Maine’s super flyway

Can mass migrations survive a changing Gulf of Maine coast?
President’s Message

THROUGH THEIR research, University of Maine scientists and scholars pursue answers to society’s most pressing problems, offering new perspectives on our world and making discoveries that inform and improve our lives. This issue of UMaine Today offers a cross section of some of those initiatives.

Biologist Rebecca Holberton and her research team have verified that the Gulf of Maine serves as a superhighway for songbirds migrating between Canada and South America. They are now part of an international network of scientists working to understand the mass migrations and the implications of changing coastal habitats.

In his graduate research on 19th-century Wabanaki petitions, Micah Pawling has provided a unique perspective on the struggle of Maine tribes to preserve their homeland — ethnohistory that has contemporary significance.

A new perspective also is found in the research of Todd Gab and his colleagues, who are exploring the keys to economic development via knowledge clusters. Gab is an economist known for asking new questions to extrapolate new answers from data.

Also impacting the state and national mindset is Lu Zeph, whose research and advocacy have helped ensure community inclusion for students with severe disabilities.

These UMaine scholars and so many others exemplify contemporary applications of the land-grant tradition. By examining issues of importance to Maine and beyond, their work allows us to effectively address pressing concerns across a wide range of disciplines.
WHENEVER CATHERINE ELLIOTT talks to audiences across the state about sustainable living, she offers a two-part scenario to drive home her message.

She asks people to take their job income and subtract the costs associated with working, such as childcare, travel and work clothes. That’s their real wage.

Then she asks them how they take that money and shop.

“If I buy an item that costs $80 and I’m making $8 an hour, I have to work 10 hours to pay for it,” says Elliott, a University of Maine Cooperative Extension professor and founding member of the National Network for Sustainable Living Education (NNSLE). “Is it worth it? The answer might be yes, and it might be no. It might be, maybe I’ll think about it.”

And what happens if they buy this item on credit? In essence, they’re paying for it with hours not yet lived.

And that, Elliott says, is a sort of aha moment — the point at which there begins to be an understanding of what it means to live sustainably.

Essentially, the practice of sustainable living is a reconsideration of what we think we know — a re-evaluation of how the choices we make in our daily lives affect the environment, economy and society, both universally and at a local level.

The key to succeeding at sustainable living, says Elliott, is to make the best possible decisions for where we are in our lives.

“Sustainability a key to improving quality of life

Despite the fact that every decision does not have to be the most sustainable decision, but that it’s a conscious, intentional decision,” Elliott says. “It’s thinking about your options given the reality of your situation.”

ELLIO T T HAS STUDIED sustainable living, or “living lightly,” as she puts it, for more than eight years. In 2004, she helped found NNSLE, a group of Cooperative Extension faculty members from across the country dedicated to fostering new consumption patterns and sustainable lifestyles to improve quality of life and reduce environmental degradation.

The national network grew out of the Sustainable Living Project at Oregon State University, led by Forestry Extension Professor Viviane Simon-Brown, author of Living Sustainably: It’s Your Choice. In 2008, the second edition of Living Sustainably was co-authored by Simon-Brown.
and Cooperative Extension specialists from 10 states, including Elliott.

NNSLE defines a sustainable life as one that is deeply satisfying, fulfilling and appealing, while also environmentally, economically and socially responsible.

The environment, economy and society make up the so-called sustainability triangle, which Simon-Brown's group uses to show the interconnectedness of daily decisions.

We can build a sustainable lifestyle, according to NNSLE, by considering our consumption of goods in light of the finite environmental resources available. Sustainability follows the logic that if we have a desire to consume less, manufacturers will produce less, and therefore there will be less of an impact on the global environment and the individual wallet.

A sustainable lifestyle is not, however, based on guilt, deprivation or doom and gloom. Elliott and other proponents of sustainable living aren't arguing that we need to deprive ourselves of purchases outside of our needs. They don't intend to make us feel guilty for less-than-sustainable choices in the past. And they don't seek to scare us about the future.

WHEN SHE SPEAKS to groups — from conservation organizations to organic farmers in Maine and meetings of Extension professionals nationwide — Elliott does ask people to put their individual actions into a global context. She wants people to think about how their daily lives impact the environment, economy and society in light of threats such as climate change, overpopulation, food supply issues and energy resource depletion, and how those choices affect their wallets and stress levels, as well as the amount of satisfaction with life.

"I think one of the challenges is that it can very quickly become overwhelming, especially when you talk about world issues that are so big and so global," says Elliott, who joined UMaine Cooperative Extension in 1987 after receiving a Ph.D. from UMaine, and who also serves as Extension's wildlife specialist. "It's very easy to get into a mind-set of, well, I can't do anything about that. But you can. It doesn't always have to be the most sustainable decision or done in the most sustainable or energy-efficient way, as long as it's a reasoned decision."

Yet many of us don't consider sustainable choices, according to Elliott. We claim not to have enough time in the day, which can lead to what she and her colleagues call time poverty. The consequences of that include loss of family time, obesity, anxiety, stress and even depression.

While we're wondering where all our time went, we're wondering how we have accumulated so much "stuff."

WHEN IT COMES to all that "stuff" — belongings that aren't necessities or don't make our lives truly happier or easier — Elliott suggests going beyond the well-known mantra of reduce, reuse, recycle to include repair, refuse and redistribute.

One woman Elliott knows did just that. During one of Elliott's talks, the woman mentioned she wanted new living room furniture even though her old furniture was still in good shape. A few months later, the woman told Elliott that she and her sister traded furniture. "Neither of them had to buy new furniture," Elliott says, "and she got a whole new look without it costing her anything."

Making those kinds of sustainable decisions given the reality of our situations can be the key to getting our lives back and contributing to the alleviation of global environmental issues.

