

PRINCIPAL OBJECTIVES OF
THE NMFS-HPA ENDANGERED SPECIES MARINE TURTLE RESEARCH PROJECT
AT KIHOLO BAY, NORTH KONA, HAWAII

OVERALL: To ensure the long-term conservation and protection of sea turtles at Kiholo Bay and the habitat upon which they depend.

SPECIFIC:

1. To determine the approximate number of turtles and their size-classes, by species, resident to this location.
2. To determine the types of life-support activities undertaken by the turtles within the habitat limits of the bay.
3. To ascertain the food sources utilized by the turtles.
4. To calculate growth rates and estimated ages at sexual maturity.
5. To determine adverse impacts to the turtles, both from humans (i.e., fishing nets, rubbish) and from natural factors (i.e., disease, shark predation).
6. To estimate the recruitment rates of juveniles to the Kiholo Bay population and migrations/movements which may occur after residency has been established.
7. To determine flipper tag retention rates on immature turtles in nearshore habitat.



GEORGE H. BALAZS
ZOOLOGIST AND LEADER
MARINE TURTLE RESEARCH

NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
HONOLULU LABORATORY
2570 COLE STREET
HONOLULU, HAWAII 96822-2396

TELEPHONE
(808) 943-1240
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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

November 4, 1987

F/SWC2:GHB

Mr. Robert L. Hind, Jr.
P.O. Box 1149
Kailua-Kona, HI 96745-1149

Dear Mr. Hind:

I am writing to let you know that our first study visit to Kiholo Bay with the HPA students turned out to be a highly educational and scientifically rewarding event. In addition, everyone had a safe and pleasant, although somewhat exhausting, experience.

Six turtles were captured, one of which I had already tagged at Kiholo 3 years ago. The growth of this turtle was found to be very slow, averaging only about one-half inch per year in shell length. At that rate, it will take many years to reach a large enough size (about 32 inches) to be sexually mature. One of the other turtles we captured showed evidence of injury from entanglement in a gill net or in monofilament fishing line. Although healed, its hind flipper had been severely cut, nearly to the point of amputation, and was no longer functional. I have often seen injuries like this and there is no doubt in my mind that they are caused by entanglement in a net or monofilament line. A person already at Kiholo told us that five gill nets had been set out at various places in the bay a day or two prior to our arrival.

Our next trip to Kiholo is scheduled for February 10-12, 1988. I certainly look forward to this additional work with the HPA students and teachers.

Sincerely,

George H. Balazs
Zoologist

cc: Marc Rice
David Gulko





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National Oceanic and Atmospheric Administration
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Southwest Fisheries Center Honolulu Laboratory
2570 Dele St. • Honolulu, Hawaii 96822-2396

May 1, 1987 F/SWC2


Mr. Robert L. Hind, Jr.
P. O. Box 1149
Kailua-Kona, HI 96745-1149

Dear Mr. Hind:

I am writing to thank you for the generous donation of \$2,000 that you recently made to the Hawaii Preparatory Academy (HPA) to study and conserve sea turtles at Kiholo Bay as part of a cooperative effort with the Marine Mammals and Endangered Species Program of the National Marine Fisheries Service. Your gift will make it possible for HPA students to work under actual field research conditions with our staff biologist and sea turtle specialist, George H. Balazs. In addition to collecting valuable data on this important turtle aggregation, HPA students should benefit substantially from the educational aspects of the project.

Again, we are most appreciative of your contribution. My staff will periodically keep you informed as to the planning and results of our cooperative work during the coming months.

Sincerely,


Richard S. Shomura
Director, Honolulu Laboratory

cc: Dr. A. Ronald Tooman, Headmaster, HPA
Mr. Mark Rice, HPA Science Instructor
Mr. David Gulko, HPA Science Instructor
F/SWC - Izadore Barrett



ROBERT L. HIND, JR.

April 24, 1987

Mark,

Enclosed is a check for \$2,000.00 for the Kiholo Bay Restricted Turtle Fund.

It is to be used by you at your discretion. George Balazs is to work with you and the H.P.A. students. It should be very rewarding.

The check is made out to H.P.A.

George, in his letter, is very interested in the project.

Sincerely,

Bobby Hind

George, I WANT YOU TO PROGRAM
THIS PROJECT WITH MARK. I DON'T WANT
TO FINANCE A BEACH PARTY ~~FOR~~ FOR THE
KIDS.

THANKS, BOBBY

Phone-329-8981

POST OFFICE BOX 1149 • KAILUA KONA, HAWAII 96745

EHB



U.S. DEPARTMENT OF COMMERCE
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Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

April 21, 1989 F/SWC2:GHB

Mr. Eric Backman
Cooperative Sea Turtle Research Project
Hawaii Preparatory Academy
P.O. Box 428
Kamuela, HI 96743-0428

Dear Eric,

I want to take this opportunity to thank you for the fine job you did during our recent 3-day research expedition to tag and study green sea turtle (Chelonia mydas) at Kiholo Bay. I was duly impressed by the interest, enthusiasm, and cooperative spirit which you and all the students displayed during the course of our work. I enjoyed having you involved in the project and I look forward to working with you again.

When time permits, I would greatly appreciate receiving a short letter from you summarizing the educational and other benefits you obtained from participating in this research project. Also, please include any suggestions you may have for project improvement with regard to enhancing your experience from a student's perspective.

Sincerely,

George H. Balazs
Zoologist and Leader, Hawaiian
Sea Turtle Recovery Team

cc: David Gulko
Marc Rice





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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

March 21, 1989 F/SWC2:GHB

Ms. Bek Mortimer
Cooperative Sea Turtle Research Project
Hawaii Preparatory Academy
P.O. Box 428
Kamuela, HI 96743-0428

Dear Bek,

I want to take this opportunity to thank you for the fine job you did during our recent 3-day research expedition to tag and study green sea turtles (Chelonia mydas) at Kiholo Bay. I was duly impressed by the interest, enthusiasm, and cooperative spirit which you and all the students displayed during the course of our work. I enjoyed having you involved in the project and I look forward to working with you again.

When time permits, I would greatly appreciate receiving a short letter from you summarizing the educational and other benefits you obtained from participating in this research project. Also, please include any suggestions you may have for project improvement with regard to enhancing your experience from a student's perspective.

Sincerely,

George H. Balazs
Zoologist and Leader, Hawaiian
Sea Turtle Recovery Team

cc: David Gulko
Marc Rice ✓



Identical letter sent to:

Mr. Bart Wyatt
Ms. Eva Anderson
Mr. Kevin Kramer
Ms. Marina Nogues
Ms. Shannon Puska
Ms. Lisa Berthoud
Ms. Kim Sweet

Ms. Visnja Negovetic
Ms. Kristen Glospey
Ms. Kathy Hannah
Ms. Dawn Hegger
Mr. Jeff Richardson
Ms. Dubravka Negovetic

Same letter to:

Ivana Zivkovic

Ryder Thomas

Kathy Adams



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Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

March 21, 1990

Mr. George Watson
Hawaii Preparatory Academy

Dear George:

Enclosed in this box are the materials which I hope will be adequate to construct our new "improved design" turtle-catching net. From the numbers that Marc gave me yesterday for lead weights on the old nets, I have computed the following:

8 lbs for 100' net = 1.3 ounces of lead per foot of net
(minus some unknown small amount of
buoyancy from polyprop leadline)

The enclosed leadcore line is 300' long and has a catalog specification of 15 lbs. Therefore, the calculated weight per foot (240 ounces divided by 300') should be:

0.8 ounces of lead per foot of net
(with no buoyancy from line)

The question is, will 0.8 ounces per foot be sufficient to hold the netting down in the average-type current conditions we experience at Kiholo? My guess is that it will be, most of the time. If we went to a doubled-up leadcore line, I'm afraid that might be too heavy ($2 \times 0.8 = 1.6$) and potentially dangerous to very small turtles, like the one we caught and nearly drowned last time.

The next consideration is the float line. Enclosed here is 300' of foamcore 1/2" diameter "floating" line. The catalog specification says it will float 3 ounces of lead per 6', or 0.5 ounces per foot. That would be 0.3 ounces per foot short ($0.8 \text{ minus } 0.5 = 0.3$) of what we need to float the leadcore line. I propose that we solve this deficiency by adding a number of foam floats (enclosed) to the extent that you feel will be needed. These floats will also help to alert us when something is in the net, since the black foamcore line lying right at the surface will undoubtedly be hard to see at night.

The last point to consider is the tension that will be on the foamcore line from currents and also just pulling it straight to anchor it in position. The catalog note on the attached page 29 recommends that a 3/16" (or more) polypropylene line be stretched parallel to the slack foamcore line and tied to it. I would also presume that the netting is tied to this line, but am uncertain. 200' of 1/4" polypropylene has been enclosed for this purpose.

If you have any questions, please call me at work (943-1240), or at home (395-6409), collect, if you need to. If I'm not in when you call, please leave a message telling me at what time, and at what telephone number, I can call you back. Oh yes, if at all possible, I prefer that we not disassemble any of the existing nets to obtain parts. If you need more supplies, just let me know and I'll buy them here and mail them to you.

If we can get it to work, I'll bet this leadcore and foamcore line is really going to make the net a beauty to handle. At least that's what I'm hoping!

Best regards,

George Balazs

Note: Please double-check my math.

cc Monica/Marc



*Also enclosed - No. 21 nylon twine
2 net needles*



*Dead letter
file -
Airport?*

HAWAII PREPARATORY ACADEMY

P.O. BOX 428 • KAMUELA, HAWAII 96743-0428

(808) 885-7321

February 1, 1990

Dr. George Balaz
National Marine Fishery Service
P.O. Box 3830
Honolulu, HI 96812

Dear George,

I want to thank you for leading another great expedition. The whole capture/tagging operation seemed to run smoothly and efficiently. I was especially pleased with your idea of rotating the lead divers on the night snorkel. I think you made some real converts with that maneuver, even though we probably set male chauvinism on its ear.

We have had another inquiry from a potential donor regarding the turtle tagging project. Mr. Brick Stange, Mauna Kea Fairways, has been involved with African wildlife projects for years and is very interested in conservation. He would like to know more about what we do and the results of your investigations. Would you be willing to forward some pertinent material to him? I will ask Monica to give him some information concerning our participation in the project.

His address is:

Brick Stange
HCR 1 SR Box 483, MKB
Kamuela, HI 96743

If you have time, please get us some data from the shelter manufacturer about the various size awnings they make. It would be nice if we could have them by the next trip.

Thanks again for the great trip.

Sincerely,

Marc R. Rice

MRR/aiy

HPA #9

Turtle Tagging
Cassie Quaintance
2/5/90

My first Turtle Tagging trip turned out to be quite a unique experience. Going into it I was a bit apprehensive because I didn't really know what to expect. I had never even touched a turtle and was getting excited over doing so.

I had been on many camping trips before, so roughing it wasn't new to me at all, and I had been to Kiholo itself many times before that.

Not only were the turtles an experience to remember, there were many other adventures along with that. The kayaks were one of them. It was an unbelievable feeling to be gliding over the water in a piece of yellow plastic.

The set up of the camps, cleanup, organization, and cooperation all had a part to play in it also. I was very suprised to see how smoothly everything ran with the right people in charge.

To be able to be so close to a sea creature like the turtle is really a thrill. It made me feel good to think that a common person such as I could do a job such that a person very educated in Marine Biology would fill. Being able to aid in the catching of the turtle, data taking, and release was wonderful.

I think that it is wonderful that you use people our age because of our abundance of energy, constant curiosity, and the fact that we need to know about the needs of creatures other than ourselves. Hopefully when we are older and have influence we can teach others about the majestic turtles and other animals and why the're dying.

I am very pleased to say that I played a part in this program. It was something I hope I can take advantage from as many times as possible in the future.

Everything started when I went for first time to one of the meetings...

I wanted to go to the project because I was curious about it, and I like marine life.

I'm happy I went, I'll probably won't be closer to a marine turtle ever in my life again...

I like snorkeling and camping a lot, I've been even planing about getting in scuba next sports period.

Returning to the point, Getting ready for the trip was easy, the hard part was getting my homework done and cleaning up the "pit" my room became after unpacking.

Anyway, we started on wednesday morning and we got to Kiholo bay at noon. We unpacked and set up the camping and experimental site. after having lunch we put the net in the water (across the entrance to the back of the bay).

I was in the second shift (we caught two turtles during it) so that night I went night snorkeling. I was about in the 6-8th place so I didn't get to catch any turtles.

The next day I learned all the data about the turtles while tagging them...

