

BOWDOIN COLLEGE

BOWDOIN SCIENTIFIC STATION

BRUNSWICK, MAINE 04011

1996 Annual Report

Since the Last Annual Report

The main purpose of the Annual Report of the Bowdoin Scientific Station is to document the biology, meteorology, and geology of Kent Island. However, the report is also meant to preserve a record of the culture and human history of the place, just as Bill Gross's reports from the 1930s paint a valuable picture of the field station's colorful early days. One of the features of the Bowdoin Scientific Station that makes it special among North America's biological field stations is that the program is maintained, quite deliberately, on a lean budget. For the record, I'd like to begin this year's report by briefly describing some of Kent Island's expenses.

An annual allocation from Bowdoin College's general fund as well as income from station fees, foundation grants, gifts, and endowment funds cover the expenses of running the station and the summer program. The college also provides a part-time salary for the caretaker and a summer stipend for the director. Student stipends amount to about \$12,000 per summer (\$1500 for each of the eight undergraduate students; station fees are waived for undergraduates). Fuel (gasoline for the boats, tractor and mowers; propane for the stove, refrigerator, freezer and generator) costs about \$500, and general travel expenses between Brunswick and Grand Manan average about \$1000 per year. Every summer we buy about \$4000 worth of food, most of it purchased in bulk in Brunswick or St. Stephen, New Brunswick, packed on a trailer, and transported in Russell Ingall's boat, the *Misty Maid*, to Kent Island at the beginning of the field season. We stretch the food budget a bit by eating locally harvested orache, strawberries, Irish moss, and clams. (If a sparrow or warbler crashes against the dorm window, it doesn't die in vain: we skin it to make a scientific specimen, and then use the rest to make "little bird tacos.") Operating costs include maintaining the field station's 12 buildings, three outhouses, five boats, wharf, three computers, miscellaneous scientific apparatus, short-wave radios, shop equipment, two generators, power tools, photovoltaic system, vehicles such as the 1960s-vintage Cub Cadet tractor and the Gravely mower, and seven kilometers of trails.

Needless to say, the books balance thanks to

the cheerfully donated labor of students, researchers, visitors, and Grand Manan neighbors. In an era when many field stations have grown to resemble miniature college campuses, I believe that Kent Island's simplicity is what safeguards its sense of community, tradition and wilderness.

We have been especially grateful for support from Bowdoin alumni, students, visiting researchers, foundations, and well-wishers. In 1996 several important gifts were made by long-time friends of the field station, including the Gross family and Olin Pettingill ('30), whose career in biology began at Bowdoin and Kent Island and led him eventually to become one of America's leading ornithologists. Last month, David Webster ('57) set Kent Island on its way to becoming fully endowed with an extraordinary gift of \$100,000 to establish the Huntington-Wheelwright Fund, the income of which will be used to support scientific field research, particularly at Kent Island.

The Summer of 1996

Although Mark Murray ('75) has stepped down from his summer caretaking job at Kent Island in order to be able to dedicate more time to his newest enterprise, Seahoss Skiffs, he took a break from boat-building to open the field station in mid-May with Chris Hall. Russell Ingalls took over from there, somehow adding to his bursting schedule of transporting students, visitors, and supplies to Kent Island, serving on the Grand Manan council, lobstering, sea-urchin harvesting, scalloping, herring weir-tending, and watching over the island throughout the year. With help from his stern man, Mark Wilcox, Russell shingled the north wall of the cow barn, replaced the north-facing windows of the lower lab, and reroofed the houseboat (affectionately known as the "rat shack" because of its origin as a camp for muskrat-trappers). He also ran a buried power line and anemometer cable connection between the Warden's house and "Fog Heaven" (Bob Cunningham's meteorology lab), and installed a solar-powered pump at the well. Henceforth, the noisy gasoline pump will be history, reducing the risk of contaminating the well and eliminating the thrum that competed with bird song and peace and quiet. Thanks to Russell, we now have a

practically frictionless "clothesline" system for retrieving the skiff from the Plank Beach mooring at any tide -- no more having to drag our dinghy, the "Chuck," up and down the cobble beach. Jason Johnston ('97), who served as apprentice caretaker, took on a number of extra duties. The trails and lawn have never looked better as a result. Jason was masterful in marshaling the troops to paint the Hodgson house and Warden's house, and the trim on the lower lab, houseboat, new lab, and dorm. I inherited Mark's duties as part-time skipper of our 23-foot boat, the *Ernest Joy*. Except for getting tangled up with the occasional lobster buoy, repositioning a few traps, and shearing off the Loran and VHF antennas in a fray with the mooring clothesline, it was a relatively uneventful summer with me at the helm.