Say, for example, you own a truck you fill up with gasoline a few times a week for runs to the grocery store. You'd love to replace that truck with a new gas-electric hybrid vehicle, but such a purchase isn't economically feasible for the next year. Living sustainably means asking questions to find a solution to spending less money on gas and saving for the new car. You could think strategically about how to combine your errands into one trip. You could carpool with a neighbor. Public transportation might be an option.

You might find not only have you reduced the amount spent on gasoline, but also cut back on the time spent in your vehicle, which means more time at home. Because you're thinking how to shop strategically, you might find yourself buying less, or at least thinking before buying. And you've helped reduce traffic and pollution levels from your exhaust. It's an outcome, based on decisions that fit with your lifestyle, that has had an effect on the sustainability triangle.

ELLIOTT ALSO has produced what she calls an UnDriving Card, based on a concept Simon-Brown first developed for an UnShopping Card. Roughly the size of a business card, the UnShopping Card lists a series of questions: Do I really need this? Could I borrow or rent it? Is it worth the time I worked to pay for it? On the other side of the UnShopping Card is Elliott's UnDriving Card. Again, the card asks people to consider why they're making the decisions they are.

Robin Reed, a sustainability specialist in the School of Forestry and Environmental Studies at Yale University, suggests asking yourself: "What is the best way to drive the car?" For example, you might plan to carpool with someone. Alternatively, you might simply walk or ride a bike.

Driving alone is the most expensive and polluting way to get around. Carpooling significantly reduces the amount of carbon emitted from your vehicle. It allows you to drive less and helps make a dent in global warming. Driving alone might not be for another. But everyone, no matter his or her income or lifestyle, can do something to live more sustainably.

"It is an attitude shift, to realize that wherever you're at, whatever you do, there's one more thing you can do to live more sustainably," she says. ©
Do you really LOVE ME?

A new study finds the warning signs of depression in young romance

H, YOUNG LOVE between a girl and a boy. So innocent. So much a part of coming of age. Such a romantic backdrop for the warning signs of depression. Adolescents and young adults who excessively seek reassurance in their romantic relationships are at increased risk for depression, according to a new psychological study at the University of Maine.

Excessive reassurance seeking — such as constantly asking, “Do you really care about me?” — is associated with poorer relationship quality and internalizing problems, especially for girls and young women, says UMaine Doctoral Research Fellow Jessica Fales.

In her research, Fales focused on three social processes: excessive reassurance seeking, negative feedback seeking and co-rumination or excessive discussion of personal problems with a tendency to focus on negative topics. She was especially interested in whether adolescents engage in these behaviors with their dating partners, and if that might help explain why involvement in romantic relationships is itself a risk factor for depression for girls.

Her study is the first to explore the three interpersonal factors simultaneously in the context of adolescent dating.

“Most intriguing was that in romantic relationships, we found that males engage in excessive reassurance seeking just as much as females,” says Fales, a fifth-year graduate student in the Psychology Department’s Clinical Ph.D. Program. “But females experienced more negative outcomes.”

Fales studied 110 couples ages 17-26 who had been in an exclusive romantic relationship an average of 12 months. The research showed that both males and females engage in these interpersonal processes with their romantic partners, in most cases more so than they do with their friends. Greater excessive reassurance seeking, co-rumination, and poor romantic relationship quality each uniquely predicted depressive symptoms for young women.

For young men, the need for excessive reassurance, poor romantic relationship quality, and shorter relationship length predicted depressive symptoms.

Follow-up analyses revealed that excessive reassurance seeking impacts depression symptoms directly, over and above any effects of poor relationship quality.

The findings highlight excessive reassurance seeking as an important risk factor for depression in young men and women. Fales says, and suggest that it is not just a symptom of a dysfunctional romantic relationship.

Greater understanding of the social processes in adolescent romantic relationships and their implications for depression has the potential to improve intervention programs.

“In younger children, it’s normal for them to seek reassurance,” Fales says. “We don’t know where the unhealthy line is, but a starting point is when excessive reassurance seeking starts to annoy other people, to the point that they begin to withdraw from the relationship.

“These are behaviors and can be changed. They can more readily be targeted through intervention. For example, because we know that dwelling on negative topics or problems with others can lead to depressive symptoms, we can talk to young people about more active problem solving.”

Research and relationships

AS AN UNDERGRADUATE, Jessica Fales of Winslow, Maine, briefly attended Hamilton College, intending to major in English and, ultimately, teach. But when she took an Introduction to Psychology course, she developed a keen interest in abnormal psychology. She realized that the best place to further develop this passion was at the University of Maine.

When she transferred in 2002, Fales was one of the first undergraduates to be part of the Psychology Department’s research-intensive track, working in the laboratories of professors Sandra Sigmon and Douglas Nangle, and being mentored by then doctoral students Teresa Edenfield and Agnieszka Serwik.

For her independent project, Fales used a large data set to explore whether social anxiety was a risk factor for dating aggression in college students. She found one component of social anxiety that stood out: fear of negative evaluation. For males ages 18–23, excessive concern of being negatively evaluated by others predicted psychological aggression toward their dating partner.

Fales took her research interests in dating, gender differences and internalizing problems into her graduate work, which she began in 2005 with Nangle as her mentor. She is interested in exploring factors that may contribute to adolescent females’ increased risk for difficulties — factors that may be prime targets for intervention.

This summer, she will begin a required, highly competitive one-year predoctoral clinical internship in a medical center setting. And Fales is mentoring undergraduate Uihra Hedrich of Presque Isle, Maine, a double major in psychology and philosophy.
It was 8:30 on a mild, clear October 2009 morning on Metinic Island in Penobscot Bay, and a group of University of Maine researchers was already several hours into a shift collecting, banding and analyzing songbirds migrating off the Maine coast. Rebecca Holberton, one of the nation’s top bird biologists, had arrived several days earlier, joining UMaine graduate student Adrienne Leppold, who oversees banding operations on Metinic and is a key member of Holberton’s Laboratory of Avian Biology. Leppold had already been on the island several weeks, going through a daily routine that included waking up before dawn to capture, band and eventually release songbirds, and then retreating to a small cabin to analyze data and repeating the process the next day.

