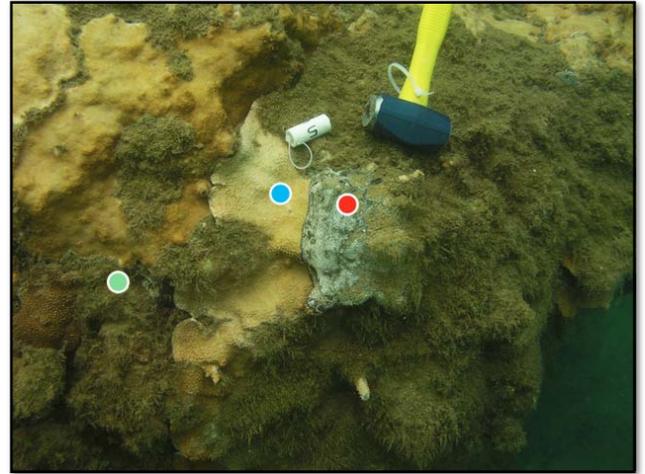


HONOLULU FIELD STATION

A Quarterly newsletter of the Honolulu Field Station, part of the USGS-National Wildlife Health Center in Madison, WI

Coral Tissue Loss Disease outbreak on Kauai

An outbreak of tissue loss disease is wreaking havoc on Kauai's north shore. First documented in 2004 with <1% of disease prevalence in Hanalei, it was found during multiple dive investigations conducted in 2012 at Makua Reef, Anini beach and Anini where prevalence had increased to epizootic levels ranging from 6-8%. At the microscopic level, a mix of gliding and cyanobacteria, a type of blue-green algae, was found in 78% of all the diseased corals examined. In 2013, the disease was found in a total of three species of corals in at least 6 sites on the north shore. Treatment of lesions with marine epoxy has been successful in some cases (+/- 50%) at stopping the spread of the disease. Some puffer fish near sick corals have been observed with skin lesions ranging from discoloration, inflammation, ulceration or rotting skin with prevalence of up to 23% at some sites. The Honolulu Field Station continues to collaborate with the Hawaii Institute of Marine Biology, NOAA, the State of Hawaii and local Eyes of the Reef volunteers to monitor the situation.



Cyanobacteria-affected coral at Makua, Kauai on August 5, 2012. The green dots indicate macroalgae; the red dots indicate cyanobacteria-associated tissue loss; and the blue dots indicate live coral. Photo credit © Thierry Work

Open House



At the end of 2012, HFS had an open house celebrating 20 years of wildlife health from ridge to reef in Hawaii and the Pacific Islands. Collaborating agencies (Federal, State, private and non-profit) were

invited to learn more about HFS's activities over the years. Informational packages, pencils, and stickers were distributed, and there was even a T shirt raffle. The event was attended by over 60 people!



HFS open house. Photo credit USGS-HFS



Wildlife Disease Association 2013
Thierry Work gave a presentation on coral disease at the 62nd International Wildlife Disease Association which was held in Knoxville, Tennessee.

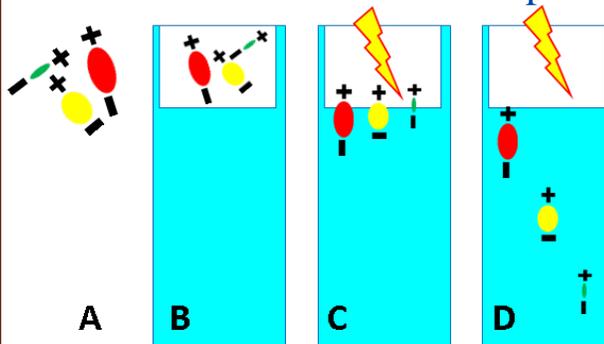
Wildlife Disease Workshop in the Pacific Islands

Recently, the HFS gave wildlife disease workshops in Kauai, Guam, Saipan, and Rota. The effort in the latter two islands was intended to set up a system to ship diagnostic samples from the Marianas to Honolulu as there is concern that some native birds in the region, such as the Rota crow (pictured), are declining from unexplained causes.



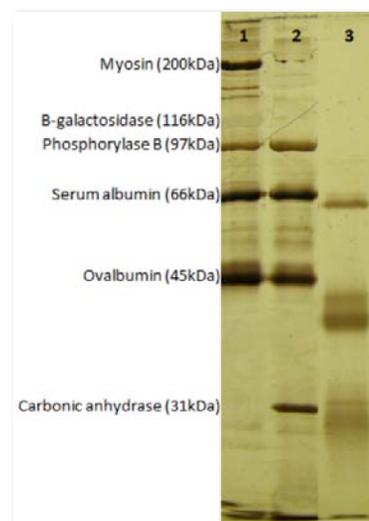
Rota crow.
Photo credit ©
Thierry Work

Technical corner: Gel Electrophoresis



A commonly used technique when working with proteins is polyacrylamide gel electrophoresis. Proteins are variably sized molecules with a positive and negative charge (A). One can take advantage of this phenomenon to separate proteins from each other using a process called gel electrophoresis. Basically, this involves casting a gel (a kind of sieve), placing the mix of proteins onto one end of the gel (B), and running an electrical current (C) that pulls the proteins through the gel where they stop migrating when the sieve gets too small (D). The outcome looks something like what you see to the right with bands of proteins stopping at a point in the sieve where they are too big to migrate any further.

Using the reference proteins of known molecular masses in lanes 1 and 2, we can then determine the mass of each protein in our sample in lane 3.



Recent papers

- Histological observations in the Hawaiian reef coral, *Porites compressa*, affected by *Porites* bleaching with tissue loss. <http://www.ncbi.nlm.nih.gov/pubmed/22824001>
- The genome of Chelonid herpesvirus 5 harbors atypical genes. <http://www.ncbi.nlm.nih.gov/pubmed/23056373>
- Tissue loss (white syndrome) in the coral *Montipora capitata* is a dynamic disease with multiple host responses and potential causes. <http://www.ncbi.nlm.nih.gov/pubmed/22951746>
- Skin pathology in Hawaiian goldring surgeonfish, *Ctenochaetus strigosus* (Bennett). <http://www.ncbi.nlm.nih.gov/pubmed/23617760>
- Parasitic infection by larval helminths in Antarctic fishes: pathological changes and impact on the host body condition index. <http://www.ncbi.nlm.nih.gov/pubmed/23872857>



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