

Kent Island Annual Report - 2004

End of an Era

As many of you know, Nat Wheelwright stepped down last spring as Director of the Bowdoin College Scientific Station at Kent Island. During his eighteen years as Director, Nat left an indelible imprint on the station and its culture. He brought solar power and computers to the island, had a new science lab built, and generally upgraded facilities. The health and future of Kent Island was always his priority, whether that meant repelling the threat of aqua-culture, or making sure that every Kent Islander remained part of the extended Kent Island family. Since 1987, over eighty papers have come from research conducted on Kent Island, many of them Nat's own, and more than 30 students from Kent Island have gone on to advanced degrees in ecology or related fields. Perhaps most significantly, Nat and his wife Genie nurtured a simplicity and community-oriented ethic that is the core of Kent Island life. The imprint is deep and lasting.

Bowdoin is committed to finding a permanent replacement for Nat, but is still a few years away from doing so. Since I had served as co-director with Nat during the 2000 and 2001 field seasons, Bowdoin asked me to direct the station for the next four years. The summer of 2004 was my first as Director.

Since the Last Annual Report

For years the station has comfortably shared the Three Islands Archipelago with the Ingalls family, owners of Hay and Sheep Islands. We have benefited from this easy relationship in many ways, including friendship and the fact that they have looked after Kent Island's welfare as if it were their own. In November 2003, Jack Ingalls died at age seventy-two. Since then, Junior Ingalls, and Jack's widow, Elizabeth, have offered to sell the islands to Bowdoin. When this opportunity

arose, Bill Gross ('37) offered to cover most of the cost. Although some funds are still needed, the deal is soon to close. If you are interested in helping with this effort, contact Scott Meiklejohn, Bowdoin's VP for Planning and Institutional Advancement (smeiklej@bowdoin.edu). The acquisition of Hay and Sheep, along with the continued friendship of the Ingalls family, will help us keep Kent Island the pristine sanctuary it has always been.

This fall, the American Ornithologists Union commemorated the 100th birthday of Harvard's Ernst Mayr, one of the 20th Century's leading evolutionary biologists. Kent Islanders are forev1hBa6d.3d8

-petrels in the 1940's.

Summer of 2004

th anniversary of the start of

Chuck's petrel demography study. Nineteen fifty-five was his first year of formal data collection and the traditional start day is June 20. On that day in 2004, there was song and celebration, complete with a cake bearing the outline of a storm-petrel. Chuck's work with these birds is almost unprecedented in duration and the value of 50 years of data collected with care, humor, and love cannot be overstated.

Barry and Karen Mills visited the island in August, the first visit by a Bowdoin president since Bob Edwards visited in 1992. You had to be impressed by their perseverance. Though they had planned a chartered flight from Portland to Grand Manan, the weather did not cooperate. After many delays, they diverted to Fredrickton, rented a car, drove to Black's Harbour, and took the ferry to Grand Manan. In their thirteen hours on Kent Island, they were treated to an art show, a fine dinner with the whole crew, and a night in the Hodgson House surrounded by petrels. My personal highlight was watching Karen's face light up as she held in her hands a fragrant and fuzzy storm-petrel chick.

Mark Murray ('75) returned this year to help ease the directorial transition. Mark once again assumed the post he had held in the early nineties – what Chuck once termed “Adjunct Professor of Insular Polytechnology” -- as well as Master and Commander of our five boat fleet. Mark opened the station and with the help of son Seth, a junior at Worcester Poly Tech, installed a new photovoltaic panel, charge controller, and a new Sun Danser DC freezer to go along with last year's DC fridge. They actually work, and together don't draw much more power than a couple of 75W light bulbs. The only use we now have for propane is the cooking. Even with all the fog we had in July (see Meteorology), the generator ran less than 3-4 hours all summer. Without ever rushing anywhere, yet never slowing his pace, Mark applied his skills everywhere they were needed, from re-roofing of the Radio Shack and the Lower Lab (north side) to painting and remodeling (a.k.a. “Marko-izing”) the lower lab. Mark has a particular talent for handling the myriad challenges entropy throws our way each year.

