

Transcript of Question and Answer Session from Meeting at NELHA
on Wednesday, April 10th, 2002, regarding Kona Blue Water Farms' application for
an open ocean aquaculture lease off Unualoha Point.

Q. Is there a problem with ammonia or fish waste accumulating on the bottom, or other environmental problems?

A. There is over 1.3 million tons of fish farmed in cages around the world, and it is generally an industry that has minimal environmental impact. In the past, some cage sites were located in protected bays or fjords with little circulation. This sometimes resulted in accumulation of fish feces and uneaten food beneath the pens. As cage engineering technology has improved, however, the cages have been able to move into deeper water, with better circulation. There is a tremendous dilution factor from all of the water that moves through the fish farm area. For the site we have proposed, at maximum production of 360 tonnes per year, presuming a 1 knot current, the total feed input to the environment is equivalent to one pound of fish feed in 274 Olympic swimming pools.

The ammonia from the fish is also quickly broken down by natural bacteria in the water. In the studies of the submerged cage in Oahu, the ammonia was not detectable at a distance of 30 m downcurrent from the cage. Although there was an increase in the numbers of worms and other organisms in the soft sand substrate beneath the Oahu cage, there was no change in the diversity of the animals. The increase in the benthic biomass is to be expected when there is some greater organic input. The overall conclusion, however, was that the organic input was not harmful to the benthic community.

Q. What is mesh size on net pen? What is risk of catching wild fish in mesh?

A. Nursery pens are usually 1/2" to 3/4"; adult pens are up to 1 1/2" mesh. It is thick twine, and wild fish do not get entangled.

Q. What is experience with wild fish predation?

A. No problem so far with other cages in Hawaii.

Q. What is potential for marine mammal entanglement?

A. Mooring lines and mesh are kept very taut, and are big diameter – more like a cable. There have been no records to date of entanglement in fish farming gear. Entanglements are almost always the result of slack-line fishing gear such as drift-nets, long-lines, and crab pot lines.

Q. Will this interfere with dolphin movement into Makako Bay?

A. Daily dolphin movements vary, but the usual pattern is for a group to aggregate on the shelf off Mahaiula, and move along the reef drop-off into Makako Bay. The fish pens will be a 1/4 mile

offshore, in deeper water, and will not impede this movement. After resting in Makako Bay, the dolphins have a “zig-zag” pattern back and forth – they don’t follow a set path out to sea. The fish pens and moorings don’t represent a barrier to dolphins. They monitor the interaction of dolphins with the offshore farm operation off Ewa Beach – the dolphins swim over, under and around the submerged cage – but they are neither attracted nor repelled by it. They don’t try to get at the fish inside.

Q. Does it interfere with turtles or marlin?

A. There is no history of any problems. It is probably too shallow for marlin.

Q. Could this be a fish aggregation device?

A. Fish are attracted to the Ewa Beach cage. Broomtail file fish (loulou) are present in large numbers, and mullet and palani are also abundant. But it doesn’t act the same as a FAD in deep water. There are no pelagic fish – tuna and marlins – around the cage.

Q. How often will dead fish be removed?

A. The farm will usually be checked on a daily basis, but some days the sea or weather may not permit access to the cages. As with most farms – chickens, cows, pigs – you don’t want to leave dead animals in the same area as your healthy animals.

Q. What is the potential for caged fish to escape? What will be the impacts of this?

A. As farmers, we would very much try to minimize the risk of escapees. However, as we are going to use just native species – not foreign species – the concerns about escapement are minimal. Most of these escapement concerns stem from the West Coast salmon farming, where they were using introduced Atlantic salmon. We are using Hawaiian species on the farm. There is an ongoing scientific debate about the potential for genetic problems with escaped native fish, but there are no firm conclusions. For mahimahi, they will disperse very quickly. For something like hapu’upu’u, if several thousand were to escape, it would be a field day for local fishermen.

Q. What vehicle will be used for feeding?

A. Current practice is for farmers to go out in a boat to the site and feed 2 or 3 times per day. We would like to eventually develop a feed buoy that would allow us to do remote feeding. This would let us feed on rough days, or from first light to last light, which is better for the fish. The buoy would store 1 or 2 days worth of feed, and would need to be solidly built, to keep the feed dry.

