

Harm Done to Seal Research

I have watched with dismay the events and media presentations of the recent controversy surrounding the use of two Hawaiian monk seals at the Waikiki Aquarium for research. Except for the March 8 article in the *Honolulu Star-Bulletin*, none of the media presented the issues adequately. Instead, TV and newspapers chose to present only the emotional aspects of the issue, ignoring press releases thoughtfully prepared by those involved.

Since the 1950s monk seal populations have declined by over 50 percent. Where have the newspapers and TV stations been during these years? Where are the stories documenting the research efforts of dedicated biologists living for months at a time on uninhabited islands? Where are the stories describing the multifaceted research program aimed at saving this magnificent animal?

Had there been some coverage of these aspects of the issue, perhaps the public would have been able to understand the pressing need for both field and laboratory research, and their associated risks.

For many years I have enjoyed and even provided some of the educational opportunities available at the aquarium. My last contribution, a lecture on Hawaii's endangered wildlife, including the urgent need for research, does not seem to have been effective. For the last five years I have spent two to five months each year in the Northwestern Hawaiian Islands studying endangered birds and assisting the National Marine Fisheries Service (NMFS) monk seal research team with various research projects, sharing their frustration with the seals' continuing decline. Like aquarium director Leighton Taylor, I strongly advocated research on captive animals as an important part of the overall research plan.

Two of the three seals brought to the Aquarium were saved from certain death from starvation by NMFS biologists. The third was a healthy animal taken for the captive research program from Laysan Island in 1983. It is illegal to bring individuals of endangered species into captivity unless they are to be used for captive propagation or for research that will promote the survival of the species in the wild.

proach to saving dozens of seal lives annually.

Understandably those volunteers working with the seals became emotionally attached to the animals. Not so understandable is that those volunteers chose to reciprocate the affection and pleasure they got from their interactions with seals by precipitating the demise of an essential element in a research program aimed at conserving this unique and highly endangered animal species. It is impractical to take adult animals from the wild and train them to participate in the research. The difficulty and expense of capturing the aquarium animals, as well as keeping and training them has been great, but it has been largely wasted. Emotionalism that demands the preservation of individual research animals at the expense of an entire species is misguided.

Something else the confrontation has accomplished is to drive the scientists, who have attempted to keep the seals and the research fully accessible to the public, behind closed doors to conduct research that is clearly in the public interest. This is the very thing for which scientists are most often feared and criticized. NMFS is to be congratulated for honoring the demands of an outraged public, whipped into a frenzy by the media. Scientists have quietly resolved to start again from scratch on their program of captive animal research aimed at saving monk seals for the future.

So where are we now? Did the news media responsibly present both sides of the issue? Can the aquarium legally hold these seals and display them to the public without simultaneously carrying on a meaningful research program? Or do we have simply an exhibit maintained at the expense of the 1,500 or so monk seals that hover on the brink of extinction?

Did the aquarium win the battle and lose the war? Surely the two monk seals may have won a longer life, and that is good — for them. I wonder how many dozens of other monk seal lives it will cost.

Sheila Conant

Associate Professor
and Chairwoman

Department of General Science
University of Hawaii at Manoa

The seals at the aquarium were brought there specifically for research and the volunteers knew it. Taylor was present at a December 1984 meeting where the proposed research was described. Every year 30 to 50 seals die at French Frigate Shoals alone. The experiment which the aquarium opposed was to directly examine the causes of that mortality. Continued research could have provided an ap-

STAR-Bulletin
3/26/86

letters

'Senior power' and seals

Skill, joy and pride

Here in Hawaii we have ample demonstration of the vitality of our senior citizens and the rich contributions that they make in the daily life of our community.

In the Department of Social Services and Housing, we have programs which are designed to operate on "senior power." These are our Foster Grandparent, Senior Companion, and Respite Services programs. They employ 244 able-bodied and low-income seniors who devote more than 16,800 hours a month to helping, encouraging and caring for their 500 clients of all ages.

We in the social services are particularly concerned over the probability of severe reductions in many of our programs as a consequence of the Gramm-Rudman Act. We are optimistic, however, that the DSSH programs which employ senior citizens will be maintained unscathed; and we expect that our "older workers" will continue to serve as they now do — with skill, with joy and with pride.