In August, Russell Ingalls decided it was time to shore up the end of the wharf. The old timbers were rotting and needed to be replaced. This was a job for Junior Ingalls who has been driving weir stakes for well over half a century. Junior's pile driver is a cross between siege engine, oil rig, and the world's biggest hammer. With the help of Christopher Ingalls and friend Claude Ross Green,

we set nine new posts in a single tide. The skill and joy with which Junior ran the operation impressed everyone there. With this massive blunt instrument, every post went home exactly where Junior and Russell wanted them to be. As the tide began to ebb and we were half done, I looked at Junior and asked how many more we would be able to set. “Can't stop now,” he said. “We're having too much fun.”

As it turned out, the greatest challenge would be getting the driver from Seal Cove to the basin. Joan Ingalls reported on the trip over:

“When we left Seal Cove, Russell ran an extra rope from the driver to the boat, not that we'd need it, he saidkn2 0 0 ostoph.g0.0e0 0 12 445.62004 509.25563

Acadies, Louisiana and New Brunswick, via their migratory birds. They came to Kent Island to film spring migrants. The film should air in Quebec sometime this year. The highlight of the film may well be the footage of Lenora's stealthy approach and capture of a female tree swallow as she returns to the nest box. We trust fame won't go to Lenora's head.

• Marine Ecology

Lela Stanley ('04) spent the summer studying the morphology of everybody's favorite seaweed, *Ascophyllum nodosum*. Lela tested the hypothesis that *Ascophyllum* morphology should differ across tidal zones (high vs. low). To do so, she measured algae in the protected waters of the West Beach and the more exposed intertidal of the South End.

Lela found that algal morphology varied more between sites (west vs. south) than within site (upper vs. lower) - hardly surprising for anyone who has seen high tide at both sites. Western plants are more streamlined (thinner in relation to their circumference) than their southern counterparts, which was opposite of what she expected. She also tested the holdfast strength of *Ascophyllum* using a spring scale attached to the holdfast. When the holdfast let go, she recorded the final reading on the scale. As you might expect, southern plants required twice the force to detach them than Western plants (20 kg cm^{-2} vs. 10 kg cm^{-2}). West Beach algae apparently can devote more resources to reproduction, in that western plants produced significantly more fruiting bodies in the last two years than did southern plants

Ascophyllum conveniently grows one new air bladder a year, which makes it easy to age an individual. Lela constructed survivorship curves for each site and found that from 1300 individuals. Of plants older than one year, southern individuals were significantly older than their western counterparts (7.2 vs. 4.9 years). In light of the morphological differences between sites, Lela suggests that western plants compensate for a shorter lifespan with higher productivity, while Southern plants may produce

fewer gametes per year but have more years to reproduce.

One of my lasting impressions of the summer is that of Lela heading south in the rain and the wind and the fog, then returning hours later, wet and tired, but undaunted. Our very own *Ascophyllum* Action Figure.

Bowdoin Visiting Professor Lindsay Whitlow
 617-253-0245 Tm(Ascophyllum)T
 617-253-0245 Tm(Ascophyllum)T

experiments “were sometimes more reminiscent of LD50 studies” due to the various marking materials and techniques.

It should be noted that Julie was often assisted in the field by Ross Mauck (Colonial Hills Elementary 2005), to whom Julie presented a hand-made, “Junior Entomologist” sweep net on his departure from Kent Island.

• **Oceanography**

Kent Island. The Bay of Fundy. These are biggest tides in the world and, to my knowledge, no one had ever studied the Kent Island tides in detail. This year, geology major Liz Hoering ('06) remedied that. Last winter, she had studied oceanographic data from the Gulf of Maine and arrived on Kent Island with a Conductivity-Temperature-Depth (CTD) meter for precise oceanographic measurements and a keen interest in studying the Fundy tides.

