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## Johanos, Thea ~ Oral History Interview

Edward Glazier

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Voices from the Fisheries  
166 Water Street  
Woods Hole, MA 02543

# **Interview with Thea Johanos by Edward Glazier *Summary Sheet and Transcript***

## **Interviewee**

Johanos, Thea

## **Interviewer**

Glazier, Edward

## **Date**

July 27, 2016

## **Place**

Pacific Islands Fisheries Science Center  
Honolulu, Hawaii

## **ID Number**

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## **Biographical Note**

Thea Johanos has been a research wildlife biologist with the Hawaiian Monk Seal Research Program at the Pacific Islands Fisheries Science Center (and its precursor, the Honolulu Lab) since 1982. She grew up in both Texas and Pennsylvania, and did her undergraduate and graduate work at Penn State University. After graduate school, she applied for work in Hawaii, as her family had just moved there. Her first job in Hawaii was with the US Forest Service working with Hawaiian honeycreepers and other forest birds. When the head of the newly established Hawaiian Monk Seal Research program was looking for field crew members, a contact in the bird community recommended Thea. The timing was right, since the bird program was being cut, so she switched to the monk seal program and has been with it ever since.

## **Scope and Content Note**

Interview contains discussions of: student research work in Wallops Island, Virginia, and Ossabaw Island, Georgia, animal behavior monk seal population assessment, field work, Northwestern Hawaiian islands, Critter cam

Thea Johanos provides a rich description of her work with the endangered Hawaiian monk seal. She discusses her field work which she began in 1982. In addition, she describes how technology has changed in the field.

## **Indexed Names**

Conant, Sheila  
Gilmartin, Bill  
Littnan, Charles  
Ralph, C. J.  
West, Sandy

## **Transcript**

**Edward Glazier:** This interview is being conducted as part of the Voices from the Science Center's project funded by the Northeast Fisheries Science Center. It is also part of the Voices from the Fisheries project supported by the National Marine Fisheries Service Office of Science and Technology. My name is Edward Glazier and today, July 27<sup>th</sup>, 2016, I'm speaking with Thea Johanos at the Pacific Island Fisheries Science Center in Honolulu. Thea is a longtime NOAA Fisheries employee and presently Lead for the Population Program for the Hawaiian Monk Seal. Thea, I thought we can start with a little bit about your background on your early days with the agency and proceed through a variety of issues as you choose. Thea?

**Thea Johanos:** I'm a research wildlife biologist with the Hawaiian Monk Seal Research Program at the Pacific Islands Fisheries Science Center. I've worked here since 1982.

**EG:** Were you at the lab on Dole Street?

**TJ:** I was. That's where I was centered, where the office was, although we also did a lot of work at Kewaloas far as prepping for the field seasons and also we had rehab seals that we would bring in and house there.

**EG:** Can you talk a little bit about your career? How it developed from school to work and how you ended up in government?

**TJ:** OK, so I went to Penn State University for both undergraduate and graduate school. I came from a musical family, so I didn't really consider science as something that I was going to go into. However, I did love nature and was very interested in animals, and when I was trying to figure out what I wanted to do before I went to college, it struck me that it would be wonderful to be a naturalist, although I felt like the age of naturalists was over.

So, anyway, I went to Penn State. I started out in liberal arts and I wanted to get all my science courses out of the way so I didn't ever have to take science again. [laughs] So, I took all the required science courses the first year and I wanted to take the real science courses, not the watered down ones for liberal arts majors, just because I wanted to learn the real stuff. The summer after freshman year I was feeling the stress of figuring out what I wanted to do with my life and so one day I sat down with the college catalogue for Penn State and I just read it from cover to cover, read about all the majors and through that process I suddenly decided I wanted to study biology. And once I made that decision, I could then see how my previous interests led to that, but it was sort of a sudden discovery that that's what I wanted to do. And so I went into biology. I didn't know exactly what aspect of biology I wanted to study, but I saw a flyer on a

bulletin board talking about a field program at Wallops Island Marine Science Consortium on the coast of Virginia that Penn State was involved in. When I saw that it, seemed like the perfect fit for me and I realized I wanted to be a field biologist, so I joined that program and went down to Wallops Island and ended up getting a marine science certificate as well as my biology degree for undergraduate. And then I went to graduate school. There was an interdisciplinary graduate program in ecology at Penn State, where I studied animal behavior and evolution. My thesis project was the reproductive strategies and parental investment patterns of the feral ass on Ossabaw Island, Georgia. So, I went down to Wallops, I mean, Ossabaw Island and so you can see, there is sort of this island theme going here. [laughs]

**EG:** Yes, I was trying to get the connections with Penn State and your career and I didn't realize they had a facility in Wallops. I grew up [for a time] on the Eastern Shore, too, so that's interesting.

