were developed on a larger scale, they could amount to a \$40 million industry. With the production of just another 10,000 tons of tuna, another 400-500 jobs could be created. ★★★

In future articles, CZNews will examine in depth the problems that Hawai'i's commercial fisheries face, what they will need to survive and expand, what the State government of Hawai'i is doing to help, and where the future horizons of Hawai'i's fishing industry can be found.



Suluan fish auction at Hilo, Hawai'i.

Photo by Ray Tabata



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Sept 13-9-1975*

『シティ・オブ・レフュージ』について

“シティ・オブ・レフュージ”という名は、早くハワイに来たキリスト教宣教師の一人が、バイブルに出てくる、犯罪者などがかくまわれた聖域に似ていることから名付けたもので、ハワイ語でわ“プウホヌア”と呼ばれていた。これは避難所あるいは聖域という意味だった。

ハワイの王族たちは、自分たちは神々の子孫で、ハワイに住む人々に対し、してよいこと、してはならないことを決めたカブ（タブー、禁制）を強制する、特別な力を与えられていたと信じていた。従って、カブのきまりを破ったものは罪人として処罰されることはのがれられない筈でだった。

しかし、うまく避難所に逃げ込んだ者は処罰をまぬがれるという除外例があった。また戦争になっても、避難所に逃げ込んだ非戦闘員である、老人、子供、病人たちは危害を加えられることもなく、さらに戦争に敗れた戦士たちでも、うまくここへ逃げ込めば許されることになっていた。

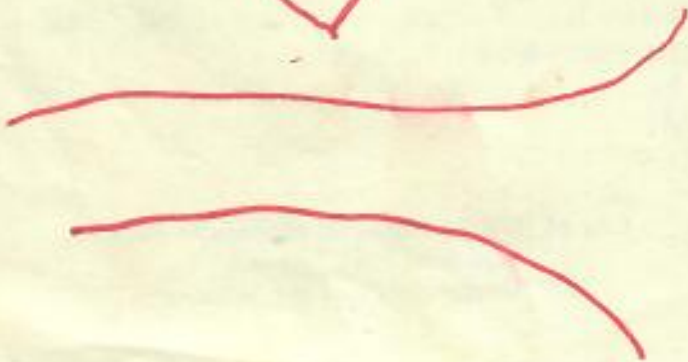
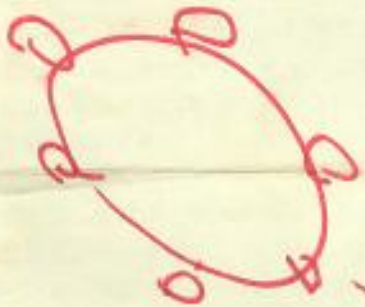
もっとも、犯罪者や敗残兵が避難所に逃げ込むためには大きな難関を突破しなければならなかった。

昔のハワイでは、罪を犯した人は神々の恩恵から見放された者で、たとえ追跡を逃れても津波か溶岩流にあって殺されてしまうと考えられていた。そして、もし津波や溶岩流におそわれるということになれば、その付近の人々全体に被害が及ぶことになり、犯罪者をきびしく探索した。だから、犯罪者は避難所に到着するまでに殺されてしまうのがほとんどだった。敗残兵の場合でも轉った方の軍勢の追及を逃れるためには、犯罪者と同じように海からしか避難所に入れなかったのも、成功率は大へん低いものだった。そして避難所への周辺は極めて聖なる場所とされ、取締りにあたる役人や族長が住めるだけだった。

難関を切り抜けて避難所にうまく逃げ込んだ者は、神官の“おはらいの祈禱”を受けなければならなかった。この“おはらい”の儀式は十数時間、時には夜を徹して続けられることもあるほどでなかなか念入りなものだった。犯罪者はこの儀式を受けると免罪になり、自宅に戻って普通人の生活にもどることができた。戦争を避けて避難所入りした人々は戦争の間中、止まっていなければならなかった。戦争は数時間で終ることもあったが、時には何週間も戦争が続き、難を避けた人々はその間中、狭いところで苦しい生活を続けなければならなかった。

カメハメハ一世がなくなり、あとを継いだリホリホは國人と同席して食事をとり、それまでの、食事は男女別々という禁制を破ってしまった。禁制は破られたが心配された惨事は起らなかった。勢を得たリホリホは神殿をこわし、神像を焼き、避難所もつぶしてしまい、長くハワイを支配したカブ（タブー、禁制）は遂にハワイの社会から姿を消してしまった。

この古いハワイの名残りととどめた史跡をごゆっくりと見学下さい。





STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FISH AND GAME
P. O. BOX 936
HILO, HAWAII 96720