Q. What type of material will the net be made of?

A. We will choose from several types, depending on cost, fouling, etc. Spectra mesh is good, but expensive. Polypropylene is less expensive, but may not stand up to the wear and tear as well.

Q. Can baby dolphins get inside the cage? Is there also potential for whales to get entangled?

A. Dolphins or other animals cannot get inside the cage. There is no history of whales getting entangled in fish farming equipment, as the mesh and lines are very taut.

Q. What sorts of moorings will be used? Will this involve drilling into the ocean bottom?

A. Moorings will be either large concrete mooring blocks, or a combination of concrete and steel anchors. We will rely on engineers' guidance for the type appropriate for our substrate.

Q. It would be good to make this program beneficial for other groups, and for community social and cultural aspects. What is planned along these lines?

A. We hope not to have a stand-alone industry, but one that is viewed as a beneficial development. As in our past projects, with the pearl farm development, we worked with training and extension programs to help develop local skilled workforce. We have two training programs under way at the moment in Majuro, Marshall Islands, to train Marshallese locals as pearl seeding technicians. One is funded by the National Marine Fisheries Service and the other by the local government. Our hatchery in Majuro is also supplying spat (baby oysters) to two other locally-owned farms. We have also worked towards setting up a Hawaiian Pearl Partnership to try to foster close working relationships with traditional pearl shell carvers, trainers, and other community groups for our proposed pearl farm in Oahu. We hope to approach our work in a similar vein, here, with training programs and sale of fingerlings to other partner farmers.

The other major public good to come from this project will be the set-up of the fish hatchery. A commercial fish farm will act as an engine to drive hatchery research into new species. It will also provide industrial-scale hatchery facilities that could be diverted to reef restocking programs for local, overfished species such as opakapaka, ehu, and hapu'u. There is a good chance that Federal funding or public foundations could pay the costs for such restocking programs. Our project would provide the facilities and the hatchery expertise.

Q. I am heartened by these comments, and suggest that we look at ways to also bring in other community groups or schools. What is the expectation of adding fish to the wild stocks?

A. With the farm comes the need for a large hatchery, and this could provide juveniles for research and restocking. We are working closely with the researchers at HIMB (Coconut Island), whose goal is to set up a stock enhancement program. As our project moves forward, we could be providing fry for both restocking and for our farm and other farms. The hatchery technology is the key, and the commercial farm helps to focus the research on this need.

Q. What effect would the farms have on Kawaihae-to-Kona boat traffic?

A. The farm will sit inside the direct line from Keahole to the rocks at Mahaiula. The cages will only represent a minimal obstruction – the pen area would only be 600 feet wide.

Q. How many people would be employed?

A. There would be 5 – 6 immediately employed, and then more for the hatchery operations. When you start to factor in the multiplier effects of post-harvest handling and distribution, marketing, equipment and feed supply. For farm workers, we are going to be primarily looking for those with good experience around boats and the ocean. Bottomfishermen will probably be the best candidates for this work. They know the ocean. In our experience in Cook Islands pearl farming, it was the better pearl shell divers who became the best farmers, because they had the boat and water skills that were needed.

Q. Recent CO2 sequestration experience is instructive; there was a combination of cultural practitioners that came together with other conservation concerns. The EA process denies cultural practitioners' input. We need to talk more, and provide opportunity for the voice of these practitioners to be heard. It would be helpful to go beyond economic issues, and to talk about social and cultural issues.

A. Certainly. Let's find a way to do that. Who should convene this and move it forward? Angel and KBWF will call a round table core group to address these issues.

Q. Will there be a stock enhancement program from the farm?

A. Once the hatchery technology is developed, then this is possible. Its just a question of then finding the money, but there are a lot of Federal and foundation avenues for this sort of support. The enhancement is all conditional on the hatchery – it will be limited to those species that we can do in the hatchery.

Q. The Hawaiian way is to always share some of the harvest – to always give something back, so there will be more for next time.

A. We recognize this tradition, and embrace the principle. With our pearl oyster hatchery work, we always make a point of releasing any excess larval oysters into the ocean, here off Keahole, because we would love to see these oysters becoming re-established here in Hawaii. Also, the natural spawning on a pearl farm helps provide larvae to restock the reef. We are always attracted to projects that can offer both these economic and environmental benefits. With the deep water snappers (onaga, etc), we would need to make sure that releases are done in a sensible way. This will require some research to figure out the best way to do it.