**TJ:** OK. So, Ossabaw Island is a barrier island off the coast of Georgia, sort of near Savannah. There's no connection to the mainland. You have to go by boat. There had been a student in my lab who'd studied the donkeys before I did. And so, he was going to do a Ph.D. on the social system of the donkeys. So, he went down there and when he got down there, he found that all the donkeys had been herded up and they (the island managers) were going to castrate them all, which, of course, would ruin his study. So, somehow, he finagled a way to have vets from Penn State fly down there and vasectomize all the males. So, they were vasectomized, but didn't realize that they were shooting blanks. By the time I got there, all the dominant males were sterile. But, there some fertile foals that had been *in utero* at the time of these vasectomies. So, it ended up that the subordinate males were fertile and the dominant males were not. This made for a very interesting study because the females would, because they didn't get pregnant again, they'd protect their foals for a longer period than they normally would. Normally, the foals would be kicked out of the harems when their mothers gave birth to their next foal, but because they were protected they could remain in the group. The females would actually get between the dominant male and their mature foals who were trying to mate other females in the group. [laughs] So, it was very interesting.

But, while I was at Ossabaw, I was living in a very primitive situation. The woman who owned the island had these programs going on to try to use the island for good. Her name was Sandy West. The program I was in was called Project Genesis and we were living in a self-sufficient way. We had a cow and chickens and --

**EG:** What year was this?

**TJ:** This was probably 1976? '77? We had kerosene lanterns and we had outhouses and a cow and chickens. It was a very interesting way to do my graduate study. I learned a lot about living in that primitive manner, as well as --

**EG:** With a mission, with a science mission. Yes.

**TJ:** With a science mission, but other people that were there were doing all sorts of other things, like pottery or dance or --

**EG:** OK. Oh, wow.

**TJ:** Yes. So, then I went back up to Penn State to defend my thesis. While I was there, I was getting near graduation, so I sent out a bunch of résumés to various places. One résumé I sent out was to somebody in Hawaii. And the reason I even thought about Hawaii was because my family had recently moved to Hawaii. I was talking with some of my lab mates and one of the women in my lab had a previous advisor who had then gone to Hawaii and was heading up a program with the Forest Service on honeycreepers, or forest birds in Hawaii. That ended up to be the one job that I was offered and so I came to Hawaii to study forest birds. And I was living on the Big Island and pretty much working out in the forest, banding birds and doing phenology of the vegetation, insect sweeps and things like that.

**EG:** Where on the Big Island?

**TJ:** I was living in Volcano.

**EG:** Volcano, uh-huh.

**TJ:** And we had study sites around the Big Island. Several places, and also we went up to the Alakai Swamp on Kauai. But mainly our study site was at Keahou Ranch on the slopes of Mauna Loa. My boss, C. J. Ralph, then asked me to come to Honolulu just for a few months to do some data analysis. So, I did and that's where I learned how to do programming. We had a remote terminal that we would submit our jobs to that was connected to the mainframe at UH [University of Hawai'i]. So, you'd submit a job and then you'd have to get in the car, this was at the State Office Building in Honolulu. We'd drive out to UH--

**EG:** With your cards, right?

**TJ:** No. No, this was post-cards.

**EG:** OK. [laughs]

**TJ:** We just typed it out on the terminal.

**EG:** I see, OK.

**TJ:** And then you got to UH and the computer building was just a hive of activity. People frantically going around and there were these, sort of a wall of bins between the mainframe and a more public area, so when your job was finished, they'd put it in a bin and you'd come and pick it up. Hopefully, it ran correctly. If not, there were some terminals in the computer building that you could possibly resubmit your job at. However, there's like a lot of competition to get on those terminals.

