each flake of tobacco as it fell while roki laughed away "

#### The Summer of

ussell ngalls aretaker of the owdoin Scientific Station opened the station in early ay in time for my spring rnithology onservation iology class field trip nee again earned a reputation as a "weather breeder" the previous fall we'd had to postpone the cology field trip a week because of a hurricane. This time brought snow sharp winds and extreme tides so we couldn't make it to ent sland the first night ussell's brother oseph put us all up at his camp at iller ond. The next day when unior ngalls ussell's father brought us down in the onus. White ead fisherman arry ussell was waiting for us in Three slands harbor with a gift of fresh salmon in late, ay returned again arriving a day before the students and huck so that could prepare the lab and have a hot dinner.

waiting for them s walked alone up the path to the dorm flushed a young ald agle from the widow's watch

The major work project on ent sland during the summer of was reshingling the south facing roof of the Warden's house Since we have gradually been repairing each of the island's buildings obody could remember when the Warden's house's cedar shingles had last been replaced but judging from the nails holding them on rusted needle thin it probably had been vears at least painted the floors of the dorm and new lab remodeled the old double outhouse for use as a storage shed and with help from yan Woods ' created a new home in the outhouse eaves for nesting arn Swallows e also added windows to the cow barn. We affixed a small aviary to the side of the cow barn which we can now use as a room for observing the behavior of captive birds through one way glass. The solar water pump works like a charm silently pushing a steady trickle of water from the well several hundred meters up to the gallon cedar storage tank by the dorm eter ngram and yan shared the job of adjunct assistant caretakers. Wielding our new brush cutter and driving the ravely tractor they opened the trails to the north and south ends

recently marine algae The latter is a particularly controversial and ominous development

Then there was the mystery of the rank iscovered by her namesake rank ierson in washed ashore on the southern tip of ent sland the dinghy vanished from its mooring off lank each one day this summer "asy come easy go" we thought ive days later as ussell eased the isty aid through a cotton candy fog outside of Sheep sland he slowed down to avoid hitting an exposed ledge that he'd never noticed before Sure enough it was the rank bobbing back into service once more

#### esearch in

#### • each's Storm etrels

huck untington completed his th field season investigating the life history of each's Storm etrel With yan Woods as his assistant huck was inspired to reactivate his odgson ouse study site if note was the late breeding season by the end of uly there were few storm petrel nestlings large enough to band. The record for the oldest known each's Storm etrel has been tied by hab a year old bird found again this year nesting at rockett's oint im ountjoy formerly University of ebraska now a visiting assistant professor at owdoin initiated a pilot project on storm petrel vocalizations with the aim of understanding the functional significance of the birds' "purr" call

# Savannah Sparrows

Since we have banded more than individual Savannah Sparrows measured birds counting multiple handlings of the same individuals and located more than nests y now you'd think that we'd have figured everything out about their biology but it seems that interesting questions keep emerging ormally about one third of all adults breeding within the study site turn out to have been raised in the same site and a minimum of were raised on ent sland n however an unusually high percentage of the population was made up of yearlings that recruited into the population from outside the study area

We established this spring that yearlings already sing well formed songs by the time they return from migration in early averedith Swett atrick ane

anet eaglev ' my field assistant proved to be a superb nest finder which laid the foundation for her independent research on Savannah Sparrows Using a obo™ datalogger smaller than a pack of cigarettes to record nest temperatures she compared the incubation patterns of yearlings with more experienced females emale sparrows tended to retire to their nests for the evening at about hr whereas males continued to sing for another hour and a half t about hr males began singing again but females didn't leave their nests until around hr emales stayed up later and left the nest earlier during their second clutches in uly when days were shorter possibly because of more moderate temperatures reduced food availability or the increased foraging demands of molt or caring for fledglings from their first broods ext year for her honors thesis anet plans to analyze her extensive results and test the hypotheses that compared to young birds older females are able to invest in longer incubation bouts show less variance in the length of incubation bouts spend a greater proportion of the day incubating their eggs and as a consequence have shorter incubation periods

ennifer Templeton formerly University of ebraska now a visiting assistant professor at owdoin teamed up with us on a study of learning in Savannah Sparrows. We captured fledglings whose ages were known to the day placed them in the cow barn aviary and challenged them to solve several foraging tasks e.g. find the mealworm under the goldenrod leaf—time budget program that—ob—auck wrote for the—ewton—acintosh's hand held computer allowed us to record the birds' behaviors continuously—ntriguingly fledglings are quite inept at finding food until they are about days old—just about the same age that—orey—reeman—allant '—and—determined that their parents stop caring for them in the field

first time in a decade no ank Swallows nested on ent sland although a few birds were present nstead yan monitored the arn Swallow and liff Swallow nests Some liff Swallows it turns out visit more than one nest. Whether these represent intraspecific brood parasites polygamous males or simply individuals on a social call remains to be determined in uly when the other two pairs of liff Swallows were feeding nestlings a third pair laid the first egg of their late clutch it hatched uly