The day passed slowly and with nothing to do but a not too useful study hall. I almost didn't get to use the kayaks (other people rushed them all the time) though this was the first day I could go to the other side of the bay on one.

That night I had the first shift, And we didn't catch any turtles during it (they had shortened the net, so turtles didn't go by where the net was). That night I didn't feel like night snorkeling, so I stayed with the 3rd shift...

The next day passed very fast except at the cleaning porta-podies part...

we examined the turtles from the night before and tagged them. Then we packed everything after having a fast lunch, and returned to school.

This section of the story was the only inconvenience: we had to clean EVERYTHING and that took about an hour.

I think it was a good experience, I learned a lot, and I didn't get to be bored except the second night after dinner...

It is not that I don't like it, but I think that it is enough with going once...

(I mean, I would go again but I wouldn't do so much trouble for going like there was in the first trip of this year.)

Jamie
Boyer

Turtle Tassies

Although we caught fewer turtles on this trip than previous trips, it was anything but an unsuccessful expedition. If anything, we learned that there are far more edible young turtle tasters than Kevin. I appreciated that everyone that wanted to got the chance to catch a turtle.

I was also glad to see a small amount of the results of all our hard work. This combined with the recapture of the hawksbill reassured me that I'm involved in a worthwhile program. Kevin's growth proves Kiholo to be an important location that should be preserved as a natural sea turtle habitat.

The night snorkel was a lot more fun than last time I went. (Perhaps because I got the chance to be in the front where I could actually see something.) All around, I enjoyed the trip and hope to participate again.

George Brandt

1/31/90

Last January I went on my second turtle tagging trip to Kiholo Bay. I found the experience to be enjoyable and educational. I learned new facts about the turtles. For example I learned that the green sea turtles eat red algae. I found the camping part of the trip to be enjoyable also. I have always liked to go camping which was one of my motives for going.

More than for camping I wanted to do something about preserving the environment. Many of my peers repeatedly state that we need to preserve our environment but they say that someone else should do it. This someone else tends to be our parents' or grandparents' generation. But it is up to our generation to do something because we will be the ones who have to live with the problems.

One aspect of the trip that I was particularly fond of was the kayaks. Having the kayaks made the trip very exciting. I enjoyed going kayak surfing. The kayaks also proved to be helpful in transporting the camping equipment from the base to the camping site. It seems that even with six kayaks there were never enough to go around; although it was better than the previous trip with only two. Despite the fact that the kayaks were tied up, it was a very good experience and I look forward to going again.



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NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

November 14, 1990

F/SWC2:GHB:JJA
EARLB-7L.GHB

Dr. Earl Bakken
Medronic, Inc.
7000 Central Avenue, NE
Minneapolis, MN 55432

Dear Earl,

I want to take this opportunity to sincerely thank you for your generous donation to the Hawaii Preparatory Academy for use in our cooperative sea turtle research project at Kiholo Bay. I am most appreciative of your continuing financial support and enthusiastic encouragement of this unique project.

It was a pleasure to see you again in person at Kiholo Bay. I have enclosed one of the group pictures (35 mm slide) taken during your visit.

Sincerely,

George H. Balazs
Zoologist

cc: Monica Traub
Marc Rice





HAWAII PREPARATORY ACADEMY

P.O. BOX 428 • KAMUELA, HAWAII 96743-0428

(808) 885-7321

March 8, 1991

Dear George,

Thanks again for allowing us to work with you and the sea turtles. This project continues to inspire our students and helps to stimulate their interests in science. Kiholo is indeed an ideal location to study the green sea turtle population and I hope, through our joint efforts we will never see it be developed into a park. Marc and I are looking forward to the one day trips in March and June. As soon as you decide on a convenient date, let us know so that we can round up students. We would also like to set up dates for the next school year so that we can put it on the school calendar. To keep the dates at Kiholo six months apart, I would suggest that we pick dates in October and April or September and March. We are all ready preparing for next year by organizing gear and constructing a new net with the webbing you sent over. I believe we have enough lead line and floats to make a new net. We are also repairing the net that we have been using. I have enclosed a copy of a letter I would like to sent into West Hawaii Today publicly thanking the Hind and Bakken families for their support of the program. I did not want to send it in until you had the chance to read it over and give your approval. I wanted to do something else (beside thank you letters) to recognize their continued support. If you feel it is a bad idea, I do understand and perhaps you may have an alternate idea to recognize these families. I look forward to hearing from you soon and thank you once again for allowing us the opportunity to do "real" science with our students.

Mahalo,

Monica M. Truitt

List of students from this trip:

Group Leaders: Farris Bogue, Marina Nogue, Glenn Pogue, Liz Miura, Kevin Krammer, Sara Fuleihan, Bart Wyatt
Marina Beal, Marania House, Sam Berry, Lauren Hewett, Melina Leitel, Ryan Kadota, Hide Kashima, Taylor Easley, Bailey Rohrbach, Eva Anderson, Reed Martic, Cy Spencer, Kath Hannah, Kathryn Adams, Kahea Thronas, Robert Kawasaki, Celeste Ellis, Cassie Quaintance, Lora Lilley, Jamuna Berliner-Caverl, Laurie Meyers

P.S Got your message today. March 21 will be fine, talk to you soon.

Barbara

6/13/90

David Kopra

Box 264

Seaside, Oregon
97138

George,

Sorry to be so late in our
Thanks! - but wanted to include
this T-Shirt - direct from
Astoria, Oregon -

We're on the mainland for
the summer - David's in
Alaska for two months -

Hope we have the pleasure
of crossing trails again - our
2nd is in Kindergarten next
year - as Kris was this year.
His teacher loved the poster
he made for class which
included a dozen photos of
the 'collection of scientific data'.
We suggested a field trip to
Kiholo for the am. for T
week - Turtle Tagging Trip -
so if you get a letter from
Hope 500 - Waimea's HPA
5th Kindergarten - you'll know why -

Best wishes

Barbara Kopra

HAWAII CLIPPING SERVICE
P.O. Box 10242
Honolulu, Hawaii 96816
PHONE: 734-8124
Victoria Cusler Elaine Stroup
HAWAII TRIBUNE HEARLD

MAR 7 1990

Students help to save

Hawaiian sea turtle

Hawaii Preparatory Academy has a mission unique in the high school world, aiding National Marine Fisheries Service scientists in their search for information about the Hawaiian green sea turtle.

Their work could increase the population of this threatened species.

"Students helping scientists" is the brainchild of Dave Gulko, a former HPA science teacher now working toward a Ph.D. at the University of Southern California. Gulko got the idea while assisting George Balazs, NMFS zoologist and turtle expert, during a joint research project between NMFS and college students in the University of Hawaii's Marine Option Program.

Balazs was interested in the green sea turtle, an important

feeding and sleeping area for green turtles which was monitored only sporadically because of budget constraints. HPA students provide the manpower and a generous donation from the late Robert L. Hind Jr., of Kailua-Kona provided the necessary funds for the first year of research. More recently, access to Kiholo and support of the program has been provided by the Kiholo Landowners Association, whose members acquired much of the property from the Hind family in 1988.

Such an opportunity is rare even for college students, much less high school students, according to Balazs and Gulko.

"To learn about the biology of an endangered species up-close is a unique opportunity," Gulko said. "Most people have never seen a green sea turtle, but our

students are gaining the hands-on experience of assisting a real scientist in real field conditions."

Since October 1987, Upper School students, science teachers, and Balazs have made three expeditions each year at Kiholo Bay. During each three-day field study, the student investigators assist Dr. Balazs as he gathers information about turtle growth rates, feeding behavior, and parasite infestation.

During each expedition, now led by Marine Biology instructor Monica Traub, students work day and night in well-defined jobs that test their research skills and tax their endurance. Most night work is done by students designated as water researchers. The turtle tenders help with on-shore work, which includes tagging, recording data, and care of the

captured turtles through the night. Other students serve as camp facilitators, cooks, and photographers (both above and under water).

Taking four-hour shifts through the night, the student scientists watch the capture area and scan the large mesh tangle nets. Once a turtle is snagged in the net, the dive team on duty swings into action to remove it quickly to avoid any possibility of injury.

The turtle is carefully removed from the net, carried to shore in a large inner tube to await data collection. In the morning, each turtle is carefully measured and tagged on a fore-flipper with a corrosion-resistant ID tag. Stomach samples and fecal samples are taken, external parasites are noted and, in some cases, removed.

3/29/91

Aloha George

Thanks for the proceedings and certificate. I'll get the certificate on the wall soon. I am proud to be able to contribute something! I have finished the proceedings, & I now better understand the urgency of the situation - I hope we can stay "clean" over here.

I met with Earl Balpa yesterday at Mauna Lani and he reconfirmed his commitment to our project (as long as it somehow relates to Kiholo). He indicated that he would like to know when we are going to be at Kiholo so that he (& his stepson Dave) could join us - I told him we would be sure to let him know about our next trip. I also tendered an offer to Dave to join us on our next Puako dive - good politics I think!

I am interested ~~to~~ in hearing more about your telemetry experiments - If we could get some money, would you be interested ~~to~~ in monitoring turtle movements at Kiholo? Would it be possible?

I am looking forward to our next Puako trip - Until then, take care!

Thanks for Everything,

Marc



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

July 18, 1990

F/SWC2:FHB

Ms. Monica Traub
Hawaii Preparatory Academy
P. O. Box 428
Kamuela, HI 96743-0428

Dear Monica,

Our June 13-14 exploratory visit to the Puako coastal reef habitat has convinced me that this area would indeed be valuable to cooperatively monitor on a systematic basis, as a second sea turtle study area for our agency and the Hawaii Preparatory Academy. As with our principal cooperative study site at Kiholo Bay, work undertaken at Puako would include both a "research" and an "educational" component. However, the overriding purpose for all activities would be research to uncover information of benefit to the recovery and conservation of threatened and endangered species of sea turtles. With this premise in mind, the following specific objectives can be set forth for the Puako site.

Research Objectives

1. To establish a second pool of tagged sea turtles in the South Kohala/North Kona region to compare individual growth rates, food sources, population size, mortality, and other important life history factors.
2. To assess the Puako sea turtle population for the presence of fibropapilloma disease (tumors).
3. To determine the scope and magnitude of coastal movements of tagged turtles that may occur between Puako and Kiholo Bay.
4. To contribute to the marine biological data base for the "Fishery Management Area" designated at Puako, and the newly established marine laboratory field station of the Hawaii Institute of Marine Biology.



Educational Objectives

1. To provide a supervised field research experience for marine biology students of the Hawaii Preparatory Academy involving sea turtle research techniques conducted by biologists of the National Marine Fisheries Service. All supervision and responsibilities for the well-being of the students involved in this work will rest with the science teachers and other adult employees of the Hawaii Preparatory Academy.

I look forward to working with you on this new project.

Sincerely,

George H. Balazs
Zoologist and Leader,
Marine Turtle Research

cc: Marc Rice



THE MAUNA LANI BAY
Hotel and Bungalows

Daniel K. Akaka, Jr.
Maunalani Bay Hotel & Bungalows
One Maunalani Drive/Kohala Coast, Island of Hawai'i

July 18, 1991

Aloha nui George,

Just a short note to thank you for the book on "Hawaiian Fishponds" by Catherine C. Summers. It's a book that I have been looking for, for the past few years. It will be a great addition to my Hawaiian reference library. Much Mahalo!

Hope your view of the Eclipse last week on Moloka'i was clear and unobstructed. For many that visited us here on the Big Island, including the Bishop Museum people, the morning clouds blocked out the view. My family and I were fortunate enough to have at least a clear view of just the 4 minutes of totality from the lawn of the Eva Parker Woods Cottage. I even did a live interview by phone with the Public Broadcasting Radio in Washington D.C. which aired nationwide that day regarding my reaction of the total eclipse while it was happening.

I found an article in yesterday's West Hawai'i Today newspaper in regards to turtle tagging in Punalu'u. Thought you might want to have the article as it has a nice shot of you with a measuring tape around your neck while the turtle is making its way back to the sea.

Once again, mahalo for the book and please keep in touch.

Aloha Pumehana,
Dan Akaka Jr.

Sea turtles

I would like to thank Robert Hind and Earl Bakken for their support and interest in Hawaii Preparatory Academy's (HPA) Sea Turtle Research Program. They have been instrumental in the success of the program by allowing us access to their property and through funding.