September 7, 1976

Mr. George Balazs
Hawaii Institute of Marine Biology
University of Hawaii
Kaneohe, Hawaii 96744

Dear George:

I received a phone call this afternoon from a fellow who lives in the Puna area on the big island. His name is Richard Carroll. Mr. Carroll claims that he has found four sea turtle nests at a place called Orr's beach. This beach is located approx. 2 miles North of Cape Kumukahi. One nest has been under observation since July 4th and is expected to produce young turtles in a day or two according to Mr. Carroll. Another hatching is scheduled for October. He thinks the nests were made by hawksbills rather than green turtles. Very small turtles have also been observed while skin diving in the area. Mr. Carroll thinks these are also hawksbills.

If you would like further details, write to Mr. Carroll at the following address:

Richard E. Carroll
P.O. Box 850
Pahoa, Hi. 96778

Thought you might be interested.

Sincerely,


Jon Giffin



University of Hawaii at Manoa

Sea Grant College Program

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Telephone (808) 935-3830

Advisory Service

September 29, 1982

Mr. George Balazs
National Marine Fisheries Service
Honolulu Laboratory
P.O. Box 3830
Honolulu, HI 96812

Dear George:

Thank you for your proposal, the turtle tags, applicator and instruction. I've already called the Aquatics Resource Biologist informing him that I have the equipment should there be a need for it.

Mr. Frank Ferreira of 1816 Kalaniana'ole Street (phone 961-3927) has 3 green turtles that he has had "for a long time." He keeps them as pets and feeds them vegetables, in addition to aquatic plants. He does not intend to eat them. They add aesthetics to his ponds, and he seems to care for them very well.

I appreciate receiving a copy of your Year 16 proposal on green turtles. I have read it and hope it will be funded. The data gathering methods are quite exciting - Ka'u is a beautiful district for night fishing. Such a research project on this island will definitely be a good way to educate the public about the plight of the green turtle and other marine turtles.

Do keep us informed on the status of your proposal.

We just received your Sea Turtles posters. Thanks! We'll distribute them as you have suggested.

Aloha,

Howard A. Takata
East Hawaii Agent

SEA TURTLE SIGHTING REPORT

(Please return to: George H. Balazs; Hawaii Institute of Marine Biology; P. O. Box 1346; Kaneohe, HI 96744; Tel. 247-6631)

Thank you for your cooperation

Observation made by Leon Hallacher Date 3 Oct 82 Time 10:23-11:25 a.m.
12:30-1:30 p.m.

Address & Tel. No. (optional) UH Hilo 961-9364

Location (indicate on chart) Puako Access #4 through Access #7

Observation made from: shore; 10:23-11:25 Access 4-6
boat; or while skin 12:30-1:30 Access 7-5
SCUBA diving. → 30' max depth

Estimated size (shell length) _____ approximately 8 turtles (greens)
Turtle seen on: _____ surface; or at depth ranging in size from
of approx. _____ ft. 1 1/2' shell length to 4 1/2' shell length

Distinguishing characteristics (species I.D. if known, long tail, shell color, tags, injuries, etc.): _____
not seen swimming near bottom
not seen resting on bottom

Other comments _____
Hallacher
NATURAL SCIENCES DIVISION
University of Hawaii at Hilo
1400 KAPIOLANI STREET
HILO, HAWAII 96720

SEA TURTLE SIGHTING REPORT

(Please return to: George H. Balazs; Hawaii
Institute of Marine Biology; P. O. Box 1346;
Kaneohe, HI 96744; Tel. 247-6631)

Thank you for your cooperation

Observation made by David Clements Date Oct 3 Time 10:23-11:25 am
12:26-1:30 pm

Address & Tel. No. (optional) UH Hilo 961-9544

Location (indicate on chart) Puako Access #4 to Access #7

Observation made from: shore;
 boat; or while skin

SCUBA diving. 35' max

Estimated size (shell length) 8 turtles seen, one $\sim 1\frac{1}{2}'$ in length
other 7 $\sim 2\frac{1}{2}$ to $4\frac{1}{2}$ ft in length

Turtle seen on: surface; or at depth
of approx. 30 ft.

Distinguishing characteristics (species
I.D. if known, long tail, shell color,
tags, injuries, etc.): green
turtle

all seen resting on bottom until
they moved due to our presence
Seen in groups of 2 or 3.