FRANKLIN Y.K. SUNN
Director, DSSH

Research and survival

I wish to make four points concerning the Hawaiian monk seals in the care of the Aquarium which have been the subject of recent articles in your paper and on television.

1. Although the private citizen who confronted the National Marine Fisheries Service (NMFS) biologist on Aquarium property is known to many staff members, we had no foreknowledge of his actions; they are unsanctioned by the Aquarium and we recognize them to be illegal. The seals are legally in the custody of the NMFS (although practically they are in our care). The Aquarium was prepared to permit the NMFS to remove the seals.

2. The Aquarium recognizes the need to conduct research on monk seals in the wild and in captivity in order to ensure the survival of the species. But we believe that there are better, safer ways of conducting the research. Review and scrutiny of the research methods by other parties are needed. The modification-to-permit

process which we asked NMFS to follow allows such review.

3. Such issues are never simple. Careful readers of your news articles are probably aware of the complexity of the problems of research on captive, hand-raised animals. However, understandably, many readers are busy and distracted, and often infer an oversimplified conclusion.

For example, the opinion has been expressed that the Aquarium's major motivation in this episode was to "save their pets" and "assure that they have monk seals on display so that attendance would not fall, thereby trading a short-time gain for the significant long-term loss of monk seals in the wild."

Such a simplistic conclusion, while understandable, is definitely not warranted. Our major motivation was to avoid the death of another captive seal. In our view, two deaths due to the same experiment would be judged harshly by both the public and the scientific community, and would seriously jeopardize all research on monk seals.

4. The two seals that remain in the care of the Waikiki Aquarium are still in the legal custody of the NMFS and will still be the subject of research that we hope will benefit the survival of the wild population. Such research should be of low risk to the animal and should take advantage of their behavioral conditioning.

LEIGHTON TAYLOR,
Director
Waikiki Aquarium

More on derelict cars

In response to Mr. Bud Thuener's letter editor (3/5), we agree that the registered owners should be held responsible for an abandoned vehicle if they have not submitted the legally required notice of transfer upon sale of their vehicle.

Unfortunately, the present law does not allow the imposition of such fines or criminal prosecution unless a police officer witnesses an individual abandoning a vehicle. However, House Bill No. 1830, which has passed the House of Representatives, will correct this deficiency by placing the responsibility of an abandoned or derelict vehicle upon the last known registered owner.

Monk seal

By Tom Kaser

Advertiser Staff Writer

A young Hawaiian monk seal died recently at the Waikiki Aquarium during an experiment to determine what can be done to reduce the high death rate among monk seal pups at French Frigate Shoals.

The young seal, named Tuffy, went into "capture shock syndrome" during the experiment and died of kidney failure Jan. 3, said William Gilmartin, leader of the Marine Mammals and Endangered Species Program of the National Marine Fisheries Service, which had been conducting the experiment for about three weeks.

Hawaiian monk seals are an endangered species and an estimated 1,300 to 1,400 of them live in the 1,000 miles of the Hawaiian Islands northwest of Kauai.

Of the nearly 170 pups that are born in those islands each year, about 100 are born at French Frigate Shoals.

But an unusually high proportion of the French Frigate Shoals pups — about 20 percent — die in their first year, and Gilmartin suspects a similarly high percentage die during the second year.

"No species can stand that high a loss of its young without experiencing an overall decline in its population," he said. "We need to know what's wrong at French Frigate Shoals.

"Maybe the problem is genetic, which we can't do anything about. Maybe it's a food resource problem — not enough food in that area to feed the monk seal population. We know that whenever food is scarce, the young animals lose out most."

HONOLULU
ADVERTISER

1-15-86

pup dies during experiment



This Hawaiian monk seal was photographed at the Waikiki Aquarium in 1983.

Advertiser photo

Gilmartin said Tuffy was an emaciated 35 pounds when he was captured at French Frigate Shoals in 1984. The animal had been born that summer, had just been weaned, should have weighed at least 150 pounds, "and would have died if left on its own."

At the Waikiki Aquarium, Tuffy was nursed back to health and weighed about 180 pounds before the experiment began in December.