Research in 1996

- Leach's Storm-Petrels

In the 43rd year of his study of Leach's Storm-Petrels, Chuck Huntington was assisted by Wakaba Futamura ('98). Chuck concentrated on adding observations to his massive database on survivorship, burrow occupancy, mate fidelity, and reproductive success at Petrel Path and Crocket Point (the Hodgson house site is no longer being intensively monitored). Chuck's familiarity with storm-petrels and his establishment of a marked, known-age population helped launch a number of related studies. Gabrielle Nevitt (University of California-Davis) initiated a project on olfaction in storm-petrels, advancing Tom Grubb and Larry Clark's earlier investigations of olfaction in Kent Island storm-petrels. Gaby's previous research in Antarctica had demonstrated that certain seabirds chase odor plumes over the ocean to find patches of food, especially krill (euphausiid shrimp). In particular, the birds seem to home in on an aromatic compound called dimethyl sulfide (DMS), which is produced by the phytoplankton that are the krill's favored diet. Antarctic euphausiid specialist Karen Haberman (University of California-Santa Barbara) helped Gaby carry out a series of experiments to determine whether navigation by storm-petrels might be influenced by the presence of DMS. Gaby and Karen soaked tampons with DMS (honest!), hung them out on the clothesline in Three Islands harbor, and used night-vision scopes to watch birds pass by the scent wicks on the way back to their burrows. Currently, Gaby and Karen are analyzing their

results.

Katie O'Reilly (Colby College) came to Kent Island to study ecological endocrinology in Savannah Sparrows (see below), but quickly saw the potential of comparing a variety of species with distinctive life history traits. Her methodology required taking a small blood sample from each bird's brachial vein within three minutes of capturing it in order to determine baseline levels of a hormone called corticosterone, which is produced in response to stressful situations. The bird was then kept in captivity for 30 minutes, after which a second sample was drawn to register maximum corticosterone response. This winter Katie plans to complete her laboratory analyses of blood samples from Leach's Storm-Petrels, Semipalmated Sandpipers, Least Sandpipers, Tree Swallows, and Savannah Sparrows in an effort to understand how a bird's physiological response to challenging situations (e.g., food shortages, the presence of a predator, sudden changes in weather) depends upon its age, sex, stage in the reproductive cycle, and ecology.

For more than two decades, the Canadian Wildlife Service (CWS) has used Kent Island as a control site to monitor the concentrations of diverse pollutants. Neil Burgess, the biologist charged with coordinating CWS's research on environmental contaminants in the maritime provinces, collected eggs of Leach's Storm-Petrels to measure concentrations of various organochlorides. Although organochloride levels in the eggs of seabirds such as puffins and cormorants have decreased in the last 15 years, thanks to tighter environmental protection regulations, Neil's analyses show that concentrations in storm-petrel eggs have remained steady since 1980. Moreover, compared to the eggs of other seabirds, storm-petrel eggs currently contain the highest concentrations of seven different organochlorides. Feeding on surface plankton farther offshore than other seabirds, storm-petrels may encounter organochlorides transmitted long distances in the atmosphere.

- Savannah Sparrows

Most summers, Savannah Sparrow populations on Kent Island are extraordinarily dense and polygamy is common -- typically 20-40% of males mate with more than one female in a season. With a large sample of banded birds of known age and reproductive history, the time seemed right to team up with Katie O'Reilly on a study of the

relationship between a male bird's testosterone level and his mating success. Alas, in 1996 the density of sparrows was down one-third, and (as a result?) only about 10% of males were polygynous, so we were forced to shift the emphasis of our study. Katie and her field assistant Ann Savage (Colby College '96) worked with Meredith Swett ('99), Emily Wheelwright and me to collect blood samples from sparrows of different ages and reproductive status. Within just a few weeks of leaving the nest, Savannah Sparrows are already sexually dimorphic in body size, and young males act as if they are defending territories, much like adults. Our aims are to trace the time course of testosterone and corticosterone production from shortly after hatching until 4-5 years of age, and to estimate the heritability of hormone levels in a polygamous songbird.