So, anyway, while I was in Honolulu doing that part of my job, I was expecting to go back to the Big Island and to the field, [but it](#) was announced that the project was closing because of

budget cuts. So, knowing this was in the future, I hadn't really started looking for a job, but I happened to call Sheila Conant, who was studying the Millerbirds on Nihoa, because we had given her some of our bird bands and somebody had called in a band return, but it wasn't in our records, so I thought well, maybe it was one of the bands that we had given her. So, I called her up and asked her about this bird band and she asked me how would I like to work with monk seals? Because --

**EG:** On Nihoa?

**TJ:** No. No, because the monk seal program here in Honolulu with the National Marine Fisheries Service was just starting up and Bill Gilmartin, who was heading up the program had asked her for recommendations of people to go out in the field. She knew me because I was in the bird community. So, I'd never heard of monk seals before, but I went for the interview and got the job. So, soon after that I went out in the field to the Northwestern Hawaiian Islands, to Lisianski Island --

**EG:** Nihoa is much closer than Lisianski. Is that correct?

**TJ:** Right. Nihoa is one of the last high islands in the Northwestern Hawaiian Islands. So, that started my career with monk seals.

**EG:** Wow. Did your experience on Ossabaw help, do you think?

**TJ:** It definitely did and that's probably pre-adapted me to go out in the field, because the conditions out in the Northwestern Hawaiian Islands field camps are very primitive and very isolated. Maybe there are just a couple of people on the island. That year, I was deployed for seven months and the first three months I was with two other people and then the last months I was with, I guess, there was six people in the camp altogether. So, it was very isolated. Only communication was with short-wave radio. We could communicate to Tern Island, which was closer in to Honolulu. [laughs] We'd call them three times a week. And then Honolulu was in better communication with Tern Island.

**EG:** What were you doing with the monk seals out there? I mean, were you looking at social behavior?

**TJ:** Well, the monk seal is an endangered species, so the whole reason for the project was, and is, to understand the population status and what factors are holding back recovery of the monk seal and to try to mitigate those factors where possible. That was the first year that we'd ever tagged pups, so that year we were doing an effects of tagging study in order to see whether it was deleterious to the monk seal to be tagged. So, half of the pups were tagged. Half of them were not and we were studying them, their behavior on a very fine scale, doing focal animal observations. And we were also just identifying the whole population and collecting reproductive information. If there was a seal that died, we did a necropsy. And at the end of that year, we actually had a study where we attached dive recorders to seals and I think that was the first time that had been done on monk seals, to get the first information on foraging among the seals.

**EG:** How did you get out there?

**TJ:** On a fishing boat. The Farisa. [laughs]

**EG:** Huh? Was that contracted through the program somehow?

**TJ:** Yes, it was contracted. Yes, it was an interesting fishing vessel. [laughs] My bunk was sort of a little board bunk bed that would come down over the kitchen table of the boat, so I was on this board and the boat was really rocky, so I would have to have one foot on the rope that was holding the board up so that I wouldn't like go flying out the window. [laughs]

**EG:** A sampan of some kind?

**TJ:** Yes, um-hm.

**EG:** Interesting. This was what year again? I'm sorry.

**TJ:** 1982.

**EG:** '82, yes. So that's a lengthy period of research for you from then „til now.

**TJ:** Right. I went out for quite a few years after the first year, but I really enjoyed the fieldwork. Then, after I had kids, I couldn't come out as often, but I actually got to go out this year just for a short period of time when we were deploying our field camps. Just during the turnaround of the ship, to help set up the camps.

**EG:** So, a NOAA ship is now doing that run up there, I would think.

**TJ:** And NOAA's ship, *Townsend Cromwell*, was doing the runs back then. I think we were picked up by the *Cromwell* that year. It's always been a combination of the white ships and also charter vessels where we have to.

**EG:** Yes, the *Cromwell* has many missions—or had. And the current vessels are the same, I would think so, to keep that research going you would have to contract folks to take you up there. Is that correct?

**TJ:** Right, if logistically it didn't work with the ship's schedule. I mean the ship's in high demand, so we used the ship whenever we can, but we can't always use it.

**EG:** Any particularly notable field experiences from those early days? Storms? I always think of being out in the Northwestern Islands in a storm situation. Were there any problems associated with weather or surf or tsunamis or anything?

**TJ:** There always were storms. You had to keep your tent lines tight. Yes, we definitely had tropical storms while we were out there. Storms when the tents would be filled up with water for

several days at a time. We never had a hurricane while I was out there although we had to evacuate our field camp several times in the recent years with hurricanes. **EG:** Just a couple of years ago, I remember there had to be an evacuation.

**TJ:** Last year and the year before. Those were the first two years. [laughs] Global warming. We did have a tsunami when I was at French Frigate Shoals. We heard about this tsunami because at French Frigate, Tern Island, Fish and Wildlife had a more permanent station and had the radio on all the time. So, we heard about the tsunami from Honolulu. However, this was 1986, I believe.