### merican edstarts Yellow Warblers

Sarah artos ates ollege ' investigated age specific reproduction in merican edstarts The ent sland redstart population is unusual because it is so dense pairs nest on the island with perhaps "floating" males and because birds' territories are located in thick coniferous woods rather than the deciduous forests that they favor on the mainland Territories ranged in size from ha territories in to coniferous forest were larger than those in ountain sh eart leaved irch forest least one color banded male defended two territories separated by m ven though males sing throughout the day nests were difficult to find because mate guarding is infrequent and inconspicuous oreover females remain tightly on the nest even while observed from maway Ider males appear to have a richer song repertoire than ales generally sing a single diagnostic repetitive song near their second year males nest or mate while defending their territory or advertising for females they sing a more diverse set of different songs

eter ngram initiated what is likely to become a long term study of Yellow Warblers Unlike redstarts Yellow Warblers are obvious during all phases of nesting position their nests in predictable sites and perch in the open where they are readily mong other things eter found that Yellow Warblers are interspecifically territorial against redstarts and that incubating females are fed on the nest every by their mates. The incubation period nestling period and duration of post fledging parental care average and days respectively art of eter's project was a collaboration with Steve othstein University of alifornia Santa arbara who had spent a summer himself on ent sland during the s and who is now the authority on the ecology of rown headed owbirds ecause there are no more than a handful of years of cowbirds parasitizing songbird nests on ent sland one records over the last hypothesis is that the island's birds have lost or never evolved anti brood parasite s an extreme test of the evolutionary lag model Steve provided brilliant blue and scarlet artificial eggs which we used to "parasitize" nests experimentally. The model eggs were accepted and incubated in all nine Yellow Warbler nests and both Savannah Sparrow nests in which they were placed

## erring ulls

Two research teams from the anadian Wildlife Service continued long term studies of erring ulls on ent sland The ent sland population serves as a relatively clean control for comparison with reat akes populations which are exposed to high levels of environmental contaminants ngela orenzo and en astien working with aird Shutt of the ational esearch entrein trawa collected erring ulls eggs

in order to determine the sensitivity of the embryos' hepatocytes liver cells to halogenated aromatic hydrocarbons—ccording to their protocol stress is reflected in porphyrin accumulation and the induction of a particular protein—cytochrome high levels of the protein are found in birds chronically exposed to polychlorinated biphenols—nother consequence of chronic exposure to pollutants can be defective immune responses. To test for signs of pollution stress—len—ox—ebbie effrey and Suzanne Trudeau injected—gull chicks in the web of the foot with lecten and sheep blood cells. The procedure called for recapturing the birds six days later for histopathological studies—nalyses of their results are currently underway—len is considering expanding his pollution monitoring efforts to Tree Swallows on—ent\_sland

## • ird opulations

uring a field trip in early ay we stumbled upon arlequin ucks five males and five females at the southern tip of the island n rchard riole was netted on ay and a uropean Whooper Swan was seen on Sheep sland in uly the latter presumably an escapee from captivity subsequently moved to White ead sland where it has remained at least through ecember male ay breasted Warbler maintained a territory all summer and may have bred on the island Similarly one or more lack billed uckoos were seen throughout the summer either species has nested on ent sland in recent years pair of ald agles nested on ay sland the pair that nested the previous year on ent sland arolina Wren spent at least eight days on the island in late uly

lack capped hickadees which were absent from ent sland for at least a decade seem firmly reestablished with pairs breeding on the island pair of oreal hickadees that nested in a Tree Swallow box in the orth field laid eggs. The fact that the clutch was so huge and that all of the eggs were sterile raises the possibility of female female pairing. Iternatively, their infertility could be due to high levels of inbreeding in this isolated population.