"The experiment called for us to physically restrain Tuffy in an drained tank so he could be injected with radioisotope material. Unknown to us, however, he went into capture shock syndrome without giving any outward sign of being in that state.

"This syndrome isn't unusual in species that

are just not used to being restrained in any way — especially exotic ones, like some species of dolphins. But it's very uncommon among seals."

He said that in Tuffy's case it caused extensive muscle damage, which in turn sent damaged muscle cells in the blood stream to the kidney.

"The muscle damage was not from Tuffy fighting us but from a passive reaction that goes on inside the animal's body. It's partly psychological."

The National Marine Fisheries Service has two other male monk seals at the aquarium and Gilmartin said one of them will soon be used to continue the experiment.

"But we will administer the radioisotope material in a different way."

Monk Seal

Killed by 'Capture Shock'

By Helen Altonn
Star-Bulletin Writer

Tuffy was a young Hawaiian monk seal who earned his name because "he was a fighter," says Reid Withrow, the Waikiki Aquarium's monk seal trainer.

He was abandoned by his mother as a pup and struggled for survival with the help of aquarium staff and volunteers who "hand-raised" him.

He was "more than just an animal," said Aquarium Director Leighton Taylor. "He was a member of the family."

The young seal died Jan. 3 of kidney failure resulting from "capture shock syndrome" when he was restrained for a research project.

The study was planned by the National Marine Fisheries Service (NMFS) and the University of Hawaii to determine if severe losses of monk seal pups at French Frigate Shoals are related to limited food resources.

Tuffy was born in 1984 at French Frigate Shoals, in the Northwestern Hawaiian Islands. He was emaciated and near death when NMFS scientists rescued him and took him to the aquarium in August of that year.

"HE WAS the smallest weaned pup we ever tried to rehabilitate," said William Gilmartin, wildlife biologist at the fishery service's Honolulu laboratory. "The aquarium staff, through force-feeding and hand-feeding,

nursed it back to health."

Gilmartin heads the NMFS Marine Mammals and Endangered Species Program, which includes the Monk Seal Recovery Team.

He said about two-thirds of all monk seals born each year — roughly 100 out of 150 — are at French Frigate Shoals. But 20 percent of the pups die during the first year. One possibility is that they can't find enough food and "slowly waste away," he said.

He said it's "critical" to learn what is causing the losses because French Frigate Shoals has the largest monk seal population and the only one that's stable. "If that goes into decline, the population will be in a critical stage throughout the archipelago."

Gilmartin said he worked with G. Causey Whittow, chairman of the physiology department in the John Burns School of Medicine, to plan the experiment.

IT WAS decided to test the procedures on Tuffy before using them on the wild population, he said. "That's the reason we have captive monk seals, to help us solve the problems facing the species in the wild." Only males are taken for experimental work because there is an excess of them in the population, he said.

He said Tuffy was strapped on a stretcher on Dec. 20 and given some radioisotope material and blood samples were taken.

Dies at Aquarium

'Syndrome' After Experiment

The experiment was believed to be safe, but Tuffy suffered from "capture shock syndrome," he said. "This is a partly psychological and partly physiological response to being held, captured or restrained," he said. "It results in a lot of muscle damage."

Dolphins display such a condition but it wasn't known to affect seals, so Tuffy's response was "totally unexpected," he said.

HE SAID the project was stopped as soon as it was realized what was happening. But it was decided not to try to treat the seal because it would involve more handling. "We opted to leave him alone and hoped the damage was not so severe that it would cause kidney damage that he would die."

Tuffy's behavior seemed "near normal," but he wouldn't eat for three weeks, Gilmartin said. As a result, he wasn't getting fresh water from food sources to flush out his kidneys.

Gilmartin said he contacted Mainland people experienced with such problems and they suggested putting the seal in a tank of fresh water in hopes that he would drink that.

The seal was placed in the fresh water Jan. 2. But he was found dead on Jan. 3.

"It's especially difficult for myself and the volunteer trainers when we spent so much time with the animal and saw him go

from an emaciated, starving pup to the best health," Withrow said.

Seals normally weigh 150 to 200 pounds after their mothers stop nursing them and they live on their fat until they learn how to catch fish and eat.