That morning, Leppold was busy banding under a tent when Holberton called her outside. Leppold tiptoed out through throngs of birds amassed on the ground. Look up, Holberton told her.

What Leppold saw was shocking and thrilling — multiple flocks, each made up of hundreds of birds moving west-southwest over the island. One flock of about 150 yellow-rumped warblers stopped and hovered briefly over the treetops west of the banding tent before splitting — half the flock coming down to land in the trees and the other half continuing on.

“I could almost feel them thinking. It was a moving experience,” Leppold says, recalling the moment. “Most of these birds are nocturnal migrants, and this was 8:10 a.m. And there was the same insanity on the ground around us. That was the moment it hit me that this was something huge.”

Huge, indeed. What Holberton saw that morning, and what Leppold substantiated while conducting research on Metinic, was that the Gulf of Maine serves as a sort of avian thoroughfare in the Gulf of Maine.
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Adrienne Leppold

IN ADDITION to the groundbreaking nature of the findings and combination of research methods, the collaborative nature of the Migration Monitoring Network itself is unheard of in the world of bird migration research in the Gulf of Maine. Faculty and student researchers from UMaine and Acadia University in Nova Scotia are involved, along with U.S. Fish and Wildlife Service biologists at the Maine Coastal Islands National Wildlife Refuge, the National Park Service and several established bird banding stations, such as Atlantic Bird Observatory in Nova Scotia, Appledore Island Migration Banding Station in Isle of Shoals, and Manomet Bird Observatory in Massachusetts.

Network researchers are now collecting data about the species and numbers of birds captured on the migration highway, as well as point of origin and destination. The network’s goal isn’t to simply amass information. Scientists want as clear an understanding as possible about the Gulf’s migrants because current and emerging issues such as climate change, loss of habitat through development of inland and coastal areas, and alternative energy initiatives along the Maine coast will inevitably affect the mass migrations.

“We’re at the northern end of their spring migration, so of course the birds that we get would be breeding north of us,” says Holberton, who also is part of the ecological monitoring team working on UMaine’s DeepCwind Consortium, the offshore wind power initiative. “Those are the habitats that are really going to be the first and fastest to go in response to global climate change. If we don’t have some idea of what we’ve got now, we won’t have a feeling for how quickly population change is happening. And we certainly don’t want to exacerbate it by increasing mortality or making it more difficult for birds to reach their destinations.”

BIRD BANDING is a key undertaking for the network. This spring, Leppold will head back to Metinic Island for the beginning of her fourth overall migration season there. She will spend hundreds of hours banding birds, taking measurements, counting birds by hand and performing other experiments.

Other network banding stations have been set up at Petit Manan and Seal islands and Petit Manan Point. UMaine biologist Brian Olsen oversees two banding stations in Acadia National Park.

In fall 2009, more than 3,000 birds were captured at Metinic, Seal and Petit Manan islands. Based on the number of nets and people available to monitor the nets and handle birds, the amount of migrants captured per net hour was almost double at Metinic compared to the other two islands. Metinic was equally as busy in fall 2010, with the intensity of birds captured there far exceeding other stations, including Manomet, a long-term and much more expansive operation.

Leppold’s job is to understand the types of birds landing on Metinic, why they’re stopping there and the condition they’re in on arrival. The birds’ energetic condition, which is related to the amount of subcutaneous fat on their bodies, is one of the most important assessments Leppold makes when banding.

“That’s really what drove the formation of the network,” Holberton says. “Energetic condition is really important to know. There are a lot of birds in these areas, but we don’t really know who they are, how many there are, where they’re coming from, where they’re going and why. We need to figure out the location of the important stopover areas.”
To describe three different types of stops migrating birds tend to make, Holberton uses terminology known in bird biology circles. Some landing spots are known as fire escapes — places where birds stop for a few hours to get a quick rest or reorient themselves after having blown off course, but aren’t suitable for long stays because of lack of food or shelter from predators. Then there are the so-called convenience stores, which have easily accessible resources for birds. Here they can rest briefly for a day or two before moving on to better sites, maintaining or improving their condition and increasing the odds of reaching their destinations. The third type of spot is the five-star hotel, a place where birds can stop for a week at a time to rest, feed and fatten in order to make long pushes on their migratory travels.

Holberton and her researchers have determined that Petit Manan and Seal islands fall into the fire escape category, offering critical places to rest, while Metic falls into the convenience store analog. Fortunately, there are also five-star hotels in the Gulf of Maine. All the areas are regarded as critical habitats for migratory birds.

Identifying those locations in the gulf is one of the big pieces of researchers’ work. When hot spots such as Metic have been plotted, scientists will know which areas and the flyways connecting them should be protected from development or coastal wind turbines.

WHEN BANDING, Leppold sometimes takes a tail feather or small amount of blood from the birds. From those biological materials, the UMaine researchers have been able to determine where birds were born or bred by looking at the stable isotope signatures of those samples. This information informs the Migration Monitoring Network’s research by revealing more about birds’ travels.

“By also measuring stable carbon isotopes, which can vary with habitat type, in the same tissues, you can start putting another coordinate on where that bird was,” Holberton says. “We’re taking these different tissues that give us a different time stamp, and we’re putting together a composite of stable isotope signatures that help give us some information.”

Blood samples also are tested for indications of the birds’ immune health and energy metabolism levels are checked for changes in behavior and physiology.

“A lot of times we see a situation where birds are not flying an infection yet, but they’re under some kind of stress, whether the stress is from bad weather or crowded conditions, or they can’t find enough food,” Holberton says. “They can become immunosuppressed and more susceptible to infection and disease. Things that you might normally have forgotten about, like a cold, can kill you.”

Another important element of research is data picked up by both radar and passive acoustic surveys. The acoustic data, gained through recorder arrays throughout the Gulf of Maine coastline and inland, give researchers an idea of which species of birds are flying overhead, especially at night.