Since 1987, high school students have worked in the field with National Marine Fisheries Service (NMFS) Scientist, George Balazs, capturing, measuring, tagging and studying the threatened Hawaiian Green Sea Turtle, *Chelonia mydas* (honu). This work has taken place at Kiholo Bay in North Kona and has consisted of both active hand captures and the use of carefully tended turtle nets. Students are taught to do both weight and size measurements, diet analysis, tag application, and net making. Such work is part of the long term recovery plan that the National Marine Fisheries Service has instituted for this animal.

Last year, two rare and endangered Hawaiian Hawksbill Sea Turtles (honu'ea) were captured and tagged at this site. The importance of Kiholo Bay as a Sea Turtle habitat inspired students to introduce a resolution to the YMCA Youth Legislature last spring to designate Kiholo as a marine sanctuary. Although this carries no formal legal status, this resolution is now being carefully reviewed by State Rep. Virginia Isbell.

This joint study by HPA and the NMFS represents a unique use of high school students to accomplish field work usually done by university students. We have found that such an experience has a profound effect on many students, giving them a new outlook towards biology and furthering their interest in sci-

ence. Without the help and support of families like the Hind's and Bakken's, unique projects such as this would not be possible at the high school level.

Monica Marie Traub
Science Teacher

Hawaii Preparatory Academy

Poison tanks

I am getting sick and tired of watching papaya workers empty their poison tanks on the roads when they drive home from work.

These are some of the nastiest chemicals.

Mark Henseni
Pahoa

Doctors, compassion

Is there a doctor in the house?

Many years ago this statement would have brought prompt response to the sick, needy or injured. Now in the '90s in Hilo, it brings the reply — "What kind of health insurance do you have, and how do you intend to pay?"

Recently, I was one of the multitudes of Hilo residents who had been stricken with strep throat. Unfortunately for me I had also been cursed with not being sick before, and not having a regular family physician.

Trying to find a decent, honorable doctor was more of a misery than being terribly ill. The morning I woke up with a high fever, swollen throat, excruciating body aches, and abscess on my glands was a nightmare in the daytime. My husband opened the phone book and proceeded to call practically every doctor in the book. With no such luck, we decided to push our weight around, and reveal our State Health Insurance Program card — (SHIP). This is a health program designed by the Governor of Hawaii to help the people who do not have a regular health plan.

Science support

Editor:

I would like to thank Robert Hind and Earl Bakken for their support and interest in Hawaii Preparatory Academy's (HPA) Sea Turtle Research Program. They have been instrumental in the success of the program by allowing us access to their property and through funding.

Since 1987, high school students have worked in the field with National Marine Fisheries Service (NMFS) Scientist, George Balazs, capturing, measuring, tagging and studying the threatened Hawaiian Green Sea Turtle, *Chelonia mydas* (honu). This work has taken place at Kiholo Bay in North Kona and has consisted of both active hand captures and the use of carefully tended turtle nets. Students are taught to do both weight and size measurements, diet analysis, tag application, and net making. Such work is part of the long term recovery plan that the National Marine Fisheries Service has instituted for this animal.

Last year, two rare and endangered Hawaiian Hawksbill sea turtles (honuea) were captured and tagged at this site.

The importance of Kiholo Bay as a sea turtle habitat inspired students to introduce a resolution to the YMCA Youth Legislature last spring to designate Kiholo as a marine sanctuary. Although this carries no formal legal status, this resolution is now being carefully reviewed by state representative Virginia Isbell.

This joint study by HPA and the NMFS represents a unique use of high school students to accomplish field work usually done by university students. We have found that such an experience has a profound effect on many students, giving them a new outlook towards biology and furthering their interest in science. Without the help and support of families like the Hind's and Bakken's, unique projects such as this would not be possible at the high school level.

Monica Marie Traub
Science Teacher

Hawaii Preparatory Academy

Waipio mahalo

Editor:

We would like to thank the people who helped to pick up trash in Waipio Valley on March 23.

The trash pickup was very successful — we removed 37 bags of garbage, along with a refrigerator and two tires.

Unfortunately, after Easter vacation there is just as much trash as there was before the pickup — another clean up will be scheduled soon. If you would like to help take care of your valley, please write to Box 5035, Kukuihaele, HI 96727.

Board of Directors
Waipio Community Association

Lighten up

Editor:

For some pure comic enter-

tainment with thought provoking messages — don't miss "You Can't Take It With You" at the Aloha Theater.

Personally, it will go down as one of my all time favorite productions. Given the size of our community it couldn't have been more perfectly cast or delivered. I've never witnessed a play where characters not involved in the dialogue were very much involved with entertaining the audience.

I have to say that Bill Feenie's critique in Sunday's paper was so harsh that it did nothing to promote community theater here in Kona.

Hey, Bill, lighten up. This island is far removed from Broadway. If you want to write trash like that go to New York where people embrace insensitivity.

Larry Blatt
Kailua-Kona

Important lesson

Editor:

A few weeks ago I wrote to you requesting information about Hawaii. Your responses were overwhelming. Today, I have received 305 postcards and numerous packages, along with all the information, and wonderful gifts including books, pictures, calendar, and video of the Big Island of Hawaii.

I have learned more than just about the geography of Hawaii. I have learned that people like you are truly interested in the youth of our country. Your generosity tells me that you people do really care about the kids in our country.

I have never participated in anything like this before and never realized there were so many wonderful people out there.

Johany Ortega
Leonard School
Lawrence, Mass.

Kona turtle-tagging project is expanded

By Hugh Clark

Advertiser Big Island Bureau

WAIMEA, Hawaii — An environmental project aimed at helping the threatened Hawaiian green sea turtle has been expanded on the Kona coast of the Big Island.

The turtle-tagging program was started four years ago by the National Marine Fisheries Service and students at Hawaii Preparatory Academy at Kiholo Bay in North Kona.

Hawaii Prep officials announced the program has been expanded to a second study site at Puako in South Kohala.

According to Monica Traub, a faculty member who administers the HPA project, the study involves field work usually done at the university level.

George Balazs, a scientist with the federal marine agency, directs students in capturing, measuring, tagging and studying the green sea turtles

to help insure the long-term survival of the species.

The use of the Puako coastal reef was first discussed last summer during an exploratory visit. That successful survey, Traub said, "convinced us that this would be a valuable second study area . . ."

Student SCUBA divers tagged 22 turtles in January and February at the Puako site. Some 110 turtles were tagged at Kiholo in six days.

Fifteen students worked this year on the Kiholo and Puako projects.

With two sites, students are able to compare growth rates, food sources, population size and mortality.

They also look for tumors that are believed to be devastating Hawaii's turtle populations and try to determine the coastal movement of the turtles between the two sites, located about nine miles apart.

Beaches of the Big Island

John R. K. Clark

(69)

Kiholo

*Ka pā wai nei ʻē ka Māmaka,
Ka mākaʻani o Iamāna o Kekaha
Ka lāwa wai o Kiholo / Ka lāʻi
Aʻoia / ʻē ka kōnōhema.*

The Māmaka wind is blowing.
The coconut leaf rustling wind of Kekaha
The serenity of Kiholo calls us
To swim in the gentle sea.

—Pu'u Waiyaka's
Traditional song

Kiholo Bay is a long, wide bay that stretches for 2 miles from Luahinewai Pond at the south to Wainanali'i Pond at the north. Along the backshore are several private homes, many archeological sites, and a long expanse of undeveloped shoreline that offers a wide variety of recreational opportunities. Many fishermen and campers visit the area, particularly on weekends and holidays. They come for swimming, snorkeling, spear fishing, lay-netting, throw-netting, pole fishing, salt gathering, hiking, and occasionally surfing.

Probably the most popular spot at Kiholo is Luahinewai, the huge spring-fed pond located at the southern

end of the bay. Coconut and *nono* surround this beautiful, pristine pond set between a black sand beach and the edge of a rugged lava flow. Luahinewai attracts not only the campers at Kiholo, but also many boaters who anchor off the beach and swim ashore. Apparently, this oasis was just as popular in times past with the Hawaiians. In his book *Raising Chiefs of Hawaii*, Samuel Kamakau, reporting on a journey to Kawahāne by the high chief Keoua and his party, noted that "they left Kailua and went as far as Luahinewai at Kekaha, where they landed the canoes." In another account in *Fragments of Hawaiian History*, John Papa Ii observed, "Early Thursday morning, the ship sailed, pausing at Luahinewai (Kiholo) to bathe and visit that strange water in the lava. After an enjoyable stop at the water with the pretty pebbles, they again sailed."

Three black sand and pebble beaches are located along the southern margin of Kiholo Bay near Luahinewai. All drop quickly to overhead depths, but during normal, calm water periods, swimming is good at all of them. Hazardous conditions occur when high surf and winter storms generate heavy shorebreaks and rip currents. The remaining shoreline to the small embayment where the private houses and fishponds are located is mostly rocky, with many tidepools and scattered pockets of black sand and coral rubble. Along this reach, a large coconut grove, the landmark for the favored surfing break in Kiholo Bay, grows near the water's edge. Surfing conditions on the shallow reef shelf in this part of the bay are generally best early in the morning during the winter months. As the rising sun begins to warm the land, the difference in temperature between the land and the ocean results in an onshore sea breeze that causes choppy, poorly shaped waves.

At the northern end of Kiholo Bay, a shallow sheltered embayment adjoins a large brackish-water lagoon, Wainanali'i Pond. Both the bay and the pond are important feeding and sleeping sites for sea turtles, especially the green sea turtle. The migrant green sea turtle travels regularly from its breeding grounds in French Frigate Shoals in the Northwestern Hawaiian Islands to the eight major islands in the Hawaiian Archipelago. This turtle, as well as all sea turtles and their nests, are protected by state and federal wildlife laws and may not be harassed or harmed in any way.

Other important nearshore feeding and sleeping areas on the Big Island where turtles seek sanctuary are Pelekae in South Kohala and Kaemehame, Punalu'u, and Ka'ali'ali in Ka'u. People who are concerned with protecting these animals from human predators have proposed that turtle habitats such as these be designated as marine sanctuaries for all sea turtles.

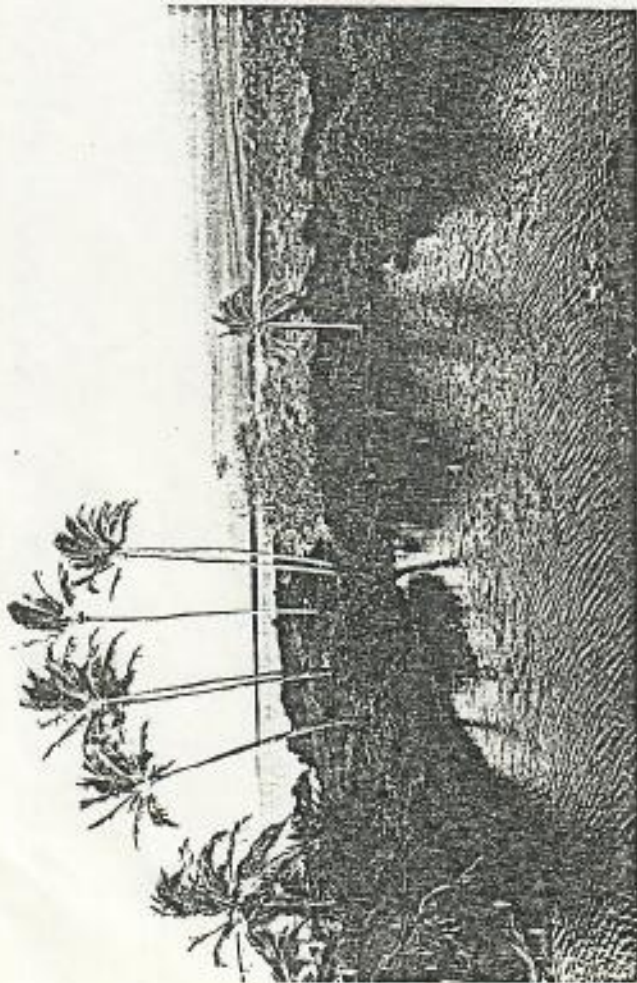
Wainanali'i Pond, the 3-acre lagoon at Kiholo, lies between the edge of the 1859 lava flow from Mauna Loa and a sand and boulder spit approximately a quarter of a mile in length. The flat-bottomed pond, lined with several small coconut palms, averages 10-12 feet deep and opens into Kiholo Bay at its southern end. The pond is an easily recognizable landmark from the Kiholo Bay Lookout on Queen Ka'ahumanu Highway, the aqua-colored pond waters a bright spot of color against the dark lava.