The more remote camps only came up for the radio calls three times a week, so they didn't hear about it. Anyway, we got ready. This was a time when National Marine Fisheries could shine because we had a lot of canned food. The Fish and Wildlife group, at that time, had a plane that would come in periodically and resupply them with fresh food, so they were eating fresh food; we were eating canned food. But, with the news of the tsunami, we got all our canned food and brought it up to the top of the generator building and we all got up there and prepared for the tsunami. At Laysan Island where they didn't know about the tsunami, they were washing dishes and they put their dishes down at the edge of the surf to wash them and then they turned around and the surf line had receded and then another few minutes later, all their dishes were like floating. It wasn't a very big tsunami, but the next radio call, they asked "was there a tsunami?" [laughs] We told them yes, there was. But we didn't actually see much.

**EG:** Many of those events seem to turn into nonevents, but there's always the threat of a big wave coming through. People have to respond accordingly. Interesting.

**TJ:** Definitely had a lot of experiences out there. One time, well, we had to bathe in the ocean, so one time myself and a camp mate were bathing in the ocean. At that time there was an aggregation of grey reef sharks that were just north of camp. This was at Laysan Island. There were maybe 200 sharks that would just mill around in this small area. What we had heard was that they were pregnant females. Anyway, we were bathing just in the wave wash and suddenly six sharks came by. So, we stood up. Two of the sharks got caught between us and shore, and were swimming back and forth trying to get around us. We were walking towards the shore going shoo, shoo. [laughs] That was a funny thing.

**EG:** Did you want to talk a little bit about the progression of science in this period? We could think about technology or the different paradigms that influence the way that you do science of monk seals. Any notable changes over time that you might want to talk about? Or, has the science been, well, certainly telemetry, remote sensing and these technologies have developed. Did that influence the way you did your work?

**TJ:** Well, definitely some aspects have stayed the same and some have changed. Our basic population assessment data extends, with many similarities, from 1983 on. The first year we went out there we didn't go out with any set protocols, so every field camp sort of developed their own system of collecting data. Then, when we came back at the end of the season, we had a big meeting and hashed out how we wanted to collect the data. So, our time series extends from 1983 to present. This is really the premier dataset for marine mammals anywhere, because we have such detailed records of individuals over time, and their progeny, and so on and so forth.



We've been tagging the pups as soon as possible after weaning and then we can follow them throughout their entire lives.

**EG:** What is the life expectancy, generally?

**TJ:** Well, we say 25 to 30 years. However, few of the animals actually get up that old. We [now have](#) records of animals that are 32 years old. So, we don't know how old they can get, but that's the maximum so far. There's been a consistency there which is really valuable. However, a lot has changed also and not only methods of analyzing the data but also methods of collecting the data. For instance, when we were first out there, if we wanted to identify a seal, we would bleach mark them or tag them, but animals are also identified by scars or natural markings. And so in the early years, we had film cameras so we'd take pictures, but those pictures couldn't be developed until we got back to Honolulu, so a lot of our ID work was done by drawing. We would draw scars and natural marks and then we would try to match drawings up. Now we have digital photography, which really makes it a whole new ball game that way. Then, of course, the telemetry and the critter cam and all the instruments that we're now able to put on seals has made a huge difference. We didn't realize monk seals were bottom foragers until we put critter cams on them.

**EG:** That's significant.

**TJ:** Right. I mean, it opens up the whole world underwater. They spend only a third of their time on the beach, so there is a lot that we're still discovering.

**EG:** It might be helpful to have a little context about the species itself. It's clearly very rare. Are there other monk seals populations? Isn't there a Caribbean or...?

**TJ:** Well, monk seals are the most ancient type of seal. They're related most closely to elephant seals, and both monk seals and elephant seals have a catastrophic molt, where they molt off their whole outer layer of skin as well as their fur every year. That's something interesting about monk seals. They're the only kind of subtropical seal. In historic times, there were three species of monk seals. Mediterranean monk seals, Caribbean monk seals, and Hawaiian monk seals.

**EG:** Species or subspecies?

**TJ:** Species. Yes. The genus *monachus*. However, just very recently the geneticists decided to make it two genera. So, the Mediterranean monk seal is *monachus*, and the Hawaiian and Caribbean monk seals are *neo-monachus* now. Anyway, the Mediterranean is highly endangered. There are only around 600 left. And the Hawaiian monk seal is endangered, also. It's around 1,300.