Other comments: _____



John W. Perry



Oct.11-82

Hi George:

Thanks for turtle mailing. Will ~~xxxx~~ start a "turtle-sea" file.
Read your interesting TM green turtle synopsis. Should you
be in the Kahala area anytime ~~give~~ give me ~~xxxxx~~ a ring (732-0253)
and stop in for a drink/chat. Cheers/jwp

PO Box 23421
Honolulu HI
96822

JOHN CURRK

P.O. BOX 661

KRILUAN, HI 96734

11-30-82

Dear George,

Enclosed is a copy of the turtle fishing material with the missing line included, and a couple of other items I found as well. (That's all there is in my Kelsey notes.)

I read your description of Polubua in the paper the other day and it reminded me of a similar situation at Kapoh Bay. One of my shoreline informants in Piina told me her grandfather used to

catch the turtles after they'd laid their
eggs and then tie them up and sell
them. 1920s, 1930s. Kapeli Bay doesn't
exist anymore. It was overrun by the
Kapoho lava flow about 1960, I think.
I also double-checked my notes on
Keoni'eli'eli or Turtle Bay as you know
it at Panaliu. My informant did say that
it was a resting site once as well as a
feeding ground.
Thanks for the post. My son & I
both really like it. Mike alpha, John

Turtle Fishing (Lawai'a Honu)

By Rev. Henry B. Narlimu, Hilo.

LIBRARY OF
GEORGE H. BALAZS

The net had openings (hakahaka), with the meshes (ka maka) perhaps a foot wide (hookahi kapuai (foot) paha (perhaps), and forty (kanahi) fathoms (-anana) the length (ka lo'i). There were two canoes (elua waa). Nite (hohui) the heads (na poo) of the nets, two nets (elua upena) ma kahi (about) eighty fathoms (kanawalu anana) long, perhaps a hundred fathoms (hookahi (one) haheli anana). There was a watchman (he kilo) above on the cliff (-iluna - o ka pali), and it was his duty (-a rana) to separate (kahikahi) and move apart (hoonee - ai) the canoes (na waa). At the time (-i ka manawa) that the fish watchman (he kilo - ai) saw (-ua ike 'oia) the turtle (-i ka honu) he signaled with his hand (pe'ahi 'oia) to the two canoes (-i na waa elua) to move (e nee). He opened up his arms (wehe 'oia - i kona lima) at the time that he saw (-i ka manawa - i ike - ai) that the turtles were right where the canoes ~~would go~~ ^{went} (-ua kupo na honu - i kahi - o na waa i hele - ai). When he opened his arms (-i ka wehe 'ana - o kona lima) they let down the net (hookua lakou - i ka upena). The canoe men would beat the sea with branches (me ka laau - o hoopuhū - ai iloko - o ke kai (laau, timber, wood, tree). Then the turtle (o) would go to where the net was

Alaila holo kā honu i kahi o kā upena²
They would leave the net (haalele ka upena),
leave it with a float (mou, buoy) (me kā mou
e haalele ai), and with the rope of the upper
selvage holding the net (-a me ke kāula o kā
'aliki e paa ana i kā upena) The line (word looks
like Fina) and the heads of the turtles tangled.
There was a piece of wiliwili wood (he laau wiliwili
(a branch?), a piece of hau wood (he laau hau),
and an 'uli'uli (a gourd that was planted (he
-ipua i kama ia), and grew (-a ulu mai), and
dried (ia māloo), and was held fast in a cala-
bash net (-a hoopaa ia i ke kōkō), and float-
ed in the sea (-a lana iloko o ke kai) - the
'uli'uli. The canoes went toward the upland
(holo ma waa mauka) to that and this outer
corner of the float (ma kela keia kahi o kā mou)
and beat the sea (-a hoopāhū i ke kai), and
the turtle(s) went off (-a holo kā honu). And the
net was gotten and pulled in (a kii kā upena
-a huki); The meshes of the net were perhaps
a malewa (wide enough to put the hand through)
The fishing watchman saw the turtles floating
on the surface of the sea (Ike ke kilo i ka honu
e lana ana iluna o kā ili kai) There are
turtles in Ka-mākua and Puna off the coast. They
used to use a spear (he o) from the haales, not the
ancient Hawaiian spear. There was only the net i
ancient times (kā upena wale no ka wa kahiko)
I have not seen the small net (hola au i ike i kā
'upena liili), 40, 50 fathoms more or less (60, how many?)