One of the most interesting descriptions of the 1859 lava flow that formed the northern margin of Kiholo Bay is found in the November 9, 1859, edition of the Hawaiian newspaper *Ka Hae Hawai'i*. The original Hawaiian account, by J. H. Kaakua, was translated by Mary Kawena Pukui:

Concerning the Lava Flow

It will be well for me to tell what I have seen concerning the lava flow at Wailea and at Kiholo in North Kona, and you will tell those who have not seen it. The flow began to go seaward in the month of February of this year, from the northwest side of Mauna Loa. It reached Wailea first, and from there it turned south to Wailea, and continued on to the deep sea, smooth lava extending into it to about forty chains or more in length. This new point has been named Lae Hou. There is a long point there called Koera Limu. It is an old point and shorter than Lae Hou. The flow turned on the south side of Wailea and went to Kiholo where it covered the pond. Then it turned again to the west, where a new point is burning now. Lae Hou is a long point, but this one is shorter. The lava has not finished building it, but it is now in the depths of the sea. I think it is about forty or more fathoms deep where it is burning, and from that burning spot it is about fifty fathoms to shore. The sea there is very hot and any fish that comes there dies. This is the news concerning these doings of the volcano.

In the year 1810, the Kiholo pond was built, during the



Kiholo. Luahinewai, a deep, cold freshwater pool on the shore of Kiholo Bay, is a traditional swimming site for travelers passing through the area. A black sand beach separates the pool from the ocean. Lae Hou, "New Point," the long promontory in the distance across the bay, was formed during an eruption of Mauna Loa. When the lava reached the shoreline in 1810, it filled an enormous fishpond that had belonged to Kamehameha I.

reign of Kamehameha I. It was a fishpond in which many of the deep sea fish were kept and in this year, in the reign of Kamehameha IV, Kiholo is closed by the lava. It is now only a heap of lava rocks.

This is another thing. The Protestant church that stood at Kiholo was removed when the lava flow drew near. The people thought that it would be burned down, so they razed it and took the lumber away lest it be destroyed. There is a circle of lava rocks surrounding it and the spot where the church stood remains like a grave. I believe that if the church had not been razed, it would not have been destroyed anyway.

Lae Hou is marked on most maps today as Hou Point. Kamehameha I's fishpond at Kiholo, destroyed by the 1859 lava, was one of the wonders of its day. Missionary William Ellis described the pond during his circle-island journey in 1823:

About four in the afternoon I landed at Kiholo, a straggling village, inhabited principally by fishermen. This village exhibits another monument of the genius of Kamehameha. A small bay, perhaps half a mile wide, runs inland a considerable distance. From one side to the other of this bay, Kamehameha built a strong stone wall, six feet high in some places, and twenty feet wide, by which he had an excellent fish-pond, not less than two miles in circumference. It was well stocked with fish and water fowl were seen swimming on its surface.

Though the lava destroyed the immense fishpond and dramatically altered the entire shoreline, Kiholo continued to provide a haven for a small community of fishermen who relocated their homes to an untouched point of the bay south of the flow. During the 1890s, this area developed into a commercial landing after Robert Hind and Eben Low acquired the lease for Pu'u Wa'awa'a Ranch from the Republic of Hawaii. Located directly *ma'awa* of the bay, the ranch used Kiholo as its cattle-shipping point. Living accommodations were built in the area where the private homes are located today, and this site served also as a base of operations on the shoreline. The cattle were herded to Shipping Pen Beach, the black sand beach before Lushinewai, where they were tied alongside lighters and rowed to the steamers waiting offshore. Pu'u Wa'awa'a Ranch discontinued use of

this landing about 1935 when improved roads made it possible to truck the cattle to the pier in Kailua.

Commercial activity continued on a smaller scale at Kiholo with the annual harvesting of *awa* and *mui* from the comparatively small fishponds left in the wake of the 1859 lava flow. Pigs were raised, and small herds of cattle were fattened on *aiwae* beans. The tsunami of 1960, however, ended all commercial operations at Kiholo, wiping out everything there in its path. Since then, a few of the private shoreline homes have been rebuilt. The part of the bay fronting the homes is a poor swimming beach, being very shallow and rocky. Copious fresh water intrusion is encountered in the nearby ponds and lagoon, as well as in many parts of the bay. As a result, a surface layer of fresh water, often several degrees colder than the bottom water, commonly floats over much of Kiholo Bay, especially near Hou Point.



Balazs

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

March 15, 1990

F/SWC2:GHB

6113
Graduate Division Admissions Office
University of Hawaii at Manoa
2540 Maile Way, Spalding Hall 354
Honolulu, HI 96822

Dear Madam/Sir:

I am writing to offer my highest recommendation for the admission of David Gulko to your graduate program. I have known David for six years and have worked closely with him in a professional capacity for two years, 1987-89. During this period, he served as my counterpart for an important research project aimed at gathering baseline data on the threatened Hawaiian green turtle in nearshore foraging habitats. I have been highly impressed with David's creativity, background knowledge, and enthusiasm in matters relating to field research. He also has an outstanding ability to relate to high school students in nontraditional educational settings. These various talents, in combination, yield a unique individual who would benefit substantially and will ultimately contribute greatly, as the result of accomplishing a graduate degree.

If you have any questions regarding my recommendation of David Gulko, please feel free to telephone me during office hours at (808) 943-1221.

Sincerely,

George H. Balazs
Zoologist
Leader, Hawaiian Sea Turtle
Recovery Team



Maui

To: George Belaz

From: Toni Withington
ph. 889-5553

HUI LIHIKAI
Citizens for Protection of
the North Kohala Coastline
P.O. Box 76
Maui, HI 96719

Subject:

Kiholo Bay access
+ Kohala Water Transmission System

DLM and Fish and Wildlife officers use this same key and have priority over the public. The reality of how many keys exist and who has use of them appears to be different from the official policy.

DLM usually steers people to use the sand beach between the Bakken and Lynn residences. Limited and unmaintained parking is available and no barriers prohibit vehicles from driving out onto the beach and rocky shoreline. Unpermitted rock and dead kiawe barriers reaching from the vegetation into the ocean have been constructed, presumably to keep the 4WD traffic off the beach fronting the houses. However the physical barriers also act as a deterrent to pedestrian shoreline traffic, sending the message "Keep Out."

The Conservation District permits for the residences also include provisions for establishing and maintaining public access easement walkways from the roadway to the ocean. While some have been left open, none are signed. Some also lack parking off the narrow road. Hand painted signs for "shoreline access" seem to indicate that the only place the public can go is the beach between the Bakken and Lynn residences.

Public pedestrian access to the beach along the inlet and the lagoon is unclear and discouraged by existing signs.

It seems clear that all of the individuals and groups that have participated in the discussion of access so far prefer to participate in an access policy that will not impact negatively the delicate biological balance of the bay. No one at this point is pushing for unlimited public access or for advancement of park plans by the State or County.

Kiholo is a major habitat for two varieties of endangered sea turtles. Poaching has taken place there. Even though it appears that the poaching is done by people arriving by sea, the State still has an interest in posting information about the turtles and enforcement efforts for the public using the area.

Finally, with federal and state interest in the identifying of the Ala Kahakai, the ancient and to-be-reconstructed shoreline trail spanning all of West Hawaii, all interested users and land owners in Kiholo should begin to focus their concerns and recommendations for the location of the trail.

Hi, George, 95 Keonani 1/25/5-

On 1/23, 1 client was able to
read tags - LF - R519 at -
RF - R520

(where else ???) Turtle Towers!!
Action (or lack of it!!) has been
excellent there. Happy New Year!

Sham - Recover here
TDPs. OKAOKO Lisa
perot and
return to me
please

Diving with a Difference - We Care



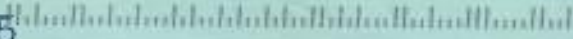
**DIVE
MAKAI**
CHARTERS



POST OFFICE BOX 2955
KAILUA-KONA, HAWAII 96745

George Balacz
National Marine Fisheries
2570 Dole Street
Honolulu
HI 96822

(808) 329-2025



Laurie Meyer

ENC 1102, section 183

February 20, 1995

Sea Turtle Tagging And Monitoring: What I Know And Does It Help?

My interest in Green Sea turtles was aroused while I went to school at Hawaii Preparatory Academy (HPA). Our school was joined in a turtle tagging project with the U.S. Marine and Fisheries Service. About twice a year, we would gather all our camping equipment, kayaks, and enough food to last about thirty people for four days ^{and drive} to a private beach we were allowed to work on. Early in the morning we would set all our equipment and ourselves in the two old army trucks HPA had purchased for these purposes (We often went camping and these were about the only cars that ~~could~~ couldn't get too damaged driving over rugged lava rock). After a thirty minute highway ride and after passing our landmark, the twin hills, we ~~could~~ would pull off to the infamous lava rock and dirt road, if it can be called that. This "road" is about two miles long and leads to where we will be setting camp, but due to the condition of our bumpy path, our trek would take us about an hour.

Finally we would set camp at our usual spot and well away from the

coconut trees. We had two camps, the one where we all slept and the one where we set up the tagging station. This area had a small bay and an inlet. The tagging station was on the right side of the bay next to the inlet and the camp was on the left. We were only able to drive as far as our camp, the equipment for the tagging station had to be transported there by kayaks or by walking^{walking?} on the hot sand along the beach. The tagging station consisted of a tarp, chairs, a table, and a temporary pen. We communicated between camps via walkie-talkies.

As soon as everything was set up, we ate lunch. One would believe that camp food is horrible, but amazingly enough the cafeteria packed all sorts of good food. We next waited until about six when our shifts would begin.

Each shift lasted an hour. Contrary to popular belief, the water was cold so we did have to wear wetsuits. After all it was winter. We would run a net across the mouth of the inlet and then watched the bobs while we waited. As soon as one went down, about three of us would go to the rescue. One of us had an inner tube with a board tied beneath it. This would serve to transport the turtle to shore.

As soon as we reached the turtle which by now would be agitated, we would work fast to untangle it from the net and bring it to the surface. It was then placed in the tube on its back. This would impede its

movement but didn't hurt it. You truly wouldn't want to deal with a turtle that's trying to escape while you're swimming to shore, especially since it has a claw on each flipper and boy can they bite! ^{!!} The turtles were placed still on their backs in the pen until morning when they would be tagged.

After the last shift we would follow the head of the program, Dr. George Balasz, along the edge of the inlet on a night dive. We would carry the tubes, flashlights, and made sure to wear a mask to protect ^{our} your eyes from jumping pencil fish that were attracted to the light. As soon as we saw a turtle, one of us was sent to dive after it. These were joined with the rest of the group in the pen. After the dive most of us would romp around in the water. The bioluminescence is something I will never forget. These little pieces of algae made the dark water alive with glitter, and splashing it around sent sparkles into the air. It was magnificent.

how
fabulous

The next day we were awakened very early, and after breakfast we were scheduled in shifts to help Dr. Balasz with the tagging. Most of the turtles we caught were green sea turtles, but we occasionally caught a hawksbill turtle. Many of the turtles caught already had tags. Their numbers were recorded in the logbook along with their weight and measurements so ^{the} their growth could be monitored. The same was

done to the untagged turtles after a tag was placed at the base of their right flipper. Some of the larger turtles couldn't be weighed with the hand scale since they weighed about one hundred pounds, so their weight was approximated. These were few. Even though they were larger than the other turtles that weighed between about twelve and forty pounds none of the turtles we caught had reached sexual maturity. On occasion one of the turtle's crop would be pumped to see what was in their diet. It consisted mostly of algae.

After tagging, measuring, and weighing, the turtle's shell was marked with a temporary yellow paint so that it wouldn't be caught again and then it was released. That evening the net was placed again and one more dive was scheduled. The next day we would tag the new turtles and release them.

After all our work with the turtles was finished we began dismantling the tagging station. Sometimes we would leave that same day and other times we would leave early the next morning. As you can imagine, everybody would rather spend one more night to relax and enjoy the beach. This was true except for on one occasion when it rained all night and the tents were floating, forcing everybody to sleep in the trucks. After this incident everybody was ready to go home.

I could never forget the experiences I had with this project, but I

can't help but admit that it has raised many questions for me. While I learned more than I ever knew about Green Sea Turtles from Dr. Balasz and this project, I feel that there is much more to learn that I don't know and want to know. For example, what are the habits of these turtles? How exactly are tagging and monitoring them helping? Is the threat against them still increasing or is it decreasing now? Hopefully I will be able to find some answers that will help me understand these creatures more. →

The enclosed paper was given to me
by an English Composition instructor at the
University of North Florida in Jacksonville.
The paper is a preliminary draft written
by a student from Hawaii who
did some work with your tagging
project.