As birds move through the sky, they call to each other via a series of short, usually high-frequency noises, many lasting a mere hundredth of a second, which sound to us like clicks or chirps. An interactive sound analysis software system called Raven, developed at Cornell University, translates each call into a spectrogram or visual picture of the sound. UMaine undergraduates in Holberton’s lab compare each bird’s song picture to standard, confirmed images of a species’ spectrogram to make identifications.

THE NETWORK’s research is expected to offer a clear picture of how migratory songbirds and other migratory species, such as waterfowl, seabirds and shorebirds, use the Gulf of Maine. Evolutionary changes in birds likely won’t keep up with human alterations to landscape, but at least scientists will know what species are flying through the area, how the birds are using different areas of the gulf, and how their numbers may be changing in the face of environmental challenges.

While climate change is one of the biggest potential threats to migrating birds in the Gulf of Maine, it isn’t the only one. Land development along the coastline could change how birds use their stopover sites; the gulf could see more areas with fire escape capabilities, for example, and fewer five-star hotel zones — a situation that could not sustain successful migrations of millions of birds annually.

Holberton, her team at UMaine and the rest of the network researchers hope their findings will be used to support responsible development in and around the Gulf of Maine, especially now that researchers such as Leppold have shown the region is a superhighway for songbirds and other species.

“Maine desperately needs a comprehensive, long-term plan for coastal and offshore development that takes into account not only our region, but those north and south of it,” Holberton says. “These birds that travel well beyond the Gulf of Maine are very good at what they do, but it might not take much more than one thing to push them over a threshold at which they can no longer sustain their populations. That’s the issue.”

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A WARNING comes with the Dorset Naga, one of the chile pepper varieties agronomist Michael Michaud sells through his mail-order seed company in England, Peppers by Post: “Please use with the greatest of caution. Under no circumstances should one of these chiles be left where an unwitting person, especially a child, might handle them.”

Michaud, an East Millinocket, Maine, native who graduated from the University of Maine in 1975 with a degree in plant sciences, and his wife, Joy, have spent four years developing the Dorset Naga in greenhouses and poly-tunnels at their home in West Bexington, Dorchester. The wrinkled, wedge-shaped red peppers “with a distinctive fruity aroma” have heat levels averaging around a million Scoville heat units (SHU).

To put that in perspective, Tabasco red pepper sauce is 2,500–5,000 SHU; ordinary jalapeños, 2,500–10,000 SHU.

The Michauds also grow dozens of other unusual, colorful fruits and vegetables, including hybrids, for their other mail-order business, Sea Spring Seeds, as well as “bonsai” chile plants for kitchen window-sills. Michaud is a garden writer and, for the last decade, has been researching the vegetables and herbs found in immigrant shops and gardens. He not only writes about his findings, but also includes some of the varieties in his seed catalog.

We asked Michaud to talk about his hot commodities and his career.

**How popular is the Dorset Naga?**
We have an international clientele, with customers in Australia, Africa, Thailand and Europe. Did I mention the U.S.? My brother is the official importer, and he sends the orders out for us from his home down South. We produce thousands of Dorset Naga seeds each year, most of which we manage to sell.

**How did you get started in the mail-order seed business?**
We have been in the growing business for more than 20 years. Peppers by Post has been under way for 13 years; Sea Spring Seeds, four or five years. After developing the Dorset Naga chile, we decided to produce seeds of it ourselves. We started Sea Spring Seeds as a way of selling the seed, and in the last two or three years have added more varieties to our catalog.

**How does one create new lines of peppers?**
We develop ours in two ways: from accidental crosses that occur between two varieties growing in the same greenhouse and from land race varieties collected in immigrant shops. We could make our own crosses, but so far, this has not been necessary.

**Do you personally eat hot peppers?**
Until we started selling fresh chiles, we had very little to do with chiles. We still don’t like scorchingly hot food, preferring to eat the larger, milder chiles instead of the smaller, hotter ones.

**How do you eat or cook with red hot peppers like some of the extreme varieties you produce?**
The Dorset Naga is derived from the Bangladesh Naga Morich chile pepper. The Bangladeshis seldom cook with it. Instead, they either rub it over their plate before the food is served or mumble on the fresh fruit as they eat their food. They also eat it green because it has less heat than when it is red.

**How do you cool the burn if the pepper is too hot?**
They say dairy products. My Bangladeshi friends offer me yogurt if they see me struggling from too much chile.

**Do you have a favorite spicy dish using these extreme peppers?**
No. The hot ones are just too hot. Chiles should be used to enhance the flavor of food, not detract from the enjoyment.

**How did your UMaine experience shape you?**
Career-wise, my UMaine experience did everything to shape me. Good teachers and interesting classes stimulated me to pursue a career in agriculture. And agriculture has been great fun: Peace Corps in El Salvador; a master’s from the University of Florida, Ph.D. from Texas A&M, research and teaching at the University of the Virgin Islands; international inspector for the organic industry; vegetable grower; garden writer. It doesn’t get much better.
Choosing SURVIVAL

19th-century Native petitions provide unique perspective on the Maine tribes’ struggle to preserve their homeland

By Margaret Nagle
Choosing survival

The Whirlwind of change in the Wabanaki homeland of the Passamaquoddy, Penobscot and Maliseet tribes began after the Revolutionary War. In 1783, British loyalists and American immigrants began staking claims to eastern lands in the region of Massachusetts known as the District of Maine, petitioning the Commonwealth for property and water rights.

Through a series of treaties with Massachusetts, the tribes had retained reservations and usufruct rights that recognized traditional use of the land and water. Native leaders had relied on traditional face-to-face communications at treaty negotiations and conferences between Native delegates and Euro-American officials.