bone, a chicken bone. Makau-kile, a hook way up (maluna ³ ² ¹ ⁰ ¹ ² ³ ⁴ ⁵ ⁶ ⁷ ⁸ ⁹ ¹⁰ ¹¹ ¹² ¹³ ¹⁴ ¹⁵ ¹⁶ ¹⁷ ¹⁸ ¹⁹ ²⁰ ²¹ ²² ²³ ²⁴ ²⁵ ²⁶ ²⁷ ²⁸ ²⁹ ³⁰ ³¹ ³² ³³ ³⁴ ³⁵ ³⁶ ³⁷ ³⁸ ³⁹ ⁴⁰ ⁴¹ ⁴² ⁴³ ⁴⁴ ⁴⁵ ⁴⁶ ⁴⁷ ⁴⁸ ⁴⁹ ⁵⁰ ⁵¹ ⁵² ⁵³ ⁵⁴ ⁵⁵ ⁵⁶ ⁵⁷ ⁵⁸ ⁵⁹ ⁶⁰ ⁶¹ ⁶² ⁶³ ⁶⁴ ⁶⁵ ⁶⁶ ⁶⁷ ⁶⁸ ⁶⁹ ⁷⁰ ⁷¹ ⁷² ⁷³ ⁷⁴ ⁷⁵ ⁷⁶ ⁷⁷ ⁷⁸ ⁷⁹ ⁸⁰ ⁸¹ ⁸² ⁸³ ⁸⁴ ⁸⁵ ⁸⁶ ⁸⁷ ⁸⁸ ⁸⁹ ⁹⁰ ⁹¹ ⁹² ⁹³ ⁹⁴ ⁹⁵ ⁹⁶ ⁹⁷ ⁹⁸ ⁹⁹ ¹⁰⁰ ¹⁰¹ ¹⁰² ¹⁰³ ¹⁰⁴ ¹⁰⁵ ¹⁰⁶ ¹⁰⁷ ¹⁰⁸ ¹⁰⁹ ¹¹⁰ ¹¹¹ ¹¹² ¹¹³ ¹¹⁴ ¹¹⁵ ¹¹⁶ ¹¹⁷ ¹¹⁸ ¹¹⁹ ¹²⁰ ¹²¹ ¹²² ¹²³ ¹²⁴ ¹²⁵ ¹²⁶ ¹²⁷ ¹²⁸ ¹²⁹ ¹³⁰ ¹³¹ ¹³² ¹³³ ¹³⁴ ¹³⁵ ¹³⁶ ¹³⁷ ¹³⁸ ¹³⁹ ¹⁴⁰ ¹⁴¹ ¹⁴² ¹⁴³ ¹⁴⁴ ¹⁴⁵ ¹⁴⁶ ¹⁴⁷ ¹⁴⁸ ¹⁴⁹ ¹⁵⁰ ¹⁵¹ ¹⁵² ¹⁵³ ¹⁵⁴ ¹⁵⁵ ¹⁵⁶ ¹⁵⁷ ¹⁵⁸ ¹⁵⁹ ¹⁶⁰ ¹⁶¹ ¹⁶² ¹⁶³ ¹⁶⁴ ¹⁶⁵ ¹⁶⁶ ¹⁶⁷ ¹⁶⁸ ¹⁶⁹ ¹⁷⁰ ¹⁷¹ ¹⁷² ¹⁷³ ¹⁷⁴ ¹⁷⁵ ¹⁷⁶ ¹⁷⁷ ¹⁷⁸ ¹⁷⁹ ¹⁸⁰ ¹⁸¹ ¹⁸² ¹⁸³ ¹⁸⁴ ¹⁸⁵ ¹⁸⁶ ¹⁸⁷ ¹⁸⁸ ¹⁸⁹ ¹⁹⁰ ¹⁹¹ ¹⁹² ¹⁹³ ¹⁹⁴ ¹⁹⁵ ¹⁹⁶ ¹⁹⁷ ¹⁹⁸ ¹⁹⁹ ²⁰⁰ ²⁰¹ ²⁰² ²⁰³ ²⁰⁴ ²⁰⁵ ²⁰⁶ ²⁰⁷ ²⁰⁸ ²⁰⁹ ²¹⁰ ²¹¹ ²¹² ²¹³ ²¹⁴ ²¹⁵ ²¹⁶ ²¹⁷ ²¹⁸ ²¹⁹ ²²⁰ ²²¹ ²²² ²²³ ²²⁴ ²²⁵ ²²⁶ ²²⁷ ²²⁸ ²²⁹ ²³⁰ ²³¹ ²³² ²³³ ²³⁴ ²³⁵ ²³⁶ ²³⁷ ²³⁸ ²³⁹ ²⁴⁰ ²⁴¹ ²⁴² ²⁴³ ²⁴⁴ ²⁴⁵ ²⁴⁶ ²⁴⁷ ²⁴⁸ ²⁴⁹ ²⁵⁰ ²⁵¹ ²⁵² ²⁵³ ²⁵⁴ ²⁵⁵ ²⁵⁶ ²⁵⁷ ²⁵⁸ ²⁵⁹ ²⁶⁰ ²⁶¹ ²⁶² ²⁶³ ²⁶⁴ ²⁶⁵ ²⁶⁶ 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Hawaiian Land Names, from trip with Mrs. Ka'ouli Kaai and her brother Ka-hau-olo-pua of Keaukaha, June 25, 1925.