For her independent project, Meredith followed up on Patrick Kane's ('96) study of Savannah Sparrow song, and accumulated recordings of the songs of nearly all the males breeding in 1996. One of Meredith's summer experiments involved exposing nestling Savannah Sparrows to the songs of their fathers and strange males to see whether differences in the nestlings' responses indicated an ability to distinguish individual songs at an early age. The nestlings definitely responded to song playbacks by begging, but they reacted equally to coughs, crinkling plastic bags, and just about any other sound that might have been associated with a possible feeding trip. During winter break, Meredith, Patrick, and I will be analyzing sonagrams at the University of Massachusetts-Amherst as part of a long-term collaboration with Don Kroodsma (whose most recent book, *Acoustic Communication in Birds*, has just been published). We have already found intriguing support for Meredith's hypothesis that females avoid mating with males whose songs are too similar to the females' fathers' songs. Song recognition coupled with female mate choice could suggest a mechanism to explain something else that Bob Mauck (Ohio State University) and I discovered about Savannah Sparrows on Kent Island, namely that they avoid pairing with relatives, despite numerous opportunities for incest.

The Bowdoin Scientific Station contributed to the Canadian Wildlife Service's newly developed Wildlife Contaminants Exposure Model by providing data on seasonal changes in the body weights of Savannah Sparrows on Kent Island. The model, designed by Lorna Brownlee (CWS), estimates the risks of exposure to pollutants and

other substances through inhalation and ingestion of food and water, using twenty common birds as indicator species.

Bob Mauck, whose PhD dissertation on Leach's Storm-Petrels at Kent Island is nearly finished, has designed relational databases to handle the overwhelming volume of life history information on storm-petrels, Tree Swallows and Savannah Sparrows. In 1996 he added some new features to the computer programs. A single click with the mouse now yields a list of half- or full-siblings, parents, or grandparents of any highlighted individual. Bob also created a program for the Newton (Macintosh's hand-held computer) called the TimeBudgeteer, which allows us to log data continuously on the behaviors of sparrows or any other bird species in the field. Corey Freeman-Gallant ('91; Cornell University) has also nearly completed his PhD dissertation research on Savannah Sparrows at the Bowdoin Scientific Station. Last summer, Corey won a well-deserved award for having presented one of the best student papers at the annual meeting of the American Ornithologists' Union.

Later this month *Science News Magazine* will cover our earlier work on how Savannah Sparrows inadvertently use Herring Gulls as "scarecrows." Even though gulls will prey on sparrow nests, sparrows nesting near gulls have greater reproductive success because the gulls shield them from crows, which are more effective predators than gulls.

• Tree Swallows

Frannie Hochberg ('97) took charge of the Tree Swallow project. The Tree Swallows rebounded slightly in 1996 after a series of disastrous years, including a colony-wide reproductive failure in 1994 followed by a record low number of breeding birds in 1995. In 1996, 30 of the 100+ nest boxes were occupied. Although it was a very wet and cool summer, the rains did not tend to coincide with periods when the nestlings were particularly vulnerable. As a result, 18 nests were at least partially successful, and altogether 90 young fledged. Frannie worked with Katie to collect blood samples to measure stress responses in birds of different ages. Swallows breeding on Kent Island routinely face harsh environmental conditions, so for a comparison, Frannie and Katie collected Tree Swallow blood samples from Brian Dalzell's colony at North Head, Grand Manan, which is a more benign site.

- Herring and Great Black-backed Gulls

By the 1930s, Great Black-backed Gulls had already earned a reputation on Kent Island as rapacious predators on a variety of smaller birds. In fact, Bowdoin ornithologist Alfred Gross dedicated much of his research towards developing techniques to control gull populations (Ernest Joy and other Grand Mananers employed their own, rather straightforward methods of keeping "farmer gulls" in line). A recent study by Kim Mawhinney (University of New Brunswick) warns that predation on Common Eider ducklings by Great Black-backed Gulls may be causing a crash in eider populations throughout the Bay of Fundy. Jason Johnston added to our understanding of the breeding biology of Herring and Great Black-backed Gulls on Kent Island with his summer research. Herring Gulls nesting near Great Black-backed Gulls or other Herring Gulls had lower reproductive success than Herring Gulls nesting in isolation. Despite the fact that Great Black-backed Gulls outcompete Herring Gulls for nest sites and have greatly increased in abundance along the entire New England coast in recent years, their population on Kent Island appears to have remained relatively steady at around 12-18 pairs since the 1940s. The number of Herring Gulls breeding on Kent Island, on the other hand, has dropped dramatically during this century, from 20,000-30,000 pairs in the 1930s and 1940s (estimated by Pettingill and Gross), to 5000 pairs in the late 1970s (estimated by Cannell and Maddox), to only 1440 pairs in 1984 (estimated by Hébert).