BUT TUFFY weighed only 32 pounds when he was delivered to the aquarium, Withrow said. "You could pick him up in one hand."

The seal weighed 170 pounds at the time of the experiment, he said.

Taylor said the aquarium's policy is to allow research on animals only if they can be trained to cooperate and don't have to be forced into restraints.

Withrow and other trainers had worked with Tuffy, touching and patting him and exposing him to the restraint apparatus — a plywood platform with canvas straps. Withrow had even tested it on himself. "I struggled to see how it felt," he said.

Withrow said volunteers observed Tuffy almost constantly after the experiment. On the evening before his death, the seal pushed a partially deflated basketball around pool, Withrow said. "We had no way of knowing he was as far gone as he was."

"It's a shame to lose any animal, but researchers did learn from this kind of treatment," Taylor said.



EXPERIMENTAL SEAL—Waikiki Aquarium staff and volunteers have developed a bond with Maka, a Hawaiian monk seal brought to Hawaii for research. —Star-Bulletin Photo by Terry Luke.

Aquarium Opposes Planned Experiments on Monk Seal

By Helen Altom
Star-Bulletin Writer

A young Hawaiian monk seal has become the focus of an unusual dispute between the National Marine Fisheries Service and the Waikiki Aquarium.

The aquarium has hand-raised Maka, a 1½-year-old male, since NMFS scientists brought him here in June 1984 as a pup from French Frigate Shoals.

The fishery scientists plan to remove the seal from the aquarium Monday and take it to Sea Life Park for an experimental project opposed by the aquarium.

Fisheries officials said Maka and two other seals — Tuffy and Nuka — were brought to Hawaii to conduct research that might help restore their declining population at French Frigate Shoals.

THE AQUARIUM objects to the research because Tuffy died after a similar experiment conducted by NMFS scientists at the aquarium Jan. 3. Tuffy, also a young male, suffered from "capture shock syndrome" when it was restrained for the project. This response wasn't known to happen in seals.

"We can only speculate that there may be something about these young seals that makes them more susceptible than wild seals to captive shock syndrome," Aquarium Director Leighton Taylor said. "However, we do not wish to have our speculation proven by the death of a second seal."

Taylor said he told NMFS

researchers that only "non-intrusive" and "low-risk" behavioral research will be allowed on seals at the aquarium.

The experiment planned on Maka "sounds kind of ominous but it is a standard procedure or technique used widely in experimental work to get information we can't get any other way," said Richard Shomura, NMFS' Honolulu Laboratory director.

NMFS WILDLIFE biologist William Gilmartin is conducting the project. He heads the NMFS Marine Mammals and Endangered Species Program, which includes the Monk Seal Recovery Team.

G. Causey Whittow, chairman of the physiology department at the John Burns School of Medicine, is working with Gilmartin on the experiment.

Maka will be given a capsule containing water and a heavier component that can be measured through blood samples to study the amount of energy used by the animal to feed, Shomura said.

Tuffy was given an injection instead of a pellet but that wasn't the factor leading to the animal's death, Shomura pointed out. "He just went through a stress syndrome that ended in death. This is very unusual for seals . . ."

"We can't guarantee there will never be mortality, but the design of the experiment isn't fraught with high probability of death being the end result."

SHOMURA SAID the research is important to deter-

mine if a high number of deaths among young seals at French Frigate Shoals is related to an inadequate food supply.

"We agree that research must be done to find out what is going on with the animals," said Aquarium Curator Bruce Carlson. "But it shouldn't be done on Maka."

He said the aquarium suggested that NMFS do the research on the wild seals at French Frigate instead of those hand-raised at the aquarium.

"If Maka was just one of a million seals, maybe it wouldn't matter so much," Carlson said. "But he is one of a dying breed and an ambassador for the species. A million people have been here and seen Maka and enjoyed his antics and playing around. They have an emotional bond with the animal. . ."

The loss of the animal from the aquarium also is "very traumatic" for the aquarium staff and volunteers who have spent "hundreds of hours" training Maka, Carlson said.

SHOMURA SAID the fisheries service and the aquarium have had a "mutually beneficial arrangement. They'd have the animals for display in captivity and promote the fact that the seal is an endangered species and we'd have the animal for experiments."