But by the 18th century, when formal meetings became less common, the Penobscots, Passamaquoddies and Maliseets in present-day eastern Maine, western New Brunswick and the southern shore of Quebec had to navigate a new and ever-changing geopolitical landscape. With their very survival on the line, the tribes learned to use petitions as a political tool that not only kept the door of diplomatic negotiations open, but also served as a way to assert concerns and articulate aboriginal rights to governments.

The result was a remarkable paper trail that provides a unique perspective on the Maine tribes’ struggle to withstand an invasion that resulted in a reconfiguration of aboriginal homeland—the process of Euro-Americans applying their own rearrangement of space to tribal lands and waters, including bridges, roads, property boundaries, and fences or stone walls.

Today, the ethnohistory revealed in a University of Maine research project on 19th-century Wabanaki petitions has contemporary cultural and political significance. It provides context for the formation of reservation lands, suggesting that these places held significant cultural importance among the communities.

Native petitions speak not only to the challenges to their lands and lifestyle, but to the tribes’ ability in waging petitions as a political medium. The petitions are filled with their voices and values, including the place-names of the important sites and valuable hunting and fishing grounds they fought to preserve.

"In the 17th and 18th centuries, Colonial wars were fought with swords and muskets. By the 19th century, the weapons were pen and paper," says ethnohistorian Micah Pawling, whose research recently culminated in a Ph.D. in history at UMaine.

As a YOUTH, Pawling was captivated by the Abenaki history of his home state of Vermont. He was an undergraduate at the University of Delaware when he received a summer grant to conduct research at the Maine Historical Society in Portland, Maine, for his thesis on the Wabanaki Confederacy, an intertribal alliance of the Abenaki, Penobscot, Passamaquoddy, Maliseet and Micmac.

That interest in the Wabanaki history brought Pawling to UMaine. His master’s research examined the role of petitions in the cultural survival of the Maliseet and Passamaquoddy in the 19th century. Pawling’s dissertation research, completed last spring, is a cross-border analysis of Wabanaki petitions and reconfiguration of their homeland in the 19th century. Similar to the work of under­grad­uate professor Brian Hosmer, my work is less about resistance and accommodation and more about Native people making choices that affected their daily lives,” says Pawling, who is the special research assistant to UMaine’s Canadian-American Center, working on the upcoming publication of the Historical Atlas of Maine.

In his research that took him to archives from Ottawa, Canada, to Augusta, Maine, Pawling pored through hundreds of Native petitions and others by Euro-Americans that pertained to aboriginal issues. Many Wabanaki petitions were written by non-Native intermediaries, including priests, but some Native peoples wrote their own. Styles, formats and lengths of petitions varied. Many of the tribes’ petitions for land focused on protecting cultural sites and important hunting and fishing locations. Other petitions addressed such issues as right of occupancy, food and assistance.

The 19th-century petitions also show evidence of Native and Euro-Americans trying to understand each other.

"In my research, I’ve seen a few petitions, but Micah’s volume really surprised me. He found petitions dating back hundreds of years, a time I didn’t realize the tribe was using that system,” says Donald Soctomah, the Passamaquoddy tribal historic preservation officer and a 1989 UMaine alumnus with a degree in forestry.

A lot of Micah’s petitions show that struggle was not just about land, but also about survival. The tribe wanted the bloodline to continue, their rights to always be here. It’s not special rights, it’s aboriginal rights that our ancestors always had."

THE PENOBSCOTS were the first tribe in eastern Maine to adopt the Euro-American practice of submitting written petitions to government officials. To use petitions, members of the Native community had to “become familiar with the unfamiliar and try to use it to their own advantage,” says Pawling. Ultimately, as petitions in the early 1800s became a steady communication link between the tribes and governments, the documents clearly demonstrate a sophistication, courage and determination by tribes to control their own destinies.

“They knew the political process of petitioning and what it required, including when to submit the petition and the precise way to address government leaders,” Pawling says. “They knew which officials to corner when they were leaving their offices. We get glimpses of all these layers behind the petitions. We also see some evidence to suggest that not all requests were conveyed accurately.”

As frustrating as it was to find petitions translated on behalf of the Native community that misrepresented their interests or that simply “got it wrong,” Pawling also found intriguing petition requests that revealed different Wabanaki positions taking place in their homeland.

For instance, beginning in 1846, R.M. Flint built four dams on Huntley Brook—two in Indian Township—and a sawmill. The next year, a Passamaquoddy petition requested permission to build a mill so the tribe could produce building supplies for its ever-expanding community that misrepresented their local alternative would be a local alternative for the tribe, precluding having to send timber to Calais.

“This was a petition not involving hunting and fishing, but attempting to seize an economic opportunity for the benefit of their own community,” Pawling says. “These kinds of requests can challenge our notions about Native decisions in the past.”

The tribes tried to use the system and “hoped for the best,” Soctomah says.

“There were some benefits that gave hope to the tribes that someone heard their requests.”

Map detail of Old Town Island from the Journal and Plans of Survey by Joseph Treat—1620. Treat, a surveyor from Bangor, Maine, and guide John Neptune, the Penobscot lieutenant governor, spent a month documenting the North Woods—the Wabanaki homeland—that was being reconfigured by Euro-American settlers. The journal entries and maps re-create a dialogue between Euro-Americans and Native peoples, showing how different perceptions of the land were negotiated and disseminated, exposing the tensions that surfaced when assumptions and expectations clashed.

In large part because of Neptune’s influence, the maps reflect a river-oriented Native perspective that would later serve as a key to Euro-American access to the region’s interior. In addition to numerous aboriginal place-names on the maps, Treat’s manuscript shows the dispersal of Penobscot families on their reservation islands and the location of important portages around rips in the river.
An example of a 19th-century Native petition is this 1825 request for a 200-acre reserve on Grand Manan Island. Passamaquoddy Gov. Francis Joseph and Deacon Sockboson of Pleasant Point, Maine, petitioned New France and Deacon Sockboson of Pleasant Point, Maine, petitioned New France and Deacon Sockboson of Pleasant Point, Maine, petitioned New France and Deacon Sockboson of Pleasant Point, Maine, petitioned New France and Deacon Sockboson of Pleasant Point, Maine, petitioned New France and Deacon Sockboson of Pleasant Point, Maine, petitioned New
culture. A bilingual dictionary, the Passamaquoddy-Maliseet Dictionary, was compiled by anthropologist David Sanger led a research initiative, “Landscapes and Language: A Com Prehensive Place-Name Project,” that signaled the emergence of the aboriginal language, including place-names characterizing sites and geographic features.