We sent a sample of Herring Gull eggs to Laird Shutt and Glen Fox (Canadian Wildlife Service) for use in a new study examining differences between bird species in their sensitivity to persistent organic compounds in the environment. The procedure requires incubating eggs to hatching and culturing hepatocytes (liver cells). However, the rough crossing between Kent Island and Grand Manan apparently created small fractures in the shells, allowing bacteria to enter the eggs and kill the embryos. The study will be repeated next year.

- Bird Populations

There were no particular rarities spotted on Kent Island in 1996, but there were a number of noteworthy changes in breeding bird populations. For the first time in more than a decade, a pair of

Bald Eagles nested on the island, in a white spruce at the north end. In late July, Hurricane Bertha blew the two big nestlings out of the nest, but they were seen following their parents a week later. Black-capped Chickadees also returned to nest on Kent Island after an absence of more than 10 years; at least three pairs were present. During spring migration, Blue Jays usually by-pass Kent Island, but this year in late May there were more than a dozen. Although breeding by jays was never confirmed, at least six birds remained on the island until mid-June, spending their days hunting ground beetles from the Tree Swallow nest boxes. Ruby-throated Hummingbirds continued to visit our feeder until early June. A lone second-year Black-crowned Night-Heron frequented the basin throughout the summer. Normally, at least one pair of American Robins breeds on Kent Island each summer, and sometimes a pair of Common Grackles, but both species were absent in 1996.

- Plant ecology

Cara Greenlaw, who was raised and home-schooled on Grand Manan and is now a first-year student at St. Thomas University in Fredericton, NB, studied carnivory in a tiny bog plant called Round-leaved Sundew (*Drosera rotundifolia*). Glandular "hairs" form a predatory fringe around the margins of sundew leaves, like the tentacles of a sea anemone. When a small insect such as a fungus gnat or midge stumbles against the sticky hairs, the hairs immobilize and then enfold their prey, digesting them within several days. Cara quantified feeding behavior in different habitats and experimentally supplemented the insect diets of plants to determine the effect of carnivory on flower production. Cara's initial results suggest that sundews growing near other plant species with insect-pollinated flowers may have greater hunting and reproductive success than sundews growing alone. Interestingly, Cara noticed that the sundew leaves cease producing sticky secretions shortly before their own flowers develop in late July, presumably to avoid intercepting insect pollinators and interfering with their own reproduction. In her spare time, Cara conducted research on Kent Island's early history. Searching through the provincial archives in Fredericton, she discovered copies of John Kent's original deed to the island and letters describing how on several occasions he had saved mariners shipwrecked off Kent Island in the late 18th century.

Joe Fontaine ('96) filled in some critical gaps in

earlier studies of two Kent Island plant species, the One-leaf Rein-Orchid (*Habenaria obtusata*) and Blueflag Iris (*Iris versicolor*). Along the way, he elegantly solved one mystery. Joe determined that the stalked pollen sacs (pollinia) of the orchid are removed at equal rates during the day and night, but we had no idea who the pollinator of its diminutive dull-green flowers might be. One night, when Joe and Katie were conducting an evening census of the plants, a mosquito (*Aedes vexans*) landed on Katie's arm. Joe glanced down, noticed a pollinium plastered across the mosquito's left eye, and snatched the insect. Later, using a light trap to attract nocturnal insects, he collected three species of geometrid moths with orchid pollinia attached to their heads. Joe determined the major insect pollinators of Blueflag Iris as well.

Back in Brunswick, Zoe Cardon, Bowdoin's new plant physiologist, measured the acidity of the water-logged soils on which the sundew and orchid grow. The samples proved to be extremely acidic, with pHs of 3.0 and 3.4, respectively. At a third site, within the gull colony on South Hill, the soil pH was only 3.2. These values are substantially more acidic than those reported from a variety of sites on Kent Island by McCain in the early 1970s. Whether the discrepancies are due to differences in methodology between the studies, variation between sites, or environmental changes over the last quarter-century, remains to be seen.