But, he said, "The sole reason for bringing the animals into captivity and holding them was to run experiments . . . and not to develop close monk seal-man relationships."

Fisheries Service Plans to Move 7-16-86 HSB Monk Seals to Lab for Research

By Helen Altonn
Star-Bulletin Writer

The National Marine Fisheries Service plans to transfer its two Hawaiian monk seals, Maka and Nuka, from the Waikiki Aquarium to the NMFS laboratory at Kewalo Basin for research.

However, NMFS officials said they won't do the type of experiment on those seals that resulted in the death of Tuffy, another monk seal, in January.

Aquarium Director Leighton Taylor was informed of the plan to move the seals before he left last week on a leave of absence to work at the California Academy of Sciences, said Richard Shomura, NMFS Honolulu Laboratory director.

"In our letter we indicated that we hoped at some point we'd be able to work with the aquarium on a compatible basis," Shomura said.

"We haven't closed the door on any future activities, but we did bring these seals in for this purpose (research) and we feel

obligated to do this."

THE FISHERIES scientists collected the three seals from French Frigate Shoals under a permit for research to determine why so many of the animals are dying in the wild population.

About 20 percent of the pups die in the first year, according to William Gilmartin, wildlife biologist who heads the NMFS Marine Mammals and Endangered Species Program.

The experiment with Tuffy concerned the ability of the animals to obtain enough food to survive. NMFS, University of Hawaii and aquarium scientists conducted the project at the aquarium.

The animal suffered "capture shock syndrome," a condition not known to occur in monk seals, and died of kidney failure after being restrained and injected with radioisotope material.

"We agree with NMFS that certain kinds of research need to be done that poses a risk to animals, but it shouldn't be to

animals raised in captivity — animals that you rehabilitate from the wild and hand-raise," Taylor said before leaving last week.

HE SAID hand-raised captive seals possibly are more sensitive than wild seals. "Maybe pups are abandoned for a reason because they're genetically unfit, and maybe when they go under stress, they die."

This is just a theory, he said. "But I hate to prove it by killing more captive seals."

The Honolulu laboratory has approval to do metabolic research, such as that on Tuffy, Gilmartin said.

However, to satisfy the concerns, he said, "We told the permit office that particular research would not be performed on those two animals (at the aquarium) and we requested permission to collect another male to do that work."

He also said the experiment also has been modified so the radioisotope material will be fed to the seal instead of injected.



WAIKIKI AQUARIUM

March 17, 1986

Richard Shomura
NMFS
Honolulu Laboratory
P.O. Box 3830
Honolulu, Hawaii 96812

Dear Richard:

I have received your letter dated March 14 which apparently passed my letter of the same date in the mail. In it you address a number of issues, the substance of which are not all relevant to the subject at hand. Your mention of certain extraneous issues reveals what I think is an unfortunate attitude and opinion about the Aquarium which I would like to work together to correct. I'll repeat my suggestion made in my March 14 letter that we meet in the company of a facilitator skilled in conflict resolution. I would suggest someone from the Neighborhood Justice Center. The Aquarium is willing to cover the expenses for such a meeting. My motive is to begin to heal the schisms between our offices.

Let me now address the pertinent issues put forth in your letter. First of all, I sincerely apologize for the oversight of not providing you with a copy of the press release which was distributed on March 7. Such an oversight is counter to our written policies and I regret very much that a copy was not made immediately available to you. For your records, a copy is attached.

As I mentioned in my previous letter, actions of Skip Naftel were not known to us in advance and we do not sanction them. We were prepared to release both Maka and Nuka to you on March 10. This is your legal right. Our prime motivation in calling public attention to your research was to avoid consequences that would greatly jeopardize research not only on monk seals, but on captive marine mammals in general. We were prepared to lose both seals from our public exhibit areas and to risk the wrath of your office in order to do what we felt was our legal, moral, and scientifically ethical duty.

You inquire in your letter as to what the future will bring. Of course, none of us know that, but I can assure you that if another circumstance arises in which I and the institution for which I am responsible, must take an unpopular, yet ethically required stance, we will do so again.