In 2002, Sootomah and UMaine anthropologist David Sanger led a research initiative, “Landscapes and Language: A Passamaquoddy Place-Name Project,” that resulted in the addition of new place-names to the Passamaquoddy-Maliseet Dictionary, compiled by Passamaquoddy elder David Francis Sr., and linguist Robert Leavitt, published by University of Maine Press in 2008. Some of the rediscovered place-names are sacred and culturally significant to the tribe and not public.

The springboard for the project was Sootomah’s personal knowledge and his historical research, Sanger’s extensive archaeological work on both sides of the international border in the Passamaquoddy homeland, and the comprehensive document research conducted by Pawling, including the Native petitions and surveyors’ journals.

WHEN PAWLING began researching Native petitions for his thesis, he learned about the journal of Joseph Treat of Bangor, Maine, who compiled with the governor’s order to survey the lands bisected by the Passobocst and St. John rivers. Treat’s more than month-long expediton in 1820 was made with the cooperation of guide John Neptune, the Passobocst lieutenant governor.

“Treat was a local man, but in contrast to many of his contemporaries, he was interested in the human landscape,” Pawling says. “Some specific examples include Pamola’s Rock, where offerings were made to Mt. Katahdin, Passobocst eel fishing camps, and the extent of isolated Ameri- can settlement up the Passobocst River. Treat and Neptune knew and respected one another. Treat was entering the Passobocst world where Neptune taught him appropriate behavior for survival.”

As a non-Native ethnohistorian, Pawlling has done the same. Beginning in 2004, Pawling met regularly with representatives from the Passobocst Nation’s Department of Cultural and Historic Preservation, at that time led by UMaine alumnus Bonnie Newsom, who now serves as the Passobocst tribal historic preservation officer. They reached their collaborative goal by publishing Treat’s journal, complete with his hand-drawn maps and written descriptions of what is now northern Maine — an account of the North Woods 20 years prior to Henry David Thoreau’s journey into the region.

“The project was valuable on two levels,” says Newsom, who received her bachelor’s degree in anthropology in 1993 and a master’s degree in Quaternary studies in 1999. “First, it serves as a model for folks in academe who are interested in community-based partnerships in research. The community-based process involved in the Treat publication shows that community partnerships are possible and can be very successful.

“Secondly, it made indigenous people visible in history,” she says. “Micah places a lot of emphasis on the role of Native people in Treat’s work. The journals could have been published without that emphasis, but Micah’s analysis and interpretation of them highlight the fact that indigenous people were dynamic participants in Maine’s history.”

THAT PASSION to understand the culture is what sets Pawling and his research apart, says Sootomah, who calls him a vital source of the aboriginal language, as gathering places for family bands, as tribal homeland sites — locations valued in the ages as tribal homelands, as places of spiritual significance, and as gathering places for family bands, as places of spiritual significance, and as places of spiritual significance.

“People and places may change, but the challenges of land retention, rights and cultural misunderstandings don’t go away,” Micah Pawling says. "We have a lot of researchers," he says. "I grew up seeing them on the reservation doing research, interpreting as they want and leaving, never to be seen again. Micah’s special because he brings in the community. I’ve never met a researcher that in tune with his work and the concerns of the Native people. In that way, he gets the full picture. He’s a specialist in Wabanaki research. What’s also important is getting back the information he finds — information pertinent to the (recognition) case in Canada, to cultural significance and to the education of our children.”

Today, the Passamaquoddy tribe continues to petition the Canadian government for recognition. Some of the 19th-century documents discovered through Pawling’s research could play a role in proving the existence of the aboriginal communities through time.

“Passamaquoddy petitions reveal that the people strove to preserve connections with the eastern portion of their homelands in Charlotte County, New Brunswick,” Pawling says. “With family hands hunting and fishing across the international border, the tribe maintained a sense of homeland that included obtaining a foothold in New Brunswick, even though the province had refused to recognize them as Canada’s First Nations peoples.”

The 1783 Treaty of Paris established the border at the St. Croix River, but uncertainty as to the true location of the river led to a boundary commission, which relied on Passamaquoddy testimony, resolving the dispute in 1798. The international border cut the Passamaquoddy homeland in two.

“I've had several meetings on Passamaquoddy land claims in Canada in which we're asked to show evidence that our community was here. The petitions serve as our foundation for obtaining Canadian recognition,” Sootomah says.

“I've been fighting for 15 years, carry- ing on from the people before me. The stuff that Micah found gives us a strong voice. Every time there's a change in government in Canada, we keep talking. I can never give up hope, like my ancestors never gave up hope.”

Sootomah also ensures that the wishes of his tribe are heard in Augusta. As a tribal representative in the Maine legisla- ture for eight years, Sootomah wrote resolu- tions that reflected the wishes of the Passamaquoddy Council.

“That becomes my petition,” he says, “to go after changes. It’s a similar process within a system.”

Measuring the outcomes of petitions in the past unit as simple as counting up how many were granted, Pawling says. Petitions rejected by governments could be followed up by negotiations resulting in partial fulfillment of the request, and some petitions that governments granted were never enforced.

“Petitions also reveal why Native people are still concerned with land loss today,” Pawling says.

The hope, he says, is that his research shows the complexity of the past and contributes to an understanding of the ethnohistory of the Native communities and their ongoing issues.