Il summer tlantic uffins ommon urres and azorbills were seen off the southern end of the island owever by early ugust the shorebird migration had still failed to materialize erhaps the late spring or the mild summer weather resulted in a delay in the birds' southbound flight

### nsect ecology

fter returning from a semester in ustralia where he worked on insect ecology yle pigian 'decided to study ground beetles which are black nocturnal flightless predatory insects in the family arabidae arlier we had noticed that the beetles abounded even in the deep barren shade of White Spruces y monitoring grids of pitfall traps yle determined that population densities were as high as ground beetles per m ach of the seven species that he studied appeared to have slightly different habitat preferences e.g. ountain shivs mixed deciduous woods vs alsam in The number of species and individuals captured in his traps declined over the course of the season fiter marking them with "white out" yle discovered that individuals wandered as far as malthough if relocated they showed little tendency

to return to where they had originally been captured. The beetles avoided crossing open areas a finding that affirms the importance of habitat "corridors" for animal dispersal To evaluate the effect of the beetles on their invertebrate prey mainly other insects isopods and spiders yle removed all trapped individuals per day from several habitat patches rev densities appeared to rise in plots where beetles had been removed whereas they remained relatively constant in control plots round beetles are eaten in bulk by erring ulls however in feeding trials with captive Savannah Sparrows even young fledglings avoided them presumably because of the noxious sprays the beetles eject Ithough we have not yet quantified butterfly population cycles it is apparent that their numbers vary from year to year ast summer onarchs were common especially early in season even though their host plant ilkweed does not occur on ent sland ed dmirals were abundant s usual mosquitoes and black flies were hardly seen or felt but in early ugust deer flies and some species of biting muscid fly appeared

## lant ecology

ollowing up on ara reenlaw's pilot study eter ngram also investigated the reproductive ecology and foraging behavior of ound leaved Sundew rosera rotundifolia a small predatory plant growing at densities of up to plants m in wet habitats in each of three major study sites, the West each the stream near the well and the north end of the island where etrel ath emerges he selected a random subset of plants alf of the plants served as controls each of the other plants had their normal diet supplemented by one fly per week in the lower lab eter set up a planter with treated similarly y the end of uly there was no difference between control and experimental plants in average leaf size leaf number or number of flowers but plants that were fed extra grew taller flower stalks. Lowers began to open in mid. uly about a week earlier than in presumably because of the sunny weather The longevity of individual flowers was only a few hours. The single pollinator observed a syrphid fly Toxomerus marginatus appeared to trap line the few available flowers Small flies were digested by the plants within two days large flies took up to six days nts centipedes and ground beetles acted as "kleptoparasites" stealing insects from the sticky sundew leaves octurnal and diurnal prey removal rates were similar in the field nocturnal of the insect prey in the exposed north site to removal rates varied from prey near the stream in captivity ground beetles showed a clear preference for freshly captured flies versus flies that had already been subdued by the sundews

We continue to monitor reproduction in a marked population ne leaf ein rchis abenaria obtusata ne of these days plan to analyze our data on tradeoffs between growth and reproduction in the perennial orchid

### eteorology

ob unningham T retired set up the weather station in ay with ussell and oward ngalls' help major improvement was installing the anemometer and recording wind vane on a new mast on the Wardens house connected to "og eaven"

the weather station by an underground cable. The wind vane replaces one used on the Warden's house since the s. The ampbell datalogger recorded wind speed and direction air and ground temperatures solar radiation and fog p. and water flow continuously during most of the summer

rom a weatherman's point of view—i e ob's—last summer's weather "was rather dull There were few rain storms no hurricanes and little fog. Some records were broken however... ast uly for instance had the third highest average maximum temperature and the lowest total precipitation in years Temperatures precipitation and fog frequency have been particularly variable during the s" Since the average summer maximum temperatures at ent sland have fluctuated around 0 o with a slight upward trend in the last eight years uring the same period average minimum temperatures have risen relatively steadily from to 0 from

We placed one obo temperature recorder in the etrel ath weather shelter to record winter temperatures at hr intervals nother was placed at a depth of m in Three slands arbour to give ocean temperatures in place of the annet ock temperature recording buoy that sunk last winter

The dry summer had several consequences ushrooms in general were very scar ce of oletus edulis which we had feasted on in never fruited. We didn't even play the "hidey game" which normally provides an indoor diversion during the typical summer's foggy spells. The pond on ay sland shrank to less than half its size in the other hand our well continued to supply the best tasting water in the archipelago and the weather was perfect for our solar shower in a sunny uly day when the ambient temperature reached only o o the shower water measured o

The all issue of Windswept the newsletter of the t Washington bservatory featured an article entitledhrank mSypato on in S teSypato ok ot Washington Tj T

#### rtist in esidence

risten and 'was chosen as ent sland's first "artist in residence" Summarizing her experience she wrote "ent sland is a magically simple and beautiful place—not only a special nesting place but a haven for any artist doing creative work... rom a panoramic West each seascape ink and charcoal studies of gull chicks and watercolor studies of irises—onarch butterflies and the—ountain—sh tunnel—tried to present the diverse natural experience of—ent sland" articularly impressive were her "ock Studies" a series of three "x" oil paintings of cobbles found along the eastern shore of the island which—risten hopes to have made into prints—risten transformed the southern corner of the Shop into a studio and her room in the—orm into a gallery space where she hosted a final show of her works—II of us appreciated her art classes where we learned techniques in the use of artists' crayons and watercolors

yan Woods brought a different artistry to ent sland dvised from afar by ohn c ee owdoin's photography professor yan used his spare time to take black and white images using a large format camera collection of ndy oldsworthy photographs inspired several island art projects made of arrangements of natural objects