**EG:** 1,300? Um-hm.

**TJ:** Yes. And the Caribbean monk seal is extinct, so the Hawaiian monk seal is the only extant species within its' genus. It's only in Hawaii, although there was one pup at least that was born at Johnston Atoll, so we consider the Johnston Atoll as also within their range.

**EG:** I see. That's quite a range.

**TJ:** [laughs] Right.

**EG:** I have some curiosity about the biogeography. How did that all happen? How did these species, how do they share similarities and yet they're disparate geographically? We're talking about long time spans.

**TJ:** Right. Well, possibly there were more monk seals around the subtropical regions and these are just the remnants. We don't know for sure.

**EG:** Fascinating. Are there paleo-populations? Skeletal remains that could be examined to understand any of that? Or probably not, I would think.

**TJ:** Not much in this environment. They've --

**EG:** Too acidic to preserve?

**TJ:** Right. This environment is not good for creating fossils. There had been several bones that they have identified as monk seal remains in some middens of Hawaiians on the main islands. Very few though. And there isn't much information, historical information, about monk seals.

**EG:** Right, it's not clear whether Hawaiians had an affinity or used or monk seals or interacted with them. I think there's some evidence, but I think that's --

**TJ:** Just those bones, really. We suppose that most likely as soon as there was contact by the early Polynesians, monk seals were probably wiped out of the main Hawaiian Islands pretty quickly. There were other species, like flightless birds, that became extinct soon after arrival of humans. Because, historically, we've had seals that we know have come down (from the Northwestern Hawaiian Islands (NWHI) to the main Hawaiian Islands). For instance, we have a seal that was born at Midway and ended up pupping on the Big Island. So, there's no barrier for them to come from the Northwestern Hawaiian Islands to the main islands. What we suppose is that it's just that monk seals were very good food sources, easy to catch, when they come up on the shore. So, most likely, they were extirpated, except for certain vagrants that would arrive every once in a while.

**EG:** As has been typical of human/mammal interactions around the world. Could you talk briefly about fishery interactions, given that we're in a fisheries science center? There's been quite a long-term issue with monk seals interacting with shoreline fishermen around the islands. I was wondering if you could just talk about that problem a little bit?

**TJ:** Well, the majority of the population is in the Northwestern Hawaiian Islands; 80%. There, there hasn't been a lot of fisheries interactions. Most of the problems dealing with human effects of fishing in the NWHI would have to do with marine debris. They're very curious and tend to get entangled in marine debris. That's something that our program has been doing from the

beginning; we've always collected marine debris that's dangerous to monk seals and other wildlife. Get it off the beaches in the Northwestern Hawaiian Islands.

**EG:** There's quite a bit of debris as I understand up that way.

**TJ:** There is.

**EG:** Yes. From fishing fleets around the North Pacific, correct?

**TJ:** I think from the whole Pacific region. Just the way the currents are, they just concentrate all the debris right around the Hawaiian Islands and Archipelago. In the more early years, there weren't very many monk seals in the main Hawaiian Islands. The main Hawaiian Island population has increased, so initially we would see maybe one or two sightings a year. We didn't see much direct fisheries interaction in the Northwestern Hawaiian Islands until I believe it was the early '90s, when there was some evidence there were some interactions with the longline fleet. So, there was an exclusion zone created to mitigate that around the Northwestern Hawaiian Islands. Then, in 1988 the first pup was born, at least in recent times, the first successful pupping in the main Hawaiian Islands. While the Northwestern Hawaiian Islands population has been in decline, the main Hawaiian Islands population has been increasing. Things appear to be more favorable in the main islands despite the fact that there's more human population and more fishing pressure. There's also more food for seals in the main islands.