“People and places may change,” he says, “but the challenges of land retention, rights and cultural misunderstandings don’t go away.”
Research on knowledge-based clusters goes beyond college degrees per capita to give a clearer economic view of a city and region

**This work gives regions an idea of the strength of their niche in the economy and how it contributes to productivity and economic activity.**

Todd Gabe

The median salary for a recent engineering graduate is about $25,000 more annually than that of a liberal arts major, according to an annual survey by UM’s Office of Institutional Studies. The skills a marine biologist needs to graduate are far different from those required by a fine arts major. And there are certain well-paying occupations — plumbing comes to mind — that don’t require a college degree at all.

To complicate things even further, two regions may have a comparable percentage of residents with college degrees, but those places may have very different strengths. There’s a reason why aspiring actors flock to Los Angeles or New York City and software geniuses move to Silicon Valley.

By using new occupational data — and redefining traditional measures of human capital — Gabe’s research on the knowledge economy is changing the way people view regional economic activity.

“Todd Gabe is among the most facile people in the world in handling occupational data and relating that to regional economic outcomes,” says Florida, director of the Martin Prosperity Institute at the University of Toronto and author of *The Great Reset* and *The Rise of the Creative Class*. “His work is providing a serious, economic investigation into the value of occupations on economic output.”

To give a clearer picture of how the skills of a region’s workforce affect economic development, Gabe and his colleagues Jaison Abel, Adrienne Ross and Kevin Stolarick created regional knowledge profiles in their “Knowledge in Cities” report. There are Making Regions, such as the manufacturing hub of Detroit, Mich., and there are Teaching Regions, such as the college town of Athens, Ga. Portland, Maine, counts as a Thinking Region because people there have high...
The top two knowledge-based clusters with above-average economic performance:

**Engineering** — very high knowledge of engineering, IT and commerce; low knowledge of physical and mental health

**Innovating** — very high knowledge of IT, arts, commerce and engineering; low knowledge of manufacturing

Gabe then collaborated with MPI researchers on the “Knowledge in Cities” article, which The Economist highlighted as one of the most interesting studies in September 2010. Gabe also recently completed a book chapter, “The Value of Creativity,” which will be published later this year in the Handbook of Creative Cities.

Gabe's creative economy research led him to look at occupations — rather than industries — as an indicator of a person's skills (it makes sense that a webmaster at a paper mill has more in common with a webmaster at a university than he or she does with others who fall under the “manufacturing” label). From there, the leap to “knowledge areas” — trying to identify which types of skills have a higher value in the market — wasn’t very big.

“The questions I’m asking haven’t changed,” Gabe says. “I’m still searching for the keys to economic development.”

At first, Gabe looked at the big picture: What impact does knowledge have on a person’s earnings? Then he started digging a little deeper to find out what impact knowledge had on the earnings of others, what he and his colleagues call the spillover effect.

“Now, I’m really interested in how these types of indicators affect geographic patterns of economic activity,” Gabe says. “Is there clustering of various types of knowledge? And how can this be applied in a practical sense?”

Though his research is helpful for individuals and policymakers, Gabe is interested in making the findings applicable to the business community.

He is currently researching the effects of population density on productivity through the lens of human capital — yet again looking at the data in a way nobody has before. He’d also like to come up with a way to see how the factors he’s researching today have affected economic growth over time.

“It would be really interesting to be able to go back in time and develop knowledge profiles and see how they affected economic growth,” Gabe says. “The occupations we have today are very different from the occupations we had 30 and 40 years ago. Even the way the jobs are done are different.”

Parents in jail need to learn how to stay connected,” says Kristy Ouellette, an Extension educator in 4-H youth and family development in the Androscoggin-Sagadahoc counties office who teaches the Parenting from Away classes.

“It’s not important why they are in jail, just that they are trying to communicate with their children. They need to know how to tell children about what jail is,” she says. “It’s all about the relationship and trust, and finding out how they can be the best parents they can be with the cards they’ve been dealt.”

Inspiration for Parenting from Away came from jail staff who recognized the need for parents in jail to learn about parenting and children’s development. Ouellette helps the inmates understand and avoid communications barriers and set goals.

Parenting from Away is modeled on similar education programs for inmates nationwide. They include a parent education program for incarcerated mothers in Colorado, which has demonstrated that inmates who took the classes had better attitudes and were less likely to reoffend.

Nationally, 70 percent of jail or prison inmates have children or have visitation rights with children. Helping inmate parents stabilize their lives and reunite successfully with children through education gives a long way toward reducing future offenses, Ouellette says.

Parents from away

RAVIS’ DAUGHTER was 6 months old when he went to prison for burglary almost nine years ago. Now, two weeks before being discharged from Two Bridges Regional Jail in Wiscasset, Maine, he is filled with anxiety about transitioning into a parental role.

“She’s grown up a lot,” says the 28-year-old. “I try to write to her and call her as much as I can. I’m hoping to get her for the summer. I’m a little nervous about it. I don’t know what lies ahead, so I’ve got to prepare.”

For Travis and about 300 other inmates at the Wiscasset jail, a parenting education class offered by University of Maine Cooperative Extension is helping ease prerelease transition apprehension. Parenting from Away features three-week sessions focusing on how to stay in contact with families through letters, phone calls and other means. Parents are encouraged to talk about issues and concerns they have about reconnecting with families and children, about authority, discipline, expectations and conflict, and making the most of visitation with games, singing or reading aloud with donated children’s books.

The class at Two Bridges is voluntary and typically attended by men, because of the small female population. It has a 90 percent completion rate.
For nearly four decades, Lu Zeph has championed community inclusion for students with severe disabilities

By Kristen Andresen

Neither of these options sat well with Zeph. “The education of children with severe disabilities is even more critical because it affects their whole quality of life,” says Zeph, director of the University of Maine’s Center for Community Inclusion and Disability Studies (CCIDS). “What these kids mostly needed was what other children already had — the opportunity to learn.”