Q. Is there a market for hatchlings?

A. Yes, there is already strong demand. The farm in Oahu is short-stocked because he cannot get enough moi fingerlings. As the industry develops, other farms will also require fingerlings. As with our Majuro pearl oyster hatchery, we would see our Kona fish hatchery as helping the industry expand here, with other farms developing.

Q. Mahimahi are your keystone species, but of all the fish in the ocean, they are the least likely to need recruitment supplementation. What is the timeline with other species, and which ones do you think will be available first?

A. Some snappers have been reared in other countries, but this does not help us here, as we need to address the Hawaiian species. We are bringing in a scientist from Australia who has been the first to rear a valuable snapper species down there. There is also a good chance that we could rear the kahala through – there has been some success elsewhere with this species. We would love to be able to rear hapu’u – the larval rearing for groupers is well-established in Taiwan, but getting hapu’u broodstock will be a challenge.

Q. Are groupers grown in Asia?

A. Yes, the grouper and snapper culture industry is extremely valuable, particularly in Taiwan and China. It feeds into the live reef fish trade, and so reduces the pressures on wild stocks around the Pacific. Usually in Asia they use smaller, surface cages, in more protected bays and lagoons.

Q. Will the food pellets affect the taste of the fish?

A. Yes, farmed fish usually taste better. The farmer can control the ingredients in the food to produce the desired taste. For example, compare wild-caught tilapia with farm-raised tilapia – wild tilapia just taste like mud.

Q. How often will you change the broodstock?

A. Not often, but we wouldn’t want to keep them if they get too big.

Q. How many broodstock?

A. 10 – 20 good pairs.

Q. Do you have a list of preferred species?

A. We will use mahimahi as the keystone species, and we will push as hard as we can to get kahala and hapu’upu’u.

Q. In our experience, promises that are made by a developer are not always kept. How can we bind the developer to provide these community benefits? What guarantees are there?

A. The farm will require a lease, and any special conditions are attached and made a binding part of the lease.

Q. We have to find and help businesses like this that are attractive and beneficial to the community. We don’t want to just think of the “stick” but also the “carrot”. We want to make it attractive for them to come and set up here.

Q. Will boaters be restricted from the 81 acre area.

A. The central 9 acre area, where the submerged pens and surface cages will be, will need to be restricted entry for security, liability and safety concerns. The 72 acre area surrounding this – which has just the mooring lines in it – should probably be “no anchor” because of the risk of getting anchors hooked on the lines, and “no SCUBA-diving” because of liability concerns.

Q. So the 81 acres are off limits to SCUBA diving?

A. There is no diving there now – it is 150 – 200 feet deep, sand bottom and blue water. Any diving will be just to look at our farm, which may expose us to some liability problems. We have concerns about that. If this is a stipulation that the community would insist on, however, then we would be willing to discuss it.

Q. What about a guided SCUBA tour basis? An educational experience, for visitors and local community, public presentations, etc?

A. This would be something that we would consider, but it is dangerous diving ... it is deep and there are strong currents.

Q. Have you made provisions for enforcement?

A. Have not yet addressed specifics. We are hoping that an overall sense of community support and goodwill will minimize the security problems. No problem yet with Oahu cages. We may provide some remote surveillance. We will need to take some precautions. Theft of fish from open ocean cages is considered to be “piracy” under the law.

Q. What will be used to delineate the area? What will be the visual effect?

A. Only the central 9 acre area will need to be marked, in accordance with Coast Guard regulations. We will have small floats and lights for night navigation.

Q. The farm will include the offshore site and the hatchery. Will there be anything closer?

A. Most of the materials (food, fry, etc) will move through Honokohau Harbor. We will have a boat and trailer based down there. We may also have a shore-base somewhere along the Cyanotech shoreline, to monitor the site for security, feeding, etc.

Q. Is Mt Cyanotech going to be removed?

A. Don't know. They can't sell the gravel – they must keep it – but we don't know what their expansion plans are.

Meeting ended.