I thought you might enjoy reading
about her perspective of the project.

Mary Duffy
Amelia Island via Turtle Watch, Inc.

Date: Thu, 20 Jul 1995 10:49:37 -1000
From: Marc Rice <mrice@hpa.edu>
To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
Subject: Re: Little Leathery

George,

glad the little rascal has returned. We are looking forward to meeting it. We are not hard to please when it comes to food so don't concern yourself overly.

Laura and I attended the advisory committee meeting on the Kiholo Issue last night. There were only 10 people there and all were in favor of the net ban. The only questions that came up from the public was if the FMA would ban throw netting. David Tarnas said that there was never any intension of limiting anything except the barrier type gill net. I spoke briefly about our work at Kiholo and mentioned that the data on the Kiholo population resides in your data base and that you would probably be willing to provide information about the estimated size of the population, etc. As I know that you are not able to really participate in this type of political process, I will (with your permission) speak for the HPA group and provide what information I can in support of the proposal. This type of support will not be necessary for some time yet (the wheels turn slowly) and we will certainly have time to discuss any concerns and ideas you have. All in all, the meeting went well and I think there will be progress made on this in the future.

I will fax you the few documents that were distributed last night. The testimony by Chairperson of the Board of Land and Natural Resources was interesting. I have circled the area where I think that we could respond- let me know what your thoughts are.

Please rest assured that I am very circumspect in all I say and I will be very careful not to say anything inaccurate or damaging to our project.

I will go and fax these documents to you now. I know you are on vacation for a day (Happy Anniversary) so I would expect to hear from you soon. We can simply meet you at your lab tomorrow morning if you want and go from there....

Marc

August 5, 1987

F/SIC2/GBB

Mr. Mark Rice
Hawaii Preparatory Academy
P. O. Box 428
Kamuela, HI 96743-0428

Dear Mark,

It's been an incredibly busy summer for me and I'm just now starting to think more about our work at Kinohi this coming school year. I spoke with David by telephone a few weeks ago concerning a 1- or 2-day planning visit to Kamuela/Kinohi that I should make later this month. I'll be at Johnston Island all next week, so some financial arrangements for travel need to be made as soon as possible.

Since I will be traveling under government travel orders, I can purchase interisland air tickets at a discounted rate. However, this will have to be done on a charge card that is billed directly to me at my home address, since there are no travel funds for this purpose in our laboratory's budget. I propose that I buy six round-trip tickets to have available for the project. Will you be able to reimburse me within a short time after receiving the receipt? Other travel expenses such as car rental, food, and possible lodging can be reimbursed on a trip-by-trip basis.

I'll telephone you right after I return from Johnston Island.

Sincerely,

George H. Balazs
Zoologist

David Guiko
(same address)

GBB:vi

bc: Balazs
HL

Balazs

8/22/93

Dear George,

It was kind of you to give me a call the other night and it was fun to talk a bit about my trip. As I indicated to you, the whole trip was a success as far as I was concerned. I found the ship's officers and crew very helpful and friendly and the scientific party was equally so.

The time spent on Necker went all too quickly. It is a marvelous island and I felt very privileged to be able to be there. The work with the Monk Seals was very interesting, and I certainly feel that I have a better feel for them now. I was not terribly good at doing the scar cards at first but I started to get the hang of it as the days passed. We spent the majority of our time doing the patrols and censuses of the monk seals but whenever there were basking turtles we endeavored to measure and tag them. Our goal was to tag 10 turtles but we simply ran out of time and turtles. I was surprised by the small number of turtles that I was able to observe in Shark's Bay. On several occasions I made timed counts of the bay and had a maximum 15 min. count of 2 turtles. There was only one occasion where I observed a small turtle feeding in the immediate vicinity of the west end.

I certainly hope that I have an opportunity to participate in another similar expedition some time in the future. I think I will ask Michele to send me the cruise schedule so that I can contact the chief scientists and volunteer as a go-fer. I am also still interested in putting together some sort of a trip to Tahiti!

On a more current note, I spoke with Gene Nitta yesterday about the proposed film production at Kiholo. It seems that the lady is proposing that a floating set some 200' in length be anchored in the bay south of Earl's residence. As I am sure you indicated to Gene, there is no way that one could safely anchor a 200' vessel in that area and not do substantial damage to the environment. Gene did not feel that there was much that could be done to stop this project except appeal to the better judgement of the promoters. It all seems like some sort of bad dream. Perhaps nothing will come of it!

We are all set to do a Mauna Lani trip on the 22,23 or 24 of Sept. if you are still interested. Also, if you have any idea of your schedule over the next couple of months, it would be great if we could plan a three day trip to Kiholo. While we are at it, perhaps we could discuss the possibilities for Puako and Mauna Lani.

Would it be possible for you to transfer the data you receive from your satellite data to us on a real time basis so that students could track the turtles while they migrate back to their home pastures? The data would allow the students to learn something about navigation (lat and long), turtle life history, monitoring and computer technology, etc. How would you feel about sharing this information? Let me know.

I will call you after you return. Hope your trip was successful. Oh, yes, thanks for the turd articles!!!!!! Very interesting. I am actually going to use some of the information on the opening day of my marine biology class- Night of the Thousand Turds!! Really!!!

Again, thanks for all you did to help me get on the Necker trip and for having Russ take the time to show me around.

Sincerely,

A handwritten signature in black ink, appearing to be the name 'Mac' with a stylized flourish at the end.

3/89

Mr. Balans,

Thank you for the literature on turtles. I haven't gotten through all of it yet, but I'm already fascinated! I appreciate you taking time out to send me the literature and I appreciate the fact that you remembered. Turtle tagging has been such a wonderful experience for me. Every time I go I come away more convinced of making my career marine biology. I respect you and the fact that you have faith in me and the other students that participated to assist you as intelligent, capable human beings. Thank you for the experience and the knowledge.

Sincerely
Shannon Ruste

Student at
Hawaii Preparatory Academy

2/90

Dear George,

Thanks for the notes you've sent. Marc had suggested the following, please look over these suggestion and get back to us, as to what your thoughts are, our goal as a school is to exposed these students to scientific research during our three days at Kiholo. Because of the number of students we take down, not all the students are involved at times. Again we want the three days downs there to be as educational as possible, the kids are very excited and interested in the project, but at times not all the students are on task. Again these are just suggestions and we would appreciate your feedback.

Mahalo,
Monica

There were a couple of things that I wanted to mention to you for consideration next time.

1. The way we did the snorkel dive was much better than in the past. The lead student, after making a capture, went to the back of the line and the second student moved up to first. This gave everyone a chance to actively participate in the hand capturing. Lets make sure George continues this practice- I think he liked it also.
2. George Watson commented on something that I had noticed long ago. Namely, the data gathering procedure is long and drawn out and keeps the kids standing around with nothing to do- it is no wonder that they become noisy and inattentive. I suggest that small groups of students (however many are needed to actively gather data with Balaz) be assigned to work on portions of the catch. After two or three turtles, another team moves in. Perhaps the recorder can remain to ensure continuity. The other teams could be used, especially during the last day, to begin picking up materials and packing for the return trip. The first day, the teams could be involved in a pond survey (salinity, visibility, types of fish, water movement, bathymetry, etc.)
3. I suggest that the next trip involve no more than three (team leaders) veterans. Earlier advertisement and publicity should net us enough new students. I had a feeling that a few of the vets were getting a little jaded--

The above are just some thoughts. I think you did another good job of organizing and running the trip-- congratulations and thanks.

Marc

2/90

1/3/90

Dear George:

Season's greetings, I hope the new year finds your family and you doing well and in good health. I wanted to thank you for the update on the shark attack listing, I greatly appreciate any and all information you can send me on such occurrences along with updates on the sea turtles and monk seals in Hawaii. If I end up staying here in LA to finish my PhD, I've decided to work on a marine natural history text for hawaiian waters; any papers, articles or books you may know of would be greatly appreciated.

I've enclosed a small turtle replica that I found in my wonderings 'cause I thought it would be great for you to take with you when you give talks on turtle anatomy or when you need to explain to people where to look on the turtle for tags, parasites, etc (I got one for myself to use when I'm teaching but I haven't figured out a way to hook a tag on it yet...). If by chance you feel that you can't use it please pass it on to HPA. I've also enclosed a copy of a newspaper clipping that I'm sure you can tie in with some of your slide shows.

It's really interesting being a student after teaching for a number of years, and USC is actually a very different environment from the peace and solitude of the Big Island. A whole semester has gone by and I still haven't narrowed down my thesis possibilities. In January I'm going to India and diving in the Maldives to do some collecting with a Dr. Bakus, hopefully I'll get some ideas. If that really works out there's the possibility of doing some work in Papua, New Guinea in the summer. To be honest though, I really don't like it here - the crime, smog, traffic and the fact that USC is very molecular and biochemistry-oriented in terms of PhD's have been making it very difficult. I'm going to try another semester but I'm also pretty serious about trying to transfer into UH where I can do more work on tropical marine ecology. **If you have some time and could write me a letter of reference I would greatly appreciate it.**

Anyways, I hope things are going well with the HPA/NMFS STRP program and please let me know about any support that I might be able to offer (other than monetary...). Hope to hear from you soon!

Sincerely,

A handwritten signature in blue ink that reads "DAVE". The signature is stylized with a long horizontal stroke at the beginning and a large, sweeping flourish at the end.

In the not too distant future, I hope to have our work with the Hawaii Preparatory Academy students and teachers expanded to include one or more other study sites of likely high importance to Hawaiian sea turtles. This will, of course, be dependent upon student interest, available class time for fieldwork, and financial and other necessary resources to undertake the studies.

If you have any additional questions about the research aspects of our project, please feel free to call me here at my office (808-943-1240). Again, thank you for your interest.

Sincerely,

George H. Balazs
Zoologist and Leader, Hawaiian
Sea Turtle Recovery Team

cc: Marc Rice
Monica Traub



32412
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

February 15, 1989

F/SWC2:GHB

Mr. Brick Stange
HCR 1 SR
Box 483, MKB
Kamuela, HI 96743

Dear Mr. Stange

Thank you for your recent inquiry to the Hawaii Preparatory Academy regarding our cooperative sea turtle research and student education program presently focused at Kiholo Bay, North Kona, on the Island of Hawaii. The enclosed literature will provide you with some background information on Hawaiian sea turtles in general, as well as specific data for green turtles, Chelonia mydas, resident to Kiholo Bay. I should also mention that during the past few months we have determined that this site also constitutes prime marine habitat for the rare and endangered hawksbill turtle, Eretmochelys imbricata.

The objectives of our research at Kiholo Bay are to determine: (1) the approximate number of turtles and their size-classes resident to this location; (2) the types of life-support activities undertaken by the turtles within the habitat limits of the bay; (3) the food sources utilized; (4) growth rates and estimated ages at sexual maturity; (5) adverse impacts to the turtles, both from humans (i.e., fishing nets) and from natural factors (i.e., disease, shark predation); and (6) the recruitment rates of juveniles to the population and migrations/movements which may occur after residency has been established. Our overall goal, inherent in the above objectives, is the careful and complete documentation that this particular habitat is indeed essential to a large aggregation of sea turtles. Under my supervision, students of the Hawaii Preparatory Academy are directly involved in the fieldwork to gather much of the above data.



Dear George,

I apologize for not writing sooner, with the holidays things got pretty hectic. I wanted to thank you for sending the graphs for Amanda and for allowing us to attend the workshop. We both found it quite fascinating. I was disappointed that I missed your presentation and the afternoon session. Unfortunately I needed to spend time in the library, getting research material for my students. Our library just is not adequate enough for our students needs, especially when it comes to science projects. George still hasn't given me the labels to mail your boxes, he's been away this vacation, so on Monday I'll track him down and get those boxes in the mail. Are we still on for January 16th? I'll call next week to confirm the Puako trip and set up the next date for Kiholo. (Feb.?)

Someone else is interested in supporting the program. Mr. Stange has been in touch with the school and would like to know more about the project. I'll be sending him our objectives for the Kiholo and Puako sites, along with a little background information. I thought we could invite him to Kiholo on our next trip, so you could meet with him and talk about the project and future plans.

Again I apologize for not getting back to you. I'll be talking to you soon, thanks again sending the graphs and allowing us to attend the workshop.

Aloha, Monica

George,

I'm trying to get you Hawaiian Airline Tickets. Because we get Aloha tickets much cheaper - my request has to get approved. I'm sending you 1 Aloha Coupon for now, so that you'll have a ticket to get over here on the 16th. Next week I'll send either another Aloha ticket or the Hawaiian coupons if it gets approved.