The chiefesses were swimming with their hair unbound.

Leaving the auto near the junction of Kalihiwai and Ka-nuku-o-kamanu St., Waiakea, Ka-ouli and I went makai to two little coves where Ke One Wali o Ohele, where the noted sand of the stout chiefess Ohele is located (waliwali ke kino o Ohele, me na lili wahine e a'e). Every day after riding the breakers of Kawili--^{and landing} ~~Ka Nalu Ha'i o~~ Kawili--that broke near the mouth of the Wailea River, the chiefesses would lie on the sand of Ohele. Poo-naheahoa (Mr. Spencer), Mgr. of Amaulu Plantation, had a wharf running out over Ka Lae o Ohele, from which he shipped whale-oil, boiled from the blubber where the third fish-market counting from the Coconut Is. side, is located.

Ka Lau o Kukui is the ^{next} little point N., where Uapo Mahoe (double wharf) of the Inter Island Co. was located. When the sea was rough passengers were landed up the mouth of the river. This point was probably named because of the numerous (lau) lights of the whale-ships in port. Women would put clothes in a container and swim to the ships. Hawaiians got whale-oil to burn in their lamps with wicks. Reed's Wharf ran out from where there is a square pile of concreted rock. The old Railroad wharf ran out at the end of Lau Kukui where the piles are now in the water. *makai aku o Ohele malaila. Ke-lua'aha, he nape no ka hui o Mackfield manna. Nalimu.*

Waipahu is a little spring and cove with young hau trees at the head of it. The Lae o Waipahu is there. The spring is at the head of the cove. *o ka Waipahu he nape o ka nape o ka lau-o-kukui.*

* Waihonu, probably a pond for breeding turtles, had its outlet, now covered by the road, just beyond the lae of Waipahu, where there was a sluice-gate, or makaha'. Beyond is an old stone house known as Uapo Lei Lehua, which used to be a wharf but is now a govt. oil warehouse. *o Kahiwa he nape haki he. Nalimu.*

We now started for the house of Ka-hau-olo-pua at Keaukaha. The place where he lives is Ka-i-ele-wai is so-called he says, because a rat got into a calabash of potato poi, which is left to sour for three days, and was drowned. This incident happened in the time of his father and other relatives. He says that Ke-au-kaha was so-called because only potato was raised there and that fish was exchanged for poi with Hile Pali Ku. Ke-o-kea was named, he stated, because white hala (hala ke'oke'o---kes also means white) was made into leis and given by one sex to the other. These gifts were termed 'e', just as luncheon is called 'e'. The fruit of the hala ke'oke'o is light yellow. Maka-o-Ku was a chief. Wai opae, lake on C.I.

in - aole
ku - Nalimu
Ku-a-ka-ananuu (I received the name Kua-a-ka-ananuu from Kahaku, Kekaula, and some others kamaainas) was a hunch-backed chief. This is the name of the heiau on the land of Maka-o-Ku opp. C.I., also the name of the cove on the east. Some of the One o Ohele is under the R.R. Lokoaka should be Loko Waka, as I also heard from aged Nalimu e and Ka-ouli---named for the grandmother of La-ie-i-ka-wai.

After taking some 'snaps' of the family the three of us set out in the auto for Loko Waka. Wai-ahole (nui na aholehole) was a lake in front of Ka-hau-olo-pua's.

Ka-hiwa (niu hiwa malaila i keia manawa) was a lowland on the right

Ka-puu-pili (pili-grass hill) with a lake of the same name, out of sight, came next. A garage is at the further boundry.



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Advisory Service

November 30, 1982

Mr. George Balazs
National Marine Fisheries Service
Honolulu Laboratory
P.O. Box 3830
Honolulu, HI 96812

Dear George:

It was exciting reading about the green turtle nesting on Oahu in the Star Bulletin, November 19, 1982. I hope many more females are coming ashore and laying eggs on Hawaiian beaches. If nesting becomes more frequent, I hope more people will report nesting evidence to you and maybe a hatchery could be set up to incubate the eggs and educate people about the plight of marine turtles. I enjoyed visiting such a hatchery on the east coast of the Malay peninsula.

To date we have not had an opportunity to tag any green turtles. When we do, we'll be sure to let you know.

Aloha,

Howard A. Takata
East Hawaii Agent

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