• Lichens

Stephen Clayden (New Brunswick Museum) identified 15 species of lichens collected on Kent Island by Ryan Woods ('97) during an ecology class field trip in mid-September: *Caloplaca verruculifera*, *Cladonia arbuscula*, *Hypogymnia tubulosa*, *Lecanora muralis*, *L. symmicta*, *L. xalophila*, *Melanelia subaurifera*, *Parmelia squarrosa*, *P. sulcata*, *Physcia tenella*, *Ramalina roesleri*, *Usnea filipendula*, *U. subfloridana*, *Xanthoria parietina*, *X. polycarpa*.

• Mosses

Hunting for storm-petrel burrows with Chuck, Wakaba developed an eye and a special fondness for the panoply of mosses that cover rocks, buttresses, treefalls, and soil everywhere on Kent Island. With long evenings of patient work and the use of our new Leica dissecting microscope, Wakaba became proficient at identifying the local mosses. To determine their microhabitat

distributions, she estimated light and moisture levels in 750 25cm² quadrats placed randomly throughout the island, and measured the percent cover and reproductive activity (presence of sporophytes) of different moss species.

Bruce Bagnell, an associate of the New Brunswick Museum, confirmed Wakaba's identification of 30 moss species: *Aulacomnium palustre* (Hedw.) Schwaegr., *Brachythecium rutabulum* (Hedw.) B.S.G., *Bryum amblyodon* (= *stenotrichum*) C. Müll., *B. salinum* Hag. ex. Limpr. (?), *Calliergon stramineum* (Brid.) Kindb., *Ceratodon purpureus* (Hedw.) Brid., *Dicranum flagellare* Hedw., *D. fuscescens* Turn., *D. majus* Sm., *D. montanum* Hedw., *D. polysetum* Sw., *D. scoparium* Hedw., *Herzogiella turfacea* (Lindb.) Iwats., *Hylocomium splendens* (Hedw.) B.S.G., *Hypnum cupressiforme* Hedw. var. *filiforme* Brid., *H. imponens* Hedw., *Leucobryum glaucum* (Hedw.) Aongstr. ex Fr., *Mnium hornum* Hedw., *Plagiomnium cuspidatum* (Hedw.) Kop., *Pleurozium schreberi* (Brid.) Mitt., *Pohlia nutans* (Hedw.) Linb., *Polytrichum commune* Hedw., *P. ohioense* Ren. & Card., *Rhytidiadelphus loreus*, *R. triquetris* (Hedw.) Warnst., *Sphagnum girgensohnii* Russ., *S. magellanicum* Brid., *S. palustre* L., *Tetraphis pellucida* Hedw., *Ulota crispa* (Hedw.) Brid.

The discovery of one of the species -- *Rhytidiadelphus loreus* -- was particularly exciting. Although the species has been reported from the other Canadian maritime provinces, and is common in western North America, it was previously unknown in New Brunswick.

• Meteorology

Bob Cunningham has seen a lot of weather on Kent Island, enough to appreciate that last summer's total of 50 days of fog ranks 1996 among the four foggiest summers in five decades (the summer of 1967 still holds the record, with 63 days of fog!). Last summer's weather was also particularly cool and damp. Only once did the mercury break 70°F (21.1°C) between May and July, and the highest temperature of the summer, 78°F (25.6°C), did not occur until 6 September. The sea temperature did not rise above 50°F (10°C) until 7 August. With the number of "growing degree days" at a record low, some discouraged residents of southern Grand Manan gave up on their gardens and plowed them under. We were able to grow plenty of lettuce, spinach

and chard, but only because Mark planted seedlings in late May and Genie Wheelwright nursed the vegetables along all summer under a cold frame. The two zucchini plants left to fend for themselves outside the cold frame managed to yield just a handful of finger-sized zucchinis.

The rusted-out Nipher-type wind shield on the rain gauge, brought to the island in 1935, was rebuilt in 1996 and now should last another 60 years. A new wooden louvered weather shelter, constructed by Chris Hall, was installed outside the Warden's house to replace the decades-old one. In Fog Heaven, the Campbell data logger recorded 11 types of weather data every 10 minutes from 19 May through 11 September. One of the measurements we took was the temperature of an abandoned Savannah Sparrow nest to get an indication of the thermal challenges faced by ground-nesting birds. Early in the breeding season, temperatures at ground level may fall below freezing at night; within 10 hours they may climb by as much as 67°F (19.4°C). The highest temperature recorded in an unattended nest was 111°F (43.9°C) on 19 June.