**EG:** In the main islands? I didn't realize. Well, is shark predation in the Northwestern islands a problem? Is that part of the --

**TJ:** It is a problem at especially at one islet, at French Frigate Shoals, where Galapagos sharks have started really concentrating on pups and trying to take them during their nursing period or as soon as they wean. So, one of our mitigations is to trans-locate those pups away from that site as soon as possible right after they wean and take them to a safer place within French Frigate Shoals. We've seen large shark bites on healthy seals. Every shark attack that I've witnessed has been on a seal that was already about to die, was just floating there, and the shark finished it off. Well, I saw one shark attack on a healthy seal during an aggressive interaction between seals, but that seal survived. Besides this one case at French Frigate Shoals (where sharks target pup), I don't think sharks are a major source of mortality. Their predation is a major impact, well, it can be for individuals, but I don't think that that's what's holding down the population up there. However, sharks are a competitor to the seals and our critter cam shows that as the seals are foraging, there are sharks right around it trying to steal whatever the seal finds, and also jacks also attempt to steal prey from seals. So, there's a lot of competition with other predators and other seals in the NWHI. Down here in the MHI, there aren't as many large predators to compete with the monk seals, although there are people fishing, a lot of where the seal is foraging is deeper than where the fishermen are fishing.

**EG:** So, that problem is more recent than I thought and perhaps not quite so direct of an interaction as I might have assumed. Although --

**TJ:** There are problems with individual seals, especially, that have learned to take fish or bait from fishermen.

**EG:** But not population-wide? It's an individual learned behavior. Is that correct?

**TJ:** I think they're very smart and so some seals have just gotten that behavior. It can become more of a problem, I guess, so yes, it is something that we're concerned about. Because the main islands is a place where the population is growing, and it's important to the overall health of the whole population. We want to foster coexistence between people and seals. That's a big push, a more recent push, of our program.

**EG:** From a human side, I don't think there's a lot of people out there who want these interactions to happen. People are, fishermen tend to want to catch fish and avoid such problems, but I guess accidents happen. It's a state water issue, but because we're talking about an endangered species, the federal government is involved in that effort to minimize interactions like that. Correct?

**TJ:** Right, we're doing what we can. And if a seal is hooked or entangled, we send a team out to de-hook it or disentangle it.

**EG:** So, there is some working with state agencies in that regard? I mean, yeah, yeah, sure.

**TJ:** Right, right. Sort of a partnership.

**EG:** Right, yes. Where are your interests now? What are you doing with seals now? What's your focus?

**TJ:** I'm the Lead for Population Assessment effort within the program in the Science Center. I work with the field teams to train them, to oversee their data collection out in the field, and work with the data back here to get it ready for analysis. And I do some of the analysis, too, to see what the status of the population is and to also do, well, to study various aspects of the natural history of the seals and guide possible management actions.

One of my big interests is in reproduction and behavior. In the past, there was a huge problem with adult male aggression in Laysan Island where there are two and a half males for every female, basically, in the population. We had these mass mating events where females, usually adult females but also immatures of either sex, would be sort of the focus of a mass mating attempt. They might become injured or die. Up to 13% of the adult females in one year were killed that way. So, we did an analysis of the association patterns and behaviors of the males and tried to identify aggressors and ended up removing 37 males from the Laysan population over a 10-year period. After these lastremovals, then the incidence has been greatly reduced. However, it's still an issue. Sometimes it's multiple male aggression or just an individual male who becomes aggressive towards pups or juveniles, so that's in a continued area that I've been working on.

**EG:** Is there morbidity or mortality between males during those events or directed only at females? It's interesting, yes. So, that's a little bit different than many mammals, I would think.

**TJ:** It occurs in other mammals.

**EG:** Got you. Have you published on that topic? Or are you?

**TJ:** I have.

**EG:** You have a long list of publications. It's fascinating work.

**TJ:** Right. I'm working on another paper about the dominance hierarchy and how that affects, interacts with aggression.

**EG:** Interesting. Is there anything you would like to talk about in terms of change in work environment?

**TJ:** Sure. When I first came to the lab at Dole Street, of course, it was a much more relaxed atmosphere than the current atmosphere. It was smaller. There were less people at the lab. It was more, science focused then. Not as much administration. There weren't very many women as scientists. Mostly they were within the admin area. Dole Street was very open air. There was no air conditioning and the whole building was sort of created for a tropical environment with the inner courtyard and louvers on the inside and then windows that would open on the outside and fans. Of course, we didn't have computers, except for this terminal that would connect to the mainframe.

**EG:** That was directly adjacent to University of Hawaii at Manoa campus, so there was some opportunity for interaction with other scientists and whatnot, I would think. Is that correct?

**TJ:** Right. It made it very easy. They could come over for seminars and we could go to the UH for seminars. Or even if we were taking classes at UH, that just made for an easy walk over because we were right on campus. So, I think it facilitated interactions between the university and the lab at that point.