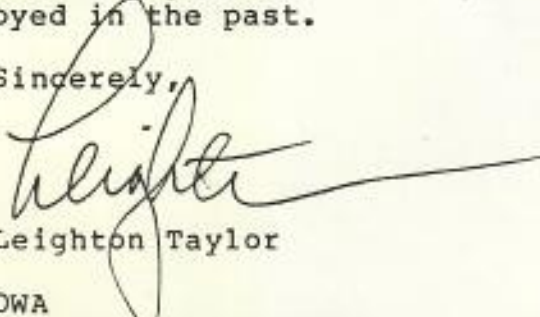
To look to the future in a more positive stance, I hope that you will accept my offer to sit and talk and resolve this conflict. Please consider it seriously and with the sincerity in which it is offered. I don't have to remind you that the two monk seals in the care of the Aquarium are still in the legal custody of NMFS and can still contribute positively to research efforts that we hope will produce information critical to the survival of seals in the wild. Aquarium staff and volunteers have been pleased to contribute time and money to the rehabilitation of young female seals which have subsequently been released in the wild. These animals have never been on public display. We are prepared to continue to contribute to the survival of monk seals through this project. In addition, both Maka and Nuka have been trained to participate in research projects such as audiograms and selected types of physiological research.

We hope that Dr. Gilmartin will continue to cooperate with our staff in the conduct of this research. In addition, the Waikiki Aquarium, in collaboration with the University of Hawaii Marine Mammal Lab and selected other scientists, will soon submit an application for an Endangered Species Permit and a Marine Mammal Permit for the conduct of behavioral research on monk seals. We have been told by Dr. Gilmartin of the high priority of his energetics research, but we feel there is a wide array of behavioral research that also needs to be done.

I note from your letter of March 14 that you have distributed copies to a number of people. I feel that it is only proper that I provide them with a copy of this letter, as well as with a copy of our press release, our draft policy for research, my letter to you of March 14, and a copy of a Letter-to-the-Editor to the two daily newspapers that is an attempt to correct some faulty inferences on the part of the public.

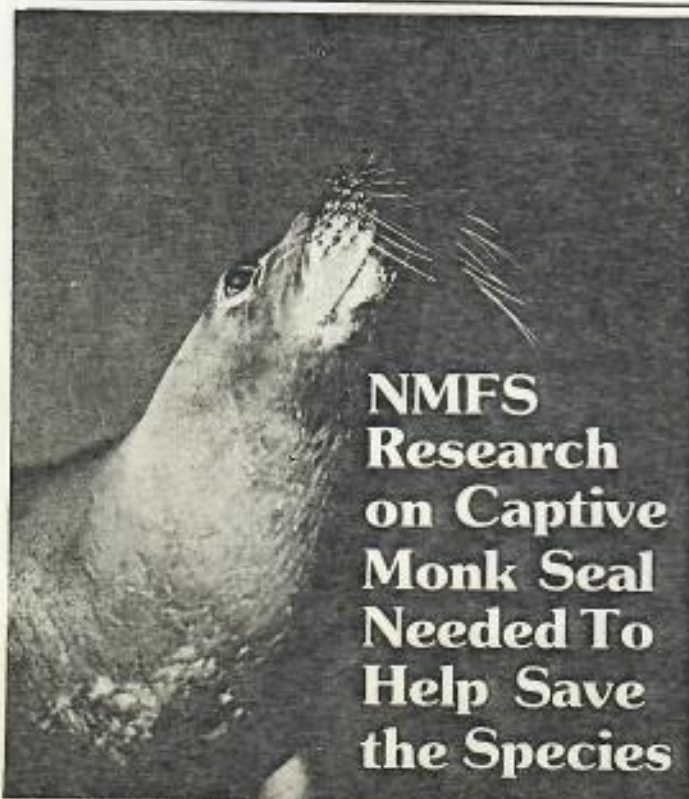
Richard, in conclusion, let me say that I think that writing indignant letters back and forth to one another is not going to heal the situation. I sincerely hope that we can all sit down together and talk and re-establish the positive working relationships that we have enjoyed in the past.

