

## COA News, Summer/Fall 2002

**COA NEWS**  
COLLEGE OF THE ATLANTIC SUMMER/FALL 2002 BAR HARBOR, MAINE

## COA Biologists and Intel Scientists Use Sensor Technology to Monitor Elusive Seabirds in Maine

For scientists at College of the Atlantic studying the Laysan Storm Petrel, monitoring its shy habits' nest activity has meant making a cumbersome remote camera or a listening ear into humuses. But last Monday, August 5, these biologists and intel buffs around the world have been able to monitor a popular breeding site in real time through the Internet while sitting comfortably in front of their computers.

Windows sensor technology developed at the Intel Research Laboratory with assistance from the University of California, Berkeley, is making this powerful method of habitat monitoring possible. Over the summer, researchers from the Intel Lab and from COA's faculty teamed with COA biologists to install a network of more than 25 miniaturized sensor cameras on nearby Great Duck Island.

Each device, slightly larger than the mini AA batteries powering it, is now beaming back live data about the conditions in the humuses and the island's microclimate that the public can view at <http://www.greatduckisland.net>.

"There is nothing else like this sensor network available for conservation biologists, nothing that can provide good quality data in such dense habitats," said John Anderson, associate dean of advanced studies and conservation biologist at COA. Anderson and students have been studying seabird colonies on Great Duck Island for the past four years. "What's really exciting about this is that we can get a fix for what happens on the island when humans aren't there," he said. "This kind of sensor network will have a profound effect on how we do field ecology."

The raw information provided by the sensors will help biologists understand why the Laysan Storm Petrel (Chelidonichthys leucurus) favors Great Duck Island and over thousands of other islands off the coast of Maine. "This is particularly important in conservation questions," said Anderson, several biology students.

Biologists believe the 237-acre island, located 17 miles from Acadia National Park, may be home to one of the largest, most isolated colonies in the eastern United States. The sensor network is particularly challenging to study because it spreads most of its activities, occurring to and only during the sensory, nesting period from the end of May through October. On land, the birds stay hidden during the day to avoid predators, typically emerging after 10:00 p.m.

The sensors were placed in six humuses and the surrounding brush, covering an area no larger than a football field. "From the biological side of things, sample size is very important," said Anderson. "The more individuals you can look at, the more we know about the health of the colony."

The idea for the project began through Anderson's friendship with Allen Marmorek, a marine scientist at the Intel Research Laboratory in Berkeley. "We were looking for an application to field test the sensors, and John needed a reliable way to monitor the petrels throughout the year," said Marmorek.

With Anderson's input, researchers at Intel and Berkeley designed the sensors to show time, barometric pressure, relative humidity and temperature conditions. An infrared heat sensor detects when the bird is occupied by a sensor and whether the bird has computer, motion within the humus and around the brush and readings on a single gateway sensor shore ground, which then relays collected information to a laptop computer located away at a distance on the island. The laptop,



Maize Public Radio's Nature School in the view, John Anderson on Great Duck Island for a segment on "Maine's Long, Coastal" in late June. The note sensor can be seen in the right of Anderson.

"We want to know which islands are important for the seabirds and why. We want to know the microclimate of Great Duck Island to measure and in need of protection."

Up to now, obtaining an accurate count of the elusive seabirds involved expensive, carefully planned trips to the island with a pony, power and a portable video system - dubbed the "petrel peeper" - that was transported by small boat or

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