I'll be in touch



This is Stange's address & number
if you would like to contact him:

Mr. AH Stange Jr.
ACR-1, SR-Box 483
Mauna Kea Fairways South
Kamuela, 96743

EMB

May 17, 1989 F/SWC2:GHB

Ms. Eva Anderson
Hawaii Preparatory Academy
P.O. Box 428
Kamuela, HI 96743-0428

Dear Eva,

This letter is to offer my formal congratulations for the excellent job you did during our recent 3-day research expedition to capture and tag green turtles, Chelonia mydas, at Kiholo Bay. I appreciate the interest, enthusiasm and cooperative spirit you displayed as a student participant in this important work.

As you know, our cooperative sea turtle project with the Hawaii Preparatory Academy is the only one of its kind offering direct "hands-on" research experience to students at the high school level. The success of this unique program continues to be demonstrated as an effective way for students to gain field experience, while at the same time collect critical data on a threatened species at a reduced financial cost to the government.

Again, thank you for your involvement and contribution of time and talent. I wish you well in all your future endeavors.

Sincerely,

George H. Balazs
Zoologist and Leader,
Hawaiian Sea Turtle Recovery Team

Same letter to:

Kim Baxter
David Bitonti
Cari Bryson
Matt Diffley
Hidetaro Kashima
Cal McDonald
Bart Wyatt

Lisa Berthoud
Farris Bogue
Jacob Cordeiro
Malia Fann
Kevin Kramer
Liz Miura




8 July, '95

packet of
sea turtles.

come across you
Kahaluu beach
weeks vacationing
on Kauai, then
and. I had my
sea turtles. I've
since I was a

little girl. I was lucky enough to see 2 heads
poke up out of the water while we rafted
at Kauai, but they dove down so fast, I
couldn't get a picture. Still, I was thrilled
that I at least got a glimpse. We happened
on your group accidentally (we were looking
for the seafood buffet!) on our very last
day of vacation. I can't tell you how
excited I was when the lifeguard



8 July, '95

Dear Mr. Balazs,

Thank you so much for the packet of information you sent me about sea turtles.

It was such a treat to come across you and your research group at Kaha'lu'i beach in June. We had spent 2 weeks vacationing in the islands; one week on Kauai, then one week on the Big Island. I had my heart set on seeing some sea turtles. I've been fascinated by them since I was a little girl. I was lucky enough to see 2 heads poke up out of the water while we rafted at Kauai, but they dove down so fast, I couldn't get a picture. Still, I was thrilled that I at least got a glimpse. We happened on your group accidentally (we were looking for the seafood buffet!) on our very last day of vacation. I can't tell you how excited I was when the lifeguard



told me that you were actually bringing the turtles in for tagging. Tears came to my eyes when I got my first good look. It probably sounds a bit over-reactive, but I'm from the heartland. We just don't grow anything like that in Indiana! I really appreciated that no one seemed to mind when I got close to watch and take pictures. And thanks for taking a minute to talk with me afterwards. Later in the evening, we went back to the beach to watch the turtles feed, as you suggested.

We spent a lot of money trying to see and do as much as we could on our visit, but my encounter with the turtles is always the first thing I tell people about. Nothing else could have made my vacation complete. It really was the "icing", so to speak.





Thanks for helping to make a
Wonderful vacation even more special!

Sincerely,

Vicki Knisley

P.S. Here's a photo of your "crew"!

Vicki Knisley
3105 Courthouse Drive #1C
West Lafayette, Indiana
47906

March 10, 1989 F/SWCZ:GHB

Mr. Robert Hind III
P.O. Box 750
Kauela, HI 96743

Dear Mr. Hind:

I am writing to thank you for allowing our joint HPA/HMPS turtle research team to camp on your property at Kinoho during our recent field study. We were all very pleased to find that the new site is actually superior in many ways to the previous camping area. Our FM two-way radios easily spanned the distance to the area where we monitor the net. In addition, the hazard of falling coconuts was virtually nonexistent at the new site.

As the research counterpart for this project, I want to again express appreciation for your support and willingness to periodically allow us access to Kinoho Bay.

Sincerely,

George H. Balass
Zoologist

cc: Mark Rice
David Gulko
GHB
HL



HAWAII PREPARATORY ACADEMY

P.O. BOX 428 • KAMUELA, HAWAII 96743-0428
(808) 885-7321

FAX TRANSMITTAL

DATE: 5/6/97

TIME: 2045 hrs.

FROM: Marc R. Pici
FAX Number (808) 885-8203

DEPT: _____

TO: George Balazs

COMPANY/SCHOOL: _____

CITY, STATE: _____

FAX NUMBER: 808-943 1290

NUMBER OF PAGES (INCLUDING COVER SHEET) TRANSMITTED: _____

MESSAGE: Here are my first 2 attempts at surface counts at Kaunihā. I don't know how the maps will come through, so let me know if you can read them.

Best,
Marc

Please advise if there are any problems with transmission: Tel. No. (808) 885-7321. Ask for Administration Office.

George,

Here are a couple of attempts to do some surface counting at Kawaihae. The counts were each for 30 minute periods. Let me know what additional information we need on this kind of census, and I will make the necessary changes in procedure.

Best,

Marc

**Turtle Surface Count
Kawaihae, Hawaii**

Date: 5/4/97

Time: 1130 hrs.

Location: 1/2 way between outer breakwater and Army Corps cement sign (Figure 1).

Weather: 5% cloud cover, wind onshore at 10 kts. Seas choppy, tide .75 feet and rising.

There were 13 turtles observed on the surface during the 30 min. observation period from 1130 hrs. to 1200 hrs (Figure 1). The surface was choppy, and it was somewhat difficult to see the turtles. binoculars were used effectively, however. There did not seem to be a large number of animals in the area.

Date: 5/6/97

Time: 1625 hrs.

Location: 2/3 way between outer breakwater and Army Corps cement sign (Figure 2).

Weather: 5% cloud cover, wind onshore at 10 kts. Seas choppy, tide high at 2.0 feet.

There were 53 turtles observed on the surface during the 30 minute observation period from 1625 hrs. to 1655 hours (Figure 2). The area to the south of the observation position could not be observed readily because of the sun's reflection off of the water. The activity during this observation period was much greater than on 5/4/97. At times there were as many as 5 turtles on the surface at one time, and observation and recording of data was somewhat rushed. I am sure, because of the chop and the rushed circumstances, that I missed a few surfacings. The surfacing animals seemed to be concentrated in the areas where transect # 2 occurred on 4/29/97.

We will be doing another transect tomorrow afternoon and we will be able to see if we get counts that are similar to what we saw previously.

Mr. Balazs

Well, here it is. Sorry I took so long,
and hope you still want it.

I'm going to miss Kibolo.

Thanks for getting me out of class!

Kahea

Kahea Thomas
P.O. Box 2837
Kamuela, Hi
96743

The waves rolled down the channel, slowly turning to foam and disappearing into the little cave at the end. The lava peninsula to the right of the protected little cove faced the full force of the wind and waves, sending a drenching salt spray high into the air.

When the wave brought the water up to the rock I launched myself into the surge. The ocean engulfed me, changing me to one of its creatures, calm, and graceful. The light poured through from the angry surface, projecting a constantly changing kaleidoscope on the coral landscape below. A huge school of Manini was moving back and forth together, picking at the reef. Something big had quickly disappeared out into open water.

As I sunk to the bottom, I took a breath of dry compressed air, slowly inhaling and pausing a few seconds before sending a long cloud of bubbles to the surface. I glanced at my pressure gauge and headed around a corner, out of the choppy water of the cove and into the breaking waves of the reef.

Immediately around the corner, a turtle glided down from the surface after getting a breath of air. Watching me intently, it drifted down to my depth. We moved in the surge together, back and forth as the waves hit the coral wall. I could have reached out and touched the green patterned algae covered shell, but I didn't. The current carried us slowly away from the little cove into deeper water. With one fluid stroke of its front flippers, the turtle smoothly disappeared into the clear deep blue-green. I wanted to follow, but knew I must return to the gravity enslaved, hot wasted world above the surface.

The above was an experience I had at the beginning of high school when I started diving. Since then I have participated in the Turtle Tagging program of the National Marine Fisheries Service. This program is important to me because it looks for ways to help the several species of turtles living in Hawaiian waters. As Hawaii becomes more developed, this program will become more important in insuring the survival of the Hawksbill and Green sea turtle in Hawaiian waters.

4. Describe your activities related to participation in science fairs or projects related to science, experiments, or some kind of hands-on explorations. What did you learn from the experience about the subject, and about yourself?

I have been taking things apart, and trying to figure out how they work for as long as I remember. Even if I don't understand everything, I have become quite good at putting things back together again.

My eighth grade science project was a solar powered flashlight. The plan was for the bulb to shine on the solar cells which would then power the bulb. Although perpetual motion still eludes me, the solar car has been a big part of my high school life. I go to the garage every day after school to work on the solar car, or other projects such as installing a stereo in a friend's car, or fixing rust holes in mine, usually something involving electronics or epoxy. I like to make things work, and don't mind spending the time it takes.

I have enjoyed participating in the turtle tagging program since my freshman year, especially the sonic tracking we have been doing lately in Kiholo Bay. Four turtles were caught, and a cigar-shaped tag about three inches long was attached to the shell of each turtle. Each tag beeps a code over and over again at an inaudible pitch. A hydrophone can determine the direction of the signal, and by counting the beeps the turtle can be identified. So far we have determined that the turtles generally sleep through the night with out moving. I will miss the turtle tagging program.

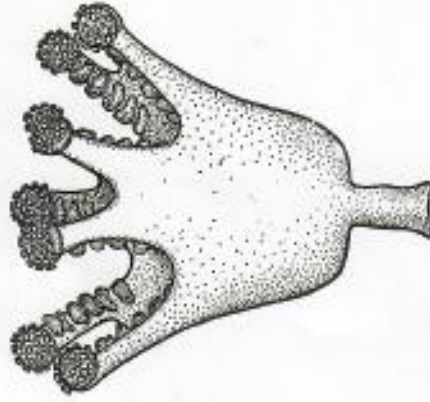


FIGURE 15.—A stalked medusa, *Kishinouyea pacifica*.

SUBCLASS ALCYONARIA

Alcyonarians vary greatly in size and general appearance, but all have eight branched (pinnate) tentacles and eight mesenteries. In some forms minute supporting structures (spicules) are embedded in the tissues.

Only one alcyonarian, *Sarcothelia edmondsoni* Verrill, has been reported from the shallow waters of Hawaii. The colony consists of a soft incrusting base, from which arise densely crowded polyps about 8 mm. high when expanded (fig. 16, *a*). There are no spicules in this species. Its bright purple or lilac color will help to identify it. At Maili Point near Nanakuli, Oahu, it has been found near shore growing over the surface of stones in patches 4 or 5 inches across. It also occurs on Waikiki reef, Oahu, and is plentiful at Keaunohu and Kahaui on the Kona coast of Hawaii.

Many other alcyonarians grow in deep water about the islands, but are unknown on the reefs. Sixty-eight species were dredged in this vicinity by the *Albatross* in 1902. Gorgonians, which are alcyonarians with branched skeletons of calcareous or horny material covered by a "crust" of fused spicules supporting the polyps, are sometimes pulled up from deep water on the lines of fishermen. Sea fans with the branches fused and growing in one plane are typical gorgonians. Sea pens are other examples of deep-water alcyonarians. To this subclass, but not present in Hawaii, also belong the "organ-pipe" coral and the red or "precious" coral.

SUBCLASS ZOANTHARIA

Representatives of this group include sea-anemone forms, true sea anemones, stony corals, and antipatharians. The polyps of all have unbranched, hollow tentacles, and in most forms the mesenteries are numerous.

Key to Orders of Subclass

- A. Zoantharia without skeletons; solitary or colonial forms.
 - B. Mesenteries and tentacles few, solitary..... Edwardiidae.
 - BB. Mesenteries and tentacles numerous.
 - C. Usually solitary.
 - D. Not occupying tubes, attached by basal disk..... Actiniaria.
 - DD. Occupying tubes and burrowing in sand..... Cerianthidae.
 - CC. Usually colonial..... Zoanthidae.
 - AA. Zoantharia developing skeletons.
 - B. Skeleton calcareous..... Madreporaria.
 - BB. Skeleton horny..... Antipathidae.

ORDER EDWARDSIIDEA

The order includes primitive Zoantharia resembling sea anemones.

