

“Immense Risks” of HIMB Research Identified by Scientists

Newly – released documentation from State Dept of Agriculture shows deep concerns raised by scientists on May 2, 2006 about HIMB disease research, Aeby’s vague and misleading claims, “unclear scientific merit”, “little evident benefits from a conservation perspective”, and show that there had been a full discussion of danger of dumping wastewater via an open-flow system – as Aeby later did in the NWHI.

Dr. Andrew Rossiter: At the outset, I would like to state that I am fully cognizant of the fact that scientific research often needs to use taxa that are non-native, and wherever possible I try to support such endeavors. However in this instance the research project comes with associated risks. **These risks are twofold, and their implications are immense: there is a potential risk of accidental introduction of a non native coral into Oahu waters, and there is the potential risk of the accidental introduction of pathogenic microbes deleterious to corals into Oahu waters. After careful consideration, I conclude that the concerns regarding accidental introduction of coral, and especially of microbes, are not satisfactorily addressed in this application, and I do not feel that the potential merits of the research come close to outweighing the risks. The deliberate importation of corals carrying known – or suspected pathogenic microbes should be forbidden.”**

State Department of Agriculture, Submission to Advisory Committee on Plants and Animals, May 2, 2006

On April 28, 2006 the Land Board voted on the Aeby permit in 2006, and placed the requirement that “No live organisms of any kind will be transported within, or outside of, the NWHI State Refuge waters. Samples will be killed by freezing, immersion in ethanol, or other acceptable means.” The staff submittal, signed by Dan Polhemus, documented staff concerns about the potential for the spread of coral disease “among sites in the NWHI” and quoted Aeby as saying, in response to concerns raised, “All samples will be killed by freezing aboard ship.” Pg 3 , Item 2 in Response section of staff submittal.

On May 2, 2006, a request was made by HIMB to the State Dept of Agriculture (document enclosed) to allow the import of “60 large fragments of table coral (*Acropora cytherea*)” which “will be used to conduct experiments examining the role of microbes in the health of the coral. Microbes will be cultured from the coral mucus and grown out to pure culture. Each strain of microbe will then be tested on a coral fragment to determine whether or not it compromises the health of the coral. This method will aid in determining which microbes are beneficial versus pathogenic.”

The submittal described (pg 2) a “semi-closed aquaria system” to house the coral fragments, the fact that access to HIMB is “limited to authorized personnel only”. Aeby claimed (on signed page at back of submittal) that “This coral specie is already found in the Hawaiian archipelago and so would be considered a native specie. Most coral microbes have been found to be host specific which means they would not affect other coral species. ... It is currently being cultured at the Waikiki Aquarium. Since it is a native specie on the reefs of Hawaii , the only concern is in any possible microbes that may be

brought with this coral.” Aeby’s submission included, however, two pages copied from a book on coral which stated that Acropora was “found in Hawaii only in the NWHI”.

In her submission, Aeby stated that “Johnston Atoll is the last stop on our research cruise before returning to Hawaii. Hence, due to the constraints of maintaining coral onboard the ship, I am requesting to use coral from Johnston Atoll as opposed to from the NWHI. . . . The risk of any potential harm from bringing this coral in for a short-term study is almost non-existent. I have prior experience working with health-compromised coral in closed systems (EPA lab in Gulf Breeze, Fl) and som am trained in appropriate protocols for such work. HIMB is isolated on Coconut Island with security guards present. Although, there is always some risk associated with bringing in organisms, I feel that the critical need for this research combined with our precautionary approach greatly outweighs any potential risks.”

Dan Polhemus, DAR Administrator, was on the Advisory Committee to review this application. According to the submittal, Dr. Polhemus had “no response” to the submittal, not even a description of concerns raised within DAR about the danger of disease and live coral transport or the ban on transport of live organisms recommended by DAR and later approved by the Land Board. (pg. 3, BDSUB-06-0331-AEBY-IAB) The failure of the state’s top aquatics official to weigh in on this permit is troubling.

Reviewer Dr. Andrew Rossiter, however, commented:

- Aeby’s claims that Acropora is a native species to be “vague and misleading” -- and indicated that Acropora is “certainly not” found on Oahu. Pg 5
- “The issues associated with bringing in a coral species that does not occur here naturally seem to have been ignored or trivialized” pg 6
- “Instead it is stated that “the only concern is in any possible microbes that may be brought in with this coral.” In my opinion, the microbes are an additional, and major, concern, on top of that associated with A cytherea import. I have strong reservations as to whether the applicant appreciates fully the risks and regulations associated with bringing in non-native corals.” Pg 6
- “The experimental protocol indicates the possibility or likelihood that the fragments would already be infected with pathogenic strains of microbes. In my opinion, importing pathogenic microbes here would seem, at best, a risky venture. In this I am in complete agreement with the applicant’s statement that “there is always some risk associated with bringing in organisms”. However, I am in complete disagreement with her statement that “the critical need for this type of research...greatly outweighs any potential risks.” Instead, I see immense risks inherent in a project that has unclear scientific merit and little evident benefits from a conservation perspective.” Pg 6
- Permit Application: “Most coral microbes have been found to be host specific.” “Most” is not the same as “all”. There thus exists a potential risk of cultured microbes being able to infect other species of corals found around Oahu. Additionally, microbes are notoriously prone to mutation – it is unwise to assume that any microbes brought into Oahu and accidentally released into the environment would be passive and not affect or infect local corals.”

- Permit Application: “The coral fragments will be housed in a semi-closed aquaria system.” For evaluation purposes, when describing a system that houses pathogenic organisms, either it is a closed system or it is an open system. The use of “semi” in this context concerns me.
- Permit Application: “Access ... [to Coconut Island] is by boat and is limited to authorized personnel”. The status of ‘authorized’ presumably includes persons visiting for tours of the facility, etc, and so should not be given too much credence as regards accessibility.
- At the outset, I would like to state that I am fully cognizant of the fact that scientific research often needs to use taxa that are non-native, and wherever possible I try to support such endeavors. However in this instance the research project comes with associated risks. **These risks are twofold, and their implications are immense: there is a potential risk of accidental introduction of a non native coral into Oahu waters, and there is the potential risk of the accidental introduction of pathogenic microbes deleterious to corals into Oahu waters. After careful consideration, I conclude that the concerns regarding accidental introduction of coral, and especially of microbes, are not satisfactorily addressed in this application, and I do not feel that the potential merits of the research come close to outweighing the risks. The deliberate importation of corals carrying known – or suspected pathogenic microbes should be forbidden.”**

Other reviewers :

- **“There is a real possibility that the potential microbial populations from the distant location of Johnston Atoll could be different and/or more pathogenic than local Hawaii microbial populations: pg 3**

From Sam Pooley – NMFS/NOAA

- **“possible disastrous consequences of a release of non-indigenous coral disease from this importation” pg 4**
- **“The HIMB site is not the most desirable site for this type of work... a location further from natural coral reefs, such as the UH Manoa campus, would be more desirable from a biosecurity perspective .. Even with the biosecurity measures proposed at HIMB , risks still remain of accidental release of microbes into Kaneohe Bay”**
- **“If future work of this sort is proposed later, facilities more isolated from natural reefs would be desirable.”**
- **Recommendation “Measures shall be taken to ensure that no release of the corals or their holding water (unless appropriately disinfected) into open waters within the State of Hawaii’s jurisdiction shall occur from aboard the ship or otherwise during transport from Johnston Atoll...”**
- **Recommendation: “All water in which the corals or microbes from them are held shall be kept in containers that do not release effluents into open or semi-open systems unless that water is sterilized or disinfected.”**