**EG:** I have a feeling you liked the lab? [laughs] Is that correct?

**TJ:** I did.

**EG:** You did.

**TJ:** I did. I really enjoyed working there. We were right next to a stream and it was a nice environment.

**EG:** I have to reveal my bias because I spent some time there myself and it's really a nice, just a beautiful setting with the stream and the campus right there. You could go get lunch very easily. But I guess it was what? Ford Island was planned about 12, 14 years ago. It took quite a while to make that transition from the lab to Ford Island.

**TJ:** Right. And it physically changed over time. For instance, when we did start getting computers, then the whole building had to close up, for the sake of the computers, not for the sake of the people. So, the louvers were boarded over and the windows could no longer open and then we had air conditioning. So, it did change physically because of technology. Then, of course, with 9/11, suddenly the doors were shut. [laughs]

**EG:** And more challenging to get in and out, right?

**TJ:** Right. [laughs]

**EG:** It's funny you mentioned that air conditioning. I sat in a room with folks who did otolith research, microscopy, you know. And I think the microscopes operated better when they were cold, chilly, so I was always freezing over there. This was mid-,90s, so it sounds like the air conditioning came some years after you originally got there.

**TJ:** Right. So, yes, I did enjoy Dole Street. Of course, then there was when we were getting ready for the field, we had people at Kewalo, we had people at Dole Street. All our gear was at Kewalo and then the ship was at Sand Island at that time, so there was a lot of back and forth, sitting in traffic.

**EG:** Right. I thought about that recently, so things had to be shuttled to Kewalo and then to Sand Island. They're not that far away, but you got to go through some serious urban traffic to make that happen. Correct?

**TJ:** Right. Yes, working at Kewalo, I enjoyed that, too. I was never based at Kewalo, but we had seals down there, plus our field gear, so I spent quite a bit of time at Kewalo. Yes, in the early years, there was a lot of fisheries research, which was interesting.

**EG:** At Kewalo?

**TJ:** At Kewalo.

**EG:** That's where the aku fleet was based, right there, in Kewalo basin. Weren't they, I think?

**TJ:** Yes.

**EG:** Yes, so there was some tuna orientation there. Then the larger harbor was at Sand Island, correct?

**TJ:** Right.

**EG:** Yes. Deeper water. Larger vessels could moor there.

**TJ:** Right, and that's where the white ships were. Sand Island. All right, I have to say this is a good facility that we're in now. IRC.

**EG:** Yes, it occurs to me that at least that part of things is probably better facilitated at Pearl. The vessels and whatnot. Would you say that's true? You know...--

**TJ:** Right. We had everything at one place and so it makes it easy to care for animals that are in rehabilitation. We can just be working at our desk and then go out and feed a seal or to help with unloading or offloading the ship. The ship is right there, so that's a big plus. The place isn't homey and convenient to the UH, but it's definitely a nice facility here.

**EG:** Is there a heliport if you needed to evacuate pups or whatever?

**TJ:** That has happened. We've had a Coast Guard helicopter land in the parking lot in order to transport a seal that we had been rehabilitating back to where it had been caught. However, that's not a usual thing to have happen.

**EG:** Is there anything else you would like to elaborate on in your long tenure?

**TJ:** [laughs] I don't know. Do you have any other questions?

**EG:** Well, we could think about challenges and maybe solutions. Are there any outstanding periods where you were responding to either agency challenges or challenges in the field?

**TJ:** Well, working out in the Northwestern Hawaiian Islands is a challenge. Logistically, it's very isolated and so you have to make sure you bring everything out with you that you're going to need and then if there's any problem, it's difficult to get people out of the field unless it's planned, end of camp or something. So, there are challenges. There are continuous challenges, which makes the job interesting. It's not a bad thing in a way. If a seal is injured out there, for instance, sometimes the field crew can do something. Sometimes they can't. We try to send very small pictures through the satellite phone, you know? Back to the vet and make recommendations. There are just continuous challenges working in a remote environment.

**EG:** That's the way it is. It hasn't really changed, has it?

**TJ:** No, that hasn't changed. I mean, people nowadays are able to email, text emails through the satellite phone. So, there's much greater communication between the field and Honolulu. And also field people can communicate with their friends and family. They can't send photos or anything like that. So, in some ways the isolation is a little less. However, it's still isolated and a lot of the physical elements of being in a field camp are still similar. [laughs] Then, of course, there's always budget challenges. Yes. The more time we're able to be out in the field, the more seals we can save, so some years we've had very shortened field camps or had to even not have field camps, but that's the nature of working. [laughs]

**EG:** That's right. There are limited resources always. Right. Maybe we'll just do a couple more questions. Do you have particularly enjoyable memories? Or do you feel like you could talk a little bit about major achievements?