FAMILY EDWARDSIIDAE

Soft-bodied, cylindrical animals found on the surface of the sand or under stones in shallow water represent this family. They resemble minute sea anemones, but are unattached to a support. In organization they are comparatively simple, having as few as eight well-developed mesenteries, with additional rudimentary ones, and in some species but sixteen tentacles. They are in the habit of partially concealing themselves with a coating of fine sand.

One species, *Edwardiella carneola* Verrill (fig. 16, *b*), has been collected at Nawiliwili, Kauai. It has 24 tentacles and is less than 1 inch long. An undetermined species with 16 tentacles has been observed on the reefs of Oahu. It expands to a length of 2 inches.

ORDER ACTINIARIA

Most true sea anemones develop as solitary polyps and when expanded are flower-like in appearance. They are attached to some support and are without skeletal structures.

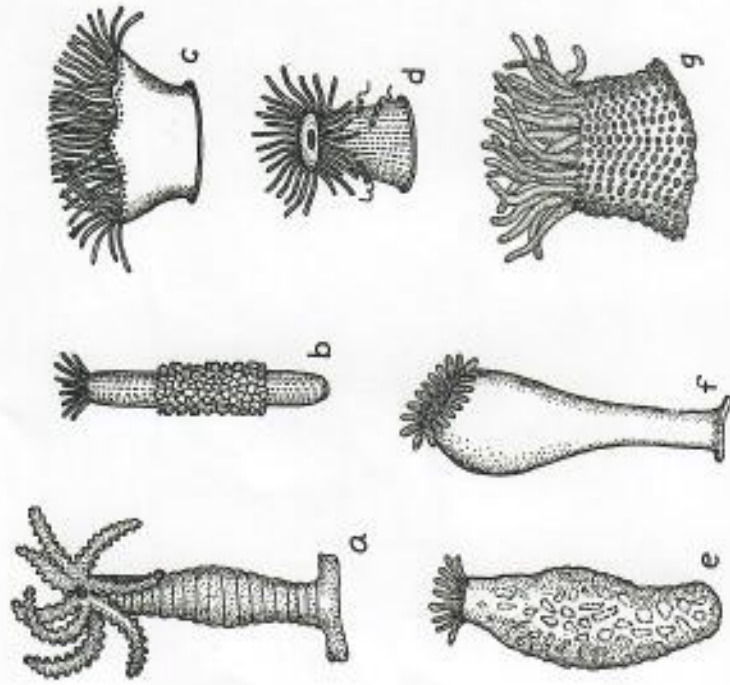


FIGURE 16.—Anthozoa: a, a single polyp of *Sarcothelia edmondsoni*; b, *Edwardsiella carneola*; c, *Anemonia (Anthea) mutabilis*; d, *Sagartia pugnae*; e, *Phellia humilis*; f, *Sagartia longa*; g, *Teuthopsis nigrescens*. (a-d after Verrill.)

Key to Families of Order

- A. Sea anemones without acontia (threadlike organs with stinging cells).
 B. Sphincter muscle not well developed, therefore tentacles not retractile.
 C. Surface of column smooth or provided with adhesive verrucae **Anemonidae**.
 CC. Surface of column usually covered with non-adhesive verrucae **Aliciadae**.
 BB. Sphincter muscle well developed, therefore tentacles retractile.....
 **Utricleinidae**.
 AA. Sea anemones with acontia; column smooth or with adhesive suckers
 **Sagartiidae**.

FAMILY ANEMONIDAE

In Hawaiian waters the largest species of this family is *Morcanthea cooki* Verrill (fig. 17, a), which is nearly 12 inches long and has about 600 tentacles when expanded. It lives almost completely buried in sand and mud in shallow water. Specimens have been collected at Laie and Kaneohe Bay, Oahu, and it probably occurs in other localities where there is a soft bottom.

Another species, *Anemonia (Anthea) mutabilis* Verrill (fig. 16, c), is about 1.5 inches high, dark green, and has a smooth surface. Large specimens have more than 300 tentacles. It is a shallow-water species and may be seen in the tanks of the Honolulu Aquarium.

A delicate little species, *Nectothelia lilae* Verrill, lives attached to the marine flowering plant *Haliophila*. It is transparent or flesh colored and has the ability, when detached, to swim like a jellyfish by constantly changing its form. Specimens expand to a height of about 12 mm.

FAMILY SAGARTIIDAE

Sea anemones of this family are characterized by threadlike structures (acontia) covered with stinging cells which are capable of being projected from pores in the sides of the body. The tentacles are numerous and capable of being completely retracted.

Several species are common about the shores, attached to seaweeds or the under surface of stones. A smooth delicate form, *Sagartia pusilla* Verrill, is about 12 mm. high when expanded and has 24 to 48 tentacles, but few stinging threads (acontia). It usually assumes the color of the support to which it is attached, being green when on *Ulva*.

Two small crabs, *Lybia tessellata* and *Polydectes caputifer*, habitually carry a tiny sea anemone in each claw. The anemone carried by *Lybia* is *Sagartia pugnae* Verrill (fig. 16, d), a pure white species. The one carried by *Polydectes* is brown with green and white tentacles and probably represents an undetermined species of *Sagartia*. When disturbed the crabs hold the actinians up and use them like boxing gloves. There is probably a mutual advantage in this association (symbiosis), as the crabs are doubtless protected by the stinging cells of the anemones and the actinians have access to more food and oxygen than if they were stationary.

Attached to the under surface of stones in shallow water is a smooth, soft-bodied species, *Sagartia longa* Verrill (fig. 16, f). It is light brown

REEF AND SHORE FAUNA OF HAWAII

By
CHARLES HOWARD EDMONDSON

BERNICE P. BISHOP MUSEUM
SPECIAL PUBLICATION 22

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INVESTIGATIONS

HONOLULU, HAWAII
PUBLISHED BY THE MUSEUM
1946

Filmmakers greet first 747 at Keahole

By ARLENE STEPHL
West Hawaii Today

The first 747 to touch down on the new runway extension of Keahole International Airport greased it on at 4:10 p.m. Monday.

The pilot of the 15-hour non-stop flight from Luxembourg made a south landing and brought the wide bodied craft to a complete stop before it was in line with the buildings along the taxiway. He did not use any of the old section of the runway.

The charter flight, a Cargolux airliner, was carrying two 60-foot trimaran sailboats and other equipment for the movie "Waterworld," plus a crew of 14 Frenchmen to reassemble the boats.

The film, to be shot at Kawaihae Harbor, will be produced by King Kona Productions. The production company's line producer, Gene Levy, thanked Big Island residents for their help.

When asked what the financial impact of the movie will be on the island, Levy said the company will leave a few dollars here.

"When you charter a plane the size of this one you're talking about a lot of money," he said. He

would not reveal any figures, but said, "Big money."

John Smith, King Kona Productions production manager, said local craftsmen are working on sets at this time and when filming begins in May, hundreds of extras will be needed.

The company will advertise for extras through the newspaper and television, he said.

In a brief ceremony prior to the landing, Diane Quitiquit stressed the importance of the film industry to the community and Georgette Deemer, branch chief for the state film industry branch of the Department of Budget and Finance mentioned the hard work and effort it took to bring the film to the island.

Clips of the landing, paid for by Hawaii Visitors Bureau Big Island chapter and filmed by a student crew from Parker School, will be sent to Universal Studios to help promote the film, which is scheduled to be complete by mid-1995.

United Airlines is scheduled to begin regular 747 flights into Keahole in March.



HAWAII PREPARATORY ACADEMY

P.O. BOX 428 • KAMUELA, HAWAII 96743-0428

(808) 885-7321

1/16/89

George Balazs
Honolulu Laboratory
National Marine Fisheries Service
2570 Dole St.
Honolulu, HI 96822-2396

Dear George:

How was your trip to the mainland? I wanted to thank you for the letters of recommendation, I really appreciated them. I bumped into Mr. Hind at a pizza place last night and he mentioned to me that his family had gold the parcel of land at Kiholo where we've been camping for our trips. He seemed to be very supportive and suggested that we camp on future trips near the ma'kua (sp?) - the man-made entrance to their pond. I take it that they still own the land adjacent to the site and are willing to let us use it. This does entail a little bit more walking but otherwise should not drastically affect the project (I haven't been able to find out who they sold the land to yet). In either case it appears that we still have access to Kiholo.

I did not get the opportunity to confirm the March 1st, 2nd & 3rd dates for the next expedition, but I'm in the process of doing that this week. As a school, HPA has switched over to a 5-day week in terms of our class schedule; this should not directly effect the quality of students that participate but does pose problems in terms of my getting faculty to help out. I have talked to Mark Rice about his participation and have contacted Tim Cooke (Lisa Uttal's boyfriend on Oahu), who has worked with the school before, and he has arranged to help out.

Have you ever thought about trying to run an expedition during the summer through Earthwatch? We could use some of the money to help run the project during the regular year and help fund your airfares and additional equipment. Just an idea...

Anyways, I'm starting to get geared up for organizing students for the next trip, drop me a line if you think of any changes that need to be made in either organization, equipment or participants.

Take care,

Dave Gulko

cc:

Marc Rice
John Colson

11/8/88

Dear George,

In response to your letter, I have few suggestions about our recent Kiholo tagging trip. For one, I'd like to be able to stay maybe a day later than our normal 2-3 day trip. This would allow us to better understand and do more work with the turtles. Also, maybe during some free time during one of the non-busy times while tagging, you could go over the actual steps involved in using the data from the turtles to help the species and how it involves the NMFS/your job. I find that this also would help us in understanding the turtles.

In all, I loved the trip. It provided me (once again) with a

Calming sense of actually helping
a species to survive. I'm very glad
that I've gotten the chance to
work with the turtles and you.
Thank you very much for allowing
us to help you tag. It's one of the
best experiences I've had. Again,
Thank you.

Bek Mortemore

P.S. - Thank you for the
Turtle data; I think I
should have a winning
project! 😊

89
June 9

Mr. Ballaps,

I'm sorry I missed you when you came over a few weeks ago. Your arrival fell during review week for exams and because I was half an hour out of town, I decided to stay home and study. I wanted to see you but I was overwhelmed with all of my homework. That was also why I couldn't go turtle tagging. If I would have gone I don't I would have been able to catch myself up in time for my exams. The end of the school is a crucial period for me. In fact, I'm just now recovering :).

My stress payed off though, I got 3 exam grades back. A 90 in Physics, a 94 in Japanese II and an 85 in math. I'm still waiting for my A.P. grades.

The main reason I'm writing is because I am interested in joining you and your

team on a trip down to
Tehol this summer if I
could. Although I have a
job, I will be able to get off
work. I'm really looking
forward to going and I
hope that you still have
room.

Thanks for everything
Mr. Ballays!

Shan ☺

March 21, 1989

F/SWC2:GHB

Ms. Bek Mortimer
Cooperative Sea Turtle Research Project
Hawaii Preparatory Academy
P.O. Box 428
Kamuela, HI 96743-0428

Dear Bek,

I want to take this opportunity to thank you for the fine job you did during our recent 3-day research expedition to tag and study green sea turtles (*Chelonia mydas*) at Kiholo Bay. I was duly impressed by the interest, enthusiasm, and cooperative spirit which you and all the students displayed during the course of our work. I enjoyed having you involved in the project and I look forward to working with you again.

When time permits, I would greatly appreciate receiving a short letter from you summarizing the educational and other benefits you obtained from participating in this research project. Also, please include any suggestions you may have for project improvement with regard to enhancing your experience from a student's perspective.

Sincerely,

George H. Balazs
Zoologist and Leader, Hawaiian
Sea Turtle Recovery Team

cc: David Gulko
Marc Rice

Identical letter sent to:

Mr. Bart Wyatt
Ms. Eva Anderson
Mr. Kevin Kramer
Ms. Marina Noguez
Ms. Shannon Puska
Ms. Lisa Berthoud
Ms. Kim Sweet

Ms. Visnja Negovetic
Ms. Kristen Glospey
Ms. Kathy Hannah
Ms. Dawn Hegger
Mr. Jeff Richardson
Ms. Dubravka Negovetic

cc: GHB
HL

MEMORANDUM

04/14/89

TO: ALL POTENTIAL TURTLE TAGGERS (That's you!)