## ent sland ife

n ill ross posed with three other owdoin students in what has become known as the "ent sland ioneers" photograph eter annell and an ierson inspired an annual tradition of reenacting the photo with current ent slanders ast summer ill returned for a visit with his wife bby and daughters aba and ynthia and we took advantage of the opportunity to pose ill in his customary position along with ob huck and the ages of this latest group of "pioneers" added up to years... Tidying the adio Shack in anticipation of the rosses' visit we came upon Tom ross's old radio receiver and the Victrola that on riffin used to disorient each's Storm etrels in his classic homing experiments

ther summer visitors included Ian ooley who sailed his small boat the ingfisher from ova Scotia to aine Wendy atham from the rand anan useum who identified plant species during her short stay a Victor manuel ature Tour uth ogler 'arragh rady 'and their families yan's mother and friend and on orsey University of Southern aine When had to leave the island for several days in early une alph ynning 'and arney ratt served ably as adjunct acting directors

eather and risten teamed up as masterful cooks for the summer. Their culinary wizardry has been preserved in a booklet they put together entitled ent sland reations which presents recipes of the summer's best dressings breads entrees and desserts or the cover risten painted each student's study subject. The Thanksgiving dinner they prepared instigated a call for a hristmas dinner which led to stockings secret Santas and even caroling at the Warden's house—aybe that was the inspiration for transforming the Tub—ingleberry into a disco one evening complete with strobe flashlights a reflecting ball platform shoes and aluminum foil outfits

The ourth of uly was one of the few rainy days we had all summer but the inclement weather didn't stop our annual beach cleanup—oaters must be dumping less garbage these days—for the first time—we were able to transfer the collected trash in the rnest oy rather than—ussell's much larger boat. That evening we performed a unique arrangement of the "Star Spangled—anner" accompanied by—yle's didgeridoo and—yan's mandolin—one of us attended—anada—ay on—rand—anan Since the administrative amalgamation of—rand—anan's villages—anada—ay festivities have been moved to—rand—arbour and the old favorite water sports such as the greasy pole distance swing—and looney dive have been discontinued—hopefully only temporarily

Taryn's green thumb plus the cold frame that we kept in place through uly yielded a vegetable garden overflowing with lettuce spinach broccoli basil zucchinis and radishes ust about everybody on the island learned to knit and produced beautiful mittens socks vests or hats 'm still working on my bookmark ussell delivered another hilarious seminar on knot tying Swimming was a big activity with anet sometimes taking several dips a day in the frigid ay The end of summer song was "lowin' in the reeze"

ussell took us on several boating adventures including an outing to achias Seal sland site of the region's largest tlantic uffin azorbill ommon Tern and retic Tern colonies. We had a magical afternoon chumming for seabirds south of White ead sland t was so calm that we cut the engine and drifted. Three finback whales lazily fished around us while we netted and banded reater Shearwaters and Wilson's Storm etrels led a trip to White ead sland where discovered the hard way the location of the redredged harbor channel—yhron—orse guided us on a wonderful tour of the island where he has lived for more than six decades.

The last ent sland visit for the season was an ecology field trip lead by ennifer and im in mid September fter dark one of the students received an emergency radio transmission a local pilot laus Sonnenberg disappeared in the dense fog somewhere west of White ead sland search party fanned out over the north end of the island sit turned out laus crash landed near iller ond on rand anan suffering only a few broken bones uring this sabbatical plan to visit the island in anuary and ebruary to assess the possibility of winter research

#### ent sland T Shirt

ast year under the misguided impression that nobody wore anything but over sized shirts these days failed to order enough medium sized owdoin Scientific Station T shirts ow we've reordered plenty of the cotton shirts with a white storm petrel flying across an outline of ent sland f you would like to purchase one or more please send a check for per shirt vailable colors are navy and stone wash light blue medium only red plum and slate any size except medium

ddenda to the ist of ublications from the owdoin Scientific Station

ore than articles have been published in peer reviewed journals based on research on ent sland apers with an author who was an undergraduate at the owdoin Scientific Station are indicated by asterisks umbers in parentheses represent

ontribution umbers from the owdoin Scientific Station The complete list of publications can be found linked to the ent sland web page