Sincerely,



Leighton Taylor

cc: L. Donaldson, Chairman, FOWA
I. Barrett, Director, Southwest Center, NMFS
E. Fullerton, Director, Southwest Region, NMFS
A. Simone, President, University of Hawaii
D. Yount, Vice-President for Research, UH
W. Gilmartin, Honolulu Lab, NMFS



NMFS Research on Captive Monk Seal Needed To Help Save the Species

by Richard S. Shomura

Maka, a 2-year-old male Hawaiian monk seal, has received much attention lately because the National Marine Fisheries Service (NMFS) plans to move Maka from the Waikiki Aquarium to Sea Life Park to continue NMFS monk seal research. The purpose of this research on captive seals is to help save the Hawaiian monk seal from extinction. Dr. Leighton Taylor, director of the Waikiki Aquarium, is opposed to removal of the two NMFS monk seals from the Aquarium. Some of the recent media coverage of the issue based on a press release issued by Dr. Taylor gives an incomplete picture of the problem and situation.

Recently a meeting involving officials from the aquarium, the University of Hawaii and NMFS was held at the Honolulu Laboratory in an attempt to resolve the problem. Dr. Taylor, who is currently traveling on the mainland, was represented at the meeting by acting aquarium director Bruce Carlson. Others from the aquarium included Reid Withrow, a seal specialist, and Wayne Gocke, a member of the Waikiki Aquarium Board and an active volunteer worker at the aquarium. NMFS was represented by Richard S. Shomura, director of the Honolulu Laboratory, and William G. Gilmartin, head of the Marine Mammals and Endangered Species Program of the laboratory. Dr. Phil Helfrich, director of the Hawaii Institute of Marine Biology, chaired the meeting at the request of Dr. David Yount, University of Hawaii vice president for research. The aquarium is operated by the university, and Dr. Taylor reports to Dr. Yount.

Richard Shomura reported that "an agreement was reached in which Nuka (the older of the two seals at the aquarium) would remain at the aquarium for research, which would be within the guidelines established by the aquarium. This was a considerable concession by NMFS, since it reduced the research capabilities of the laboratory. Maka, the younger of the two seals, would go to Sea Life Park, with our (NMFS) assurance to the aquarium staff that we would have the details of a modified research plan reviewed by the NMFS Permit Office."

Shomura added, "The aquarium representatives were satisfied that the planned research was necessary and that this final approval of the new procedure would assure minimal risk to Maka."

Before a joint press release could be issued, Taylor called Helfrich to say that the agreement and the press release were unacceptable to him.

In reviewing the research to be conducted on Maka, Gilmartin emphasized that "the research involving Maka

is high priority if we are to find out what is causing the deaths of several dozens of Maka's cousins at French Frigate Shoals annually. Young seals at French Frigate Shoals are experiencing a significantly higher mortality than at any other breeding island in the Northwestern Hawaiian Islands chain, and the cause may relate to availability of food. The experiment with Maka was to develop procedures to determine how efficiently monk seals feed in the wild. The double-labeled water technique, which Taylor objects to, is a standard procedure used by biologists on a number of wildlife including other species of seals."

Gilmartin further stated that "since the death of Tutu, we have modified the test procedure and are confident that the study will present no more risk to the seal than force-feeding and collecting blood samples from Maka. Both procedures have been performed previously at the aquarium on Maka as well as on several other monk seals."

Shomura added that while he "believes this type of research is fully covered by our Federal Endangered Species Act Permit, our plans are to postpone the work until a fully detailed research outline has been reviewed by the NMFS Permit Office in Washington, D.C." Shomura expressed "surprise at Taylor's negative reaction to the research since Taylor was present when details of the research were given to the Hawaiian Monk Seal Recovery Team by Dr. Casey Whitlow of the University of Hawaii in December 1984." Dr. Taylor is a member of the recovery team.

Shomura and Gilmartin believe NMFS has made a major concession in leaving Nuka at the aquarium and that, in taking Maka under the conditions mentioned earlier, they have satisfied most of the concerns for the safety of the animal voiced by the aquarium staff at the recent meeting.

Gilmartin said, "Maka will be moved at our earliest convenience for adaptation to the Sea Life Park facility and continuation of training for an audiogram study. While this research work is the only justification for keeping this endangered seal in captivity, public display will continue to be as much a part of Maka's life as possible, as it was at the aquarium." ... Richard

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