**TJ:** Well, I would say a major achievement is just to, have made a difference in the fate of the monk seal. When the field people are out in the field and when I was out in the field and up to present, it gives an opportunity to save individual seals by disentangling them, collecting debris off the beach. If there's a pup that's separated from its' mother, we can put them back together. Or if there's an abscess, we can treat that out in the field. So, there are many different things that we will do. Sometimes a pup is born and the placenta doesn't detach from the pup and that can be a problem because the pup can be anchored in the water and can't get out. Or it can be anchored up in the vegetation and would overheat. It can't get down to the water, so in that case, we would cut it. So, there are many different things, little things, that we do to save individual seals. Since it's an endangered species, we feel that's important. We did an analysis looking at the animals that would likely have died if we hadn't done something. At least 32% of the population that's alive today is here because of something that we did either to that individual or it's a progeny of an individual that we did something to. That's a minimum, because it doesn't count for all the debris that we collected that would have entangled an animal or the males, aggressive males that we removed or the sharks.

**EG:** Sounds rewarding.

**TJ:** Anyway, I feel like there's a purpose to what I do and I enjoy it. It's beautiful when you go out in the field. Sometimes for example, at Kure Atoll, a pod of dolphins might come, and you might see them as you're going from island to island. There's a lot of fun times and you get to really know the field, the people that you're out in the field with. I feel lucky.

**EG:** Little did you know when you were at Penn State you might end up on those remote atolls. [laughs]

**TJ:** Right, right.

**EG:** Quite a career.

**TJ:** It's just kind of funny how life is. You just don't know what's going to fall into your lap. I feel sort of like this fell into my lap.

**EG:** Maybe we could close with a little discussion about the future. In your case, for the monk seal. How do you see things going for this endangered species?

**TJ:** Well, I feel encouraged. Right now we have been looking at recent trends and it appears that although the population in the Northwestern Hawaiian Islands, has been declining for decades, there are some hopeful signs that maybe that is stabilizing. In the main Hawaiian Islands, the population has been increasing. So, we're feeling that perhaps the overall population is coming to a point where it may be stabilizing. We need more years of data to tell for sure, but I'm feeling hopeful in that way and also I feel like we're making progress in working towards this culture of coexistence between people in the main Hawaiian Islands and the monk seal population that's here. So, I feel cautiously optimistic.



**EG:** Yes, I think those strides have been really significant on the human interaction side, at least based on my observations in the last years. Is there anything that . . . I know the critter cam and the critter cam education program . . . do you feel like that's been successful?

**TJ:** Yes. I feel like that's one of the most --

**EG:** We should probably explain what that is. Just briefly.

**TJ:** Charles Littman is the head of our program and he also comes from a foraging background. He thought up, had the idea, that a really good way to, well, both learn more about the monk seal foraging in the main Hawaiian Islands, and have an outreach to the community would be to have this critter cam project in the main islands. Critter Cam, of course, is done in collaboration with National Geographic.

**EG:** I didn't know that.

**TJ:** The idea of this program was to have school children involved so that they could actually see what the seals are doing underwater.

**EG:** The camera is mounted on the seal, correct? . . it's a small camera . . .

**TJ:** Right. It's a camera that's epoxied to the fur of the seal. It's put on its' shoulder area. It's programmed so that it will take video when the seal is underwater and you can program it different ways to take footage at different time intervals or different depths. But anyway, some individual students are able to go out with the team that was deploying these critter cams and then after a few days the cameras were then retrieved and these school groups were able to see the footage first. So, they could actually see how often the seals were catching fish or passing fish. [laughs] Or sleeping underwater. It really gave a firsthand, well, not only did it foster an interest in the seals for the students, but it also gave a firsthand look at what the seals were actually doing underwater and helped to dispel certain myths about the seals just eating continuously. So, I think that that's been a very successful program of outreach to the students.

**EG:** Anything else in the works along those lines?

**TJ:** We hope to do more of that depending on funding. What we also now have, our recent recovery team is geared towards implementing main Hawaiian Islands management, so it has a lot of community members and we're hoping to get input from them as to the best way forward.

**EG:** Terrific. I wish you the best of luck and thanks very much for your time this morning.

**TJ:** Okay. Thank you.

**EG:** Thank you.