FROM: DAVE GULKO

SUBJECT: MEETING AND ACTIVITY SCHEDULE TO QUALIFY TO PARTICIPATE IN STRP

CONGRATULATIONS!!! You have taken the first step required in order to participate in this spring's HPA/NMFS Sea Turtle Tagging Research Project. The project was started last year as an extension of some work that some HPA students did with the University of Hawaii at Hilo. The National Marine Fisheries Service personnel were so impressed with the quality, maturity and interest displayed by HPA students last year they have asked if we would like to continue the project this year. This is really a phenomenal opportunity for you! You may get the chance to work hands-on with an endangered species; collecting REAL data with REAL scientists that will be used to find out more about the Hawaiian Green Sea Turtle and perhaps ways of saving their populations from the increased effects of man. This is the sort of work that graduate and undergraduate students in college usually do; you may get the opportunity to be amongst some of the only high school students in the United States doing this kind of work. If you decide that you are interested in trying to join us on this expedition, you need to accomplish the following:

1) Complete and return to me the attached questionnaire before Apr. 18th's meeting. Some material from this questionnaire will be used to evaluate candidates.

2) Attend two meetings to be held on Tuesday evening, Apr. 18th and Sunday evening, Apr. 23rd. These meetings will be held in room 32 from 7:00 - 8:00 pm; failure to attend without talking to me beforehand will cause you to be dropped from consideration. The meetings will deal with introducing you to a number of aspects about sea turtles, their biology and natural history. We will also discuss basic sea turtle research techniques and perhaps set up a practice session in the pool to give you a taste of what you're in for. At the second meeting we will also be assigning preliminary research teams and duties. For those of you who have never been on one of these expeditions, I will have slides of previous trips for you to look at.

3) Take and pass a short test on the material presented at the two meetings. Scores on the test will be used to evaluate candidates.

4) There have been some changes from previous trips and it will be expected that those students participating will take on most of the load for the pre-trip planning and preparation...those students which do not help out with the pre-trip preparations will be dropped immediately from the program.

5) Finally, I've already initiated getting feedback from your teachers, coaches and dorm personnel about your being able to participate; I will be using this and the previous information to try to narrow down the list to around fifteen people - it's not going to be easy, it's a great group of people!!! Obviously because of the importance of this research project, I am going to try to take the most mature (not necessarily the oldest) and INTERESTED people that I can. In addition, having participated on a previous expedition does not give you any advantage towards being placed on this one (in fact it just might count against you...)

Once again, please make sure that you attend the mandatory meeting on Tuesday, Apr. 18th and lug along any questions, ideas or suggestions you might have about the project. I'm really looking forward to this spring's expedition, I think it's going to be an exciting and fun trip!



H P A / N M F S S E A T U R T L E R E S E A R C H P R O J E C T

PRE-TRIP QUESTIONNAIRE TO BE FILLED AND RETURNED TO MR. GULKO

NAME: _____ DATE: _____

GRADUATING CLASS: _____ STUDENT ID # _____

BOARDER _____ (Please list which dorm _____)
OR

DAY STUDENT _____ (Please list your home phone # _____)

SPRING SPORT: _____ ARE YOU IN PRINCETON REVIEW: _____

HAVE YOU GONE ON A PREVIOUS TAGGING EXPEDITION? _____ WHICH ONE? _____

ARE YOU CERTIFIED IN: _____ WHICH OF THE FOLLOWING EQUIPMENT DO YOU HAVE:

LIFESAVING _____ (Date: _____)	WETSUIT _____
CPR _____ (Date: _____)	UNDERWATER FLASHLIGHT _____
FIRST AID _____ (Date: _____)	REGULAR FLASHLIGHT _____
SCUBA _____ (Date: _____)	MASK, FINS & SNORKEL _____
	BOOTIES, TABIS OR OLD SNEAKERS _____

LIST YOUR MOST RECENT "IN-WATER" OCEAN EXPERIENCES:

LIST YOUR MOST RECENT SCIENCE-RELATED EXPERIENCES (OUTSIDE OF A CLASSROOM):

LIST ANY OTHER EXPERIENCES THAT MIGHT SERVE TO SHOW YOUR ABILITY TO
CONTRIBUTE POSITIVELY TO THIS PROJECT:

USING THE BACK OF THE PAGE, EXPLAIN WHY YOU WANT TO PARTICIPATE ON THIS
PROJECT (Be honest and expressive - this is important towards determining
eligibility):

GHB

May 17, 1989

F/SWC2:GHB

Negovetic Family
Ksaver 12
4100 Zagreb
Yugoslavia

Dear Mr. and Mrs. Negovetic:

I had promised Dubravka and Visnja that I would send you the enclosed literature about sea turtles, as well as a photo taken during our recent field study. They have both done an excellent job in this project.

Sincerely,

George H. Balazs
Zoologist

Enclosures

TO: Bek Mortemore
FROM: Dave Gulko
SUBJECT: HPA/NMFS SEA TURTLE RESEARCH PROJECT

05/07/89

Dear Bek:

I wanted to take this opportunity to thank you for contributing your time, enthusiasm and hard work into this project. This last trip was easily the best trip that we've ever done to Kiholo (we're talking THIRTY-NINE TURTLES!!!), everybody pulled their own weight and helped out with all of the research work. I was overwhelmed with the dedication and maturity displayed by all of the students who participated. It is really a credit to you that Dr. Balasz is very dedicated to trying to keep this project going next year and it is my hope that you will try to participate in it once again.

As things stand right now I am trying to arrange a get-together for all who participated in the project for Friday evening, May 18th. This would take place in the dining hall right after dinner (about 6:45pm) and would be a chance for all of us to get together and look at the slides and photos from the trip. We should have the T-shirts in by then and also will try to have order forms for anyone who would like to order copies of a particular photo from the trip. I am currently arranging for Dr. Balasz to come over for this get-together and this would be an opportunity for him to present you with a group photo from the trip. This would also be a great opportunity for your parents and friends to find out more about the project and I encourage you to invite them to come.

Finally, in order that I can try to improve the next expedition I'd like to ask you to take a little time to fill out the following evaluation as completely and honestly as you can. Once you are done please return it to me or my mail box as soon as you can. Once again, thank you for making this trip so successful; I am extremely proud of the job that you did and hope that you'll take advantage of other opportunities like this that may come your way in the future.



HPA/NMFS SEA TURTLE RESEARCH PROJECT
POST-TRIP EVALUATION

05/07/89

1. IN ONE PARAGRAPH, DESCRIBE WHAT YOU GOT OUT OF THIS EXPERIENCE
(be honest, I'm not a college admissions officer...):

2. WHAT WAS THE MOST EXCITING THING THAT YOU DID ON THIS TRIP?

3. WHAT WAS THE WORST THING THAT YOU DID ON THIS TRIP?

4. PLEASE DESCRIBE THE TURTLE DATA COLLECTION PROCESS AS YOU
UNDERSTAND IT:

5. WHAT DID YOU THINK OF THE TEAMS:

6. HOW ABOUT THE PRE-TRIP REQUIREMENTS:
 - Two mandatory seminars:
 - Turtle Quiz:
 - Pre-trip preparation:
 - Teacher evaluations:
 - Gulko's evaluation:

What do you think of a pre-trip ocean activity/swim test?

What could I do to better prepare you for the expedition
and/or to better evaluate potential candidates?

7. FOOD:
 - What was the best thing we brought/made:
 - What was the worst:
 - What should we do differently next time:

 - Suggestions for changes in
 - Breakfast:

 - Lunch:

Dinner:

Snacks:

8. EQUIPMENT:

Problems? Things that need to be fixed?

What other things should we try to bring next time?

9. IDEAS FOR DAY PROJECTS THAT COULD BE CARRIED OUT DOWN AT KIHOLEO?

10. ANY ADDITIONAL SUGGESTIONS/PROBLEMS/POSITIVE POINTS/NEGATIVE POINTS...IS THERE ANYTHING ELSE YOU'D LIKE TO SAY?

Identical letter sent to:

Mr. Bart Wyatt
Ms. Eva Anderson
Mr. Kevin Kramer
Ms. Marina Noguez
Ms. Shannon Puska
Ms. Lisa Berthoud
Ms. Kim Sweet

Ms. Visnja Negovetic
Ms. Kristen Glospey
Ms. Kathy Hannah
Ms. Dawn Hegger
Mr. Jeff Richardson
Ms. Dubravka Negovetic

HPA/NMFS SEA TURTLE RESEARCH PROJECT

TEAM ASSIGNMENTS:

The following lists represents the team assignments for the spring expedition. The first name listed are designated team leaders; these are people who have been on at least one previous expedition, they are familiar with the research, schedules and difficulties that might be encountered over those three days - make use of them to answer any questions you might have. In addition, **MAKE SURE THAT YOU BRING THIS SCHEDULE WITH YOU ON THE TRIP.**

	TEAM 1	TEAM 2	TEAM 3
Captain:	Bek M.	Sylvan W.	Marania H.
	Hide K.	Liz M.	Kim B.
	Jane P.	Kevin K.	Cal M.
	Glenn P.	Bart W.	Jacob C.
	David B.	Carl B.	Ferris B.
	Eva A.	Lisa B.	Adam R.
	Matt D.		

CAMP SET UP:

Each team will be responsible for certain duties when we reach Kiholo; no one is to start setting up their own campsites (I will assign tents later) or claiming spots with their personal gear (Team 1 will place all personal gear on a tarp for later collection). After these duties are completed, we will get together with Dr. Balazs to discuss the project, our roles, what we will be doing and to answer any questions that might be raised. After this a group will swim out to set the net and we will start to run shifts.

TEAM 1: Organize wetsuits, hoods, u/w lights (load batteries and check o-rings), tools and any other school gear not going to research site and place in milk crates in the back of the WEP truck closest to trail to research site. Fill lanterns, prime them and set them up for the night. Set up campfire and stack wood. Set up all three tents (not under coconut palms!) with rain flys (please place tent bags inside each tent).

Organize food into WEP truck closest to barbeque pit (all food not in coolers goes in front seat - windows up), try to arrange so that team on cooking detail can find all the food items for that meal. Post a complete menu on the truck with the items for each meal listed so that the team doing the cooking knows what materials to use. Set up grill and stoves. Set up trash bags so that mongooses can't investigate them.

TEAM 2: Set up tarp attached to WEP trucks to form a canopy along with a ground tarp underneath. Place all personal gear and snorkeling equipment on ground tarp. Move turtle floats, measuring gear, nets, battery, turtle sign and any tagging gear to research site (BE VERY CAREFUL MOVING THIS GEAR). Unpacked boxes should be carefully stored underneath or inside WEP truck.

TEAM 3: Set up all four Porta-Pottis (three for girls, one for guys) away from camp, place chemicals in correct place, don't forget TP and plastic bags to put TP in. Set tarps up at the research site to provide shaded working area and afterwards help move gear to research site. Help Team 1 with any unfinished work.

SCHEDULE:

	BREAKFAST =====	LUNCH =====	DINNER =====	SHIFTS =====	NITE SNORKEL =====
TEAM 1			WED	WED: 3RD, 6TH THURS: 1ST, 4TH	WED
TEAM 2		THURS	THURS	WED: 2ND, 5TH THURS: 3RD, 6TH	WED or THURS
TEAM 3		THURS		WED: 1ST, 4TH THURS: 2ND, 5TH	THURS
	FRI: CAMP CLEAN-UP				

NOTE: THERE WILL BE A MANDATORY HOMEWORK SESSION ON THURSDAY AFTER WE FINISH TAGGING THE TURTLES IN THE MORNING...ALSO DON'T FORGET TO MAINTAIN A JOURNAL OF YOUR EXPERIENCES AND WHAT YOU HAVE LEARNED (THIS WILL REALLY HELP THE PERSON NEXT YEAR WHO TRIES TO TAKE THIS PROJECT OVER).

ON FRIDAY AFTER ALL THE TAGGING AND RELEASE WORK IS DONE:

- TEAM 1: PACK UP RESEARCH SITE AND TRANSPORT BACK TO CAMP. ACCOUNT FOR ALL SCHOOL WETSUITS & LIGHTS.
- TEAM 2: PACKAGE PORTA-POTTIS IN ASBESTOS BAGS AND PLACE INTO TRAILER WITH TRASH. PACK GRILL.
- TEAM 3: FOLD UP AND PACK TARPS AND TENTS. PUT AWAY LANTERNS & STOVES.

When we return to school on friday, I will pick two people from each team to clean out one of the porta-pottis (plus one lucky group will get the pleasure [?] of doing two! Who will the lucky people be - stay tuned for details...).

- Teacher evaluations:

- Gulko's evaluation:

What do you think of a pre-trip ocean activity/swim test?

What could I do to better prepare you for the expedition
and/or to better evaluate potential candidates?

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What was the worst:

What should we do differently next time:

Suggestions for changes in

Breakfast:

Lunch:

Dinner:

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