Bob continued his collaborative research on fog chemistry with investigators at the University of Maine-Orono. The pH of the fog on one day last summer reached a record low value of 2.5, which is more acidic than lemon juice. A surface weather map for that period showed a weak southward-drifting weather front, suggesting that in this case the source of pollution may have been local, such as the coal-fired power plant at Colson Cove or the city of St. John 40 miles (64 km) to the northeast.

• Marine Ecology

Maria Stanko ('98) focused her research on the interaction between two species of marine algae, knotted wrack (*Ascophyllum nodosum*) and *Polysiphonia lanosa*, a small, finely branched red alga which grows as an epiphyte on the wrack. By conducting quadrat samples at 12 wave-exposed and 12 protected sites around the island, Maria confirmed Marney Pratt ('97) and Beth Archie's ('97) 1995 observations that the epiphyte occurs more densely and grows to larger sizes on exposed shores. Breakage rates of the knotted wrack are much higher on exposed shores. Does the increased drag imposed by *Polysiphonia* increase the risk of breaking for knotted wrack, or do the wave-induced wounds provide additional sites for settlement of the epiphyte's spores? Because knotted wrack produces a single air bladder along

the stem (thallus) every year, Maria was able to age algae (the oldest individual was at least 18 years old) and identify years in which epiphyte recruitment was particularly high. Knotted wrack also bears a record of previous reproduction in the form of the stalks of their receptacles (spore-producing organs), so Maria could estimate the impact of epiphyte load on growth and reproductive success.

Each winter's storms carve a distinct beach profile on Kent Island. This year the sandy west beach was flat and firm; the familiar steep, buried mounds of rotting algae were absent. Even at an extremely low (1.0-foot) spring tide, the channel between Sheep and Kent Island was too deep to wade across. On the east beach, the bank has become progressively undercut. Now the road toward the south end that Myhron and Bob Tate used to drive the tractor across is perched on the very edge of the cliff.

Glynn Sharp and his colleagues from Fisheries and Oceans Canada sampled the canopy invertebrates of *Ascophyllum nodosum* at high tide at Kent Island in 1994 as part of a survey of marine animals that could be affected by a proposed marine algae harvesting plan. They recently reported the following species: Gastropoda -- *Littorina obtusata* (L.), *L. littorea* (L.), *Lacuna vincta* (Montague), *Skeneopsis planorbis* (Fabricius), *Onoba aculeus* (Gould), *Nucella* (= *Thais*) *lapillus* (L.), *Acmaea testudinalis* (Müller); egg masses of *Cragon septemspinus*, *Mysis stendepis*; Bivalva -- *Mytilus edulis* (L.), *Mya arenaria* (L.); Amphipoda -- *Marinogammarus obtusatus* (Dahl), *M. finmarchicus* (Dahl), *Ampithoe rubricata* (Montague), *Hyale nilssoni* (Rathke), *Gammarus oceanicus* (Segerstrale); Isopoda -- *Jaera marina* (Fabricius); Other taxa -- Halcaridae, Harpacticoids, Diptera (Chironomidae, Tipulidae), Collembolla, Nematoda, Trematoda, Nemertina, Oligochaeta, Polychaeta, Hydrozoa, Porifera.

Kent Island Life

On July 4, after a magical foggy evening watching the Ingalls families and their fishing partners seine a full herring weir at Whale Cove on Wood Island, we continued on to Grand Manan in the *Misty Maid* to drop off a boatload of garbage that we had gathered earlier in the day during our annual Kent Island beach cleanup. While Russell and Jason drove the load to the dump, the rest of us decided to take advantage of the public phone at

Seal Cove. We quickly encountered a problem that spoke volumes about Kent Island life. Of the dozen of us scruffy islanders assembled on the wharf that night, not one had so much as a dime or a wallet or a checkbook in our pockets. The midnight voyage back to Kent Island ended with a bit of an adventure. Russell's GPS (global positioning system), Loran, compass, radar, and general good sense guided us through a thick black fog precisely to the mooring off Crocket Point. The short leg between the mooring and land proved not to be so simple. After feeling our way around Three Islands harbor in Russell's skiff for a long spell, with storm-petrels hurling themselves towards our searching flashlights, at last we hit ground... on the north beach.