Liz describes the tide as a wave that hits Kent Island twice a day. Think of a rock near shore and how the water moves as the waves pass. With great help from Mark Murray as boat captain and sounding board, Liz spent much of the summer characterizing that wave. She found that the ‘wave’ hits the western side first and propagates around to the South, then East, and arrives last at the North (perhaps an eddy from outside Hay Island and Constable Ledge). We have always calculated tidal effects on Kent Island in reference to the Saint John tide table, with a 45 minute difference between KI and SJ. We now know the true lag time depends on where you are standing (see table below)

driftwood bench. Julie and Lenora honed their carpentry skills by building an Adirondack chair, patterned after the chair Nina and Mark had donated to the station last year.

We had Thanksgiving in July, complete with turkey and dressing. Russell's family joined us, as did Mark Wilcox and his family. We were glad Mark's kids found the now defunct Cub Cadet such an enchanting toy.

The fog of July didn't prevent two spectacular trips on *Island Bound*. In early July, we went to Machias Seal Island where we ran into Laura Minnich ('02), a Kent Islander in '01 and '02 who is now in graduate school at University of New Brunswick and who was working on Machias for the summer. On the way home, Russell landed us on Gannett Rock as the sun was breaking through the fog. Until recently, Gannett Rock was one of the last manned lighthouses in North America. It is now completely automated and people no longer live there. We spent an hour walking the rock, exploring what man had left behind, and finding alcid skulls and broken eggs strewn everywhere. I felt as if I had been dropped into the computer game MYST. At the end of July, we had a day with flat calm seas and no fog, though somewhat overcast. Russell advised the *carpe diem* approach and we ended up with whales right next to the boat. It left everyone in awe and Hallie speechless, though Russell's barbecued bacon may have had something to do with that.

Finally, there is the new outhouse. The previous director had skillfully managed things such that the Dorm outhouse would not actually overflow until just after he left the island. By late-July, it had reached crisis proportions. We dug the new hole a few yards south of the old one. Luckily, Seth Murray was visiting his father and Seth knows his way around a Kubota tractor. Seth managed about 70% of the digging with the front loader. From there, it was a group effort; everyone taking turns with a shovel when they had a few minutes to spare. Most Valuable Shovel goes to Emily Balf for exertions above and beyond the call. The actual moving of the outhouse, though at times unpleasant, was all about teamwork,

cooperation, skill and luck. For me, the outhouse was yet another illustration that life on Kent Island is lived close to the earth, that we have to be responsible for ourselves, and that we all have to work together.

Addenda to the List of Publications from the Bowdoin Scientific Station.

More than 160 scientific articles have been published in professional journals based on research on Kent Island. Papers with authors who were undergraduates at the Bowdoin Scientific Station are indicated by asterisks. Numbers in parentheses represent Contribution Numbers from the Bowdoin Scientific Station. The complete list of publications can be found on the Kent Island web page (www.academic.bowdoin.edu/kent_island/public.shtml).

- Freeman-Gallant C.R., N.T. Wheelwright, K.E. Meiklejohn, S.L. States and S.V. Sollecito. 2005. Little effect of extra-pair paternity on the opportunity for sexual selection in Savannah sparrows. *Evolution* (in press).
- Mauck, R.A. and R.E. Ricklefs. 2005. Control of Fledging Age in Leach's Storm-petrel (*Oceanodroma leucorhoa*): Chick development and pre-fledging mass loss. *Functional Ecology* (in press).
- Wheelwright, N.T., C.R. Freeman-Gallant, and R.A. Mauck. 2005. Asymmetrical incest avoidance in the choice of social and genetic mates. *Animal Behaviour*, (in review).
- Blackmer, A.L, R.A. Mauck, J.T. Ackerman, C.E. Huntington, G. Nevitt, and J.B. Williams. 2005. Exploring individual quality: basal metabolic rate and reproductive performance in Leach's storm-petrels. *Behavioral Ecology*. (in review).

Robert A. Mauck
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