Ken and Sarah Kimball, who met on Kent Island 28 years earlier when they were undergraduates at Carleton College and Cornell University, revisited the island for the first time last summer, bringing their son Eric. Ken relocated the clunky World War II night-vision scope which was last used in his study of the incubation behavior of Leach's Storm-Petrels. Both Ken and Sarah commented on the decline in Herring Gull numbers. Genie's parents, Jane and Alec Stevens, finally made it to Kent Island, as did the Curley family, Denis Corish of Bowdoin's Philosophy Department, his daughter Maeve, and French student Lisa Souillac. Celeste Goodridge and Anna Wilson of Bowdoin's English Department delivered an inspired reading of the poetry of Amy Clampitt and other contemporary poets in the Club Dingleberry. It was a special pleasure to host the Stuckey family, on whose farm in Monteverde, Costa Rica I have stayed on many occasions while conducting research on tropical trees. Visits by old-time Kent Islanders included the Piersons, Cannells, Maucks and Louise Huntington. The Maine Audubon Society, Massachusetts Audubon Society, and Victor Emanuel Nature Tours each brought groups of naturalists on day trips to the island. In August, Chuck was helped in the field by Dianne Tessaglia, Chris Hymes and the MacFarlands.

Frannie's tenure as cook began inauspiciously. Preparing her debut dinner, she noticed that the water from the jug seemed a little colorful but, in the Kent Island spirit of frugality, she pressed on and used it to boil the lentils. As we sat down to eat, someone noticed a dark form at the bottom of the jug. The starling must have been seeking shelter a week or so earlier. Anyway, the rest of the summer's meals were relished by both the

vegetarians among us, as well as the carnivores. Particularly memorable was the feast of Jonah crabs Frannie produced after she, Ann and Jason spent a day and night helping Russell pull his lobster traps. As usual, weekend cooking duties rotated among the rest of us. Angie Ingalls, who was able to spend more time on Kent Island last summer with Russell and her children Theron, Christopher, and Megan, introduced us to Grand Manan fare and was a welcome source of motherly advice and inspiration in the kitchen. Wakaba contributed a wonderful sushi dinner with raw salmon, dulse, swiss chard, and brown rice. Jason displayed his appreciable fly-casting skills off the bow of the *Ernest Joy*, although he never managed to hook anything for dinner.

Favorite games during the summer of 1996 included cards (especially pinochle, hearts and cribbage), scrabble, Boggle, croquinolle, home run derby and run-the-bases. Knitting was popular once again. Russell gave a seminar on the art of knot-tying, took us out chumming for seabirds beyond Old Proprietor's Ledge, and busted the island record for "hang-time" on the chin-up bar (66 seconds). Although we missed Mark and his guitar last summer, Gaby's banjo, Frannie and Wakaba's guitars, and Emily's electric keyboard brought music to the island. Our end of the season song was entitled "The A-E-D Blues" (a reference to my meager chord repertoire as a novice guitarist). The last visit to the field station before it was closed down for the winter was a four-day field trip of my ecology class on 22 September.

Kent Island T-Shirt

Several years ago we sold the last of the Bowdoin Scientific Station T-shirts. We have finally gotten around to ordering more. Just like the original, the design features a silhouette of a storm-petrel flying across an outline of Kent Island. Ever sensitive to current fashion trends, we polled 1995's students (plus Emily and Alex) and chose larger sizes and new colors for the 100% cotton shirts (red, plum and slate, with a white design). If you would like to purchase one or more, please send a check for \$11 per shirt, using the form below.

Addenda to the List of Publications from the Bowdoin Scientific Station

More than 130 articles have been published in peer-reviewed journals based on research on Kent

Island. Papers with an author who was an undergraduate at the Bowdoin Scientific Station are indicated by asterisks. Numbers in parentheses represent Contribution Numbers from the Bowdoin Scientific Station.

- Evans, R.M., and S.C. Lee. 1991. Terminal egg neglect: brood reduction strategy or cost of asynchronous hatching? *Proceedings of the International Ornithological Congress* 20: 1734-40. (61)
- Lee, S.C., R.M. Evans, and S.C. Budgen. 1993. Benign neglect of terminal eggs in Herring Gulls. *Condor* 95: 507-514. (60)
- Mauck, R.A., and T.C. Grubb, Jr. 1995. Monogamy in Leach's Storm-Petrels: DNA fingerprinting evidence. *Auk* 112: 473- (118)
- MacWhirter, R.B., and R.A. Mauck. 1996. Acquiring scientific data with the Newton. *SciTech Journal* 7: 15-18.
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