To say Zeph has been involved with nearly every major advance in education for students with severe disabilities would not be an overstatement. She has advised Congress on landmark legislation. She has served in leadership roles in national associations. She was a sounding board for mainstreaming in Maine schools. In 1999, she was awarded a prestigious Kennedy Public Policy Fellowship in Washington, D.C., and was later called back to Washington for a year to serve as executive director of the Joseph P. Kennedy Jr. Foundation.

**Timeline: Critical Events Related to the Evolution of Inclusive Education in Maine and the U.S.**

- **1954** Brown v. Board of Education, a Supreme Court decision that established the rights of all children to participate in unsegregated education. Established that children could not be segregated by race. This law became the basis for later lower court decisions related to access to education for children with disabilities.
- **1961** President John F. Kennedy appoints a President’s Panel on Mental Retardation.
- **1966** President Lyndon Johnson establishes the permanent President’s Committee on Mental Retardation; now known as the President’s Committee for People with Intellectual Disabilities.
- **1970** Passage of the Developmental Disabilities Services and Facilities Construction Act amendments, establishing the federal definition of developmental disabilities and what has become a national network of University Centers for Excellence in Developmental Disabilities Education, Research and Service.
Willing and able

At UMaine, she developed the master’s specializations in severe disabilities and early intervention, and coordinated the undergraduate and graduate interdisciplinary concentrations in developmental disabilities that are now a part of disability studies. She is the driving force behind CCIDS, which has brought in more than $50 million in grants since 1992.

“The field of severe disabilities and I grew up together, and at each point where it needed to evolve, my thinking was typi- cally way ahead of where things were,” says Zeph, who joined UMaine’s education faculty in 1979 as coordinator of graduate study in severe disabilities. “I had a reputa- tion, both in the state and nationally, for pushing the envelope and wanting more, expecting more and trying to create more.”

EARLY IN HER career in Maine, no program was legally required to serve preschool children with disabilities. But in four counties of midcoast Maine where she was running one of the state’s first programs in early intervention, Zeph made sure they did. With little funding and often few resources, she bartered.

“For the kids that we’re talking about, this community, just because they don’t learn the same way other kids do doesn’t mean there have to be limitations to their learning.”

Lu Zeph

In the late ’70s as director of a private school for students with severe disabilities in Brewer, Maine, she made it her mission to close her school and others like it so that these children could learn in a public school setting, alongside same-age peers.

Zeph wasn’t just fighting for mainstreaming, she was fighting for the rights of children with the most complex needs, including those with multiple physical and cognitive disabilities.

Her position was often unpopular among parents, teachers and administra- tors. But she pushed on, because she is an innovator. And, when she needs to be, an instigator.

“People thought what I was proposing was impossible, but I became committed to the idea that what is now called ‘inclus- ive education’ was the best way of educating all children,” Zeph says. “All of the kids learn something. They see the struggle of a kid who can’t walk or talk, or a kid who can barely pick up a pencil and they become more respectful, they find something nice inside themselves. What I learned is that we’re all better for it.”

In 1979, Congress passed the Education for All Handicapped Children Act. The regulations governing that law, which were enacted in 1977, called for the right to a free, appropriate public education in the least restrictive environment. Schools suddenly had a need for teachers who were trained to work with this population.

When UMaine special education faculty set out to meet that need with a graduate program, they knew just whom to call — the woman who had made headlines for closing down schools and dreaming of something better.

“Up to a great challenge to figure out how to teach (these children), and that’s what I want,” Zeph says. “I wanted to teach where teachers how to problem solve, how to be creative, to instill the quest for figuring it out, doing what other people didn’t think was possible.”

She and her small cadre of students were trailblazers, and they knew the future of how these children were educated in Maine hinged on their dedication.

“One of the things Lu always empha- sized was that it wasn’t just being a teacher and passing on skills,” says one of those early graduate students, James Arte- sani, who is now an associate professor of special education at UMaine. “It was look- ing at people more holistically to find out where these things fit in with a student’s overall quality of life.”

As these students graduated, most became teachers in these schools. Today, many of them are considered leaders in the field in Maine and beyond.

“I think in many ways, it allowed Maine to really be at the forefront of the education of this population of children,” Zeph says. “What was then highly unusual — to educate children with very complicated needs in a general education setting along with same-age peers — created a standard. Now it’s the norm.”

ZEPH LEARNED early on that the best way to improve the quality of life for one student is to improve it for every student, systematically. That became the focus of her doctoral study in educational leadership and policy at Vanderbilt University, where she got her degree in 1983. Since then, she has been actively shaping public policy at the state and national levels.

In 1992, she became the founding director of the Center for Community Inclusion and Disability Studies at UMaine. One of 67 University Centers for Excellence in Developmental Disabilities Education nationwide, it is a resource for professionals, researchers, advocates and individuals with disabilities and their families throughout Maine. It focuses on interdisciplinary education, research and public policy analysis, community outreach, and the creation and dissemination of resources and publications.

Though the educational climate has improved significantly for students with disabilities since Zeph entered the field, there is still work to be done. Today, the challenge is less about placing students with disabilities in public schools and more about providing learning opportuni- ties that result in enhancing their quality of life.

“What I’ve learned over the years is try not to place limitations on what’s possi- ble,” Zeph says. “For the kids that we’re talking about, this community, just because they don’t learn the same way other kids do doesn’t mean there have to be limitations to their learning. The chal- lenge to us — and I think what the excite- ment is — is how do we figure this out? Their differences create more of a chal- lenge for us to figure out how to help them achieve all that they can achieve.”

1972 NAIC is Commonwealth of Pennyslvania, a class-action suit brought by parents of children with severe disabilities challenging the exclusion of their children from public school. The case affirmed both the right to education for these students and the right to education in the least restrictive educational environment.

1972 U.S. District Court decision that the District of Columbia could not exclude students with disabilities.

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1974 Part 119 of the Rehabilitation Act of 1973 prohibiting discrimination in education programs and services, and all programs receiving federal funds. Section 504 specifically prohibited discrimination on the basis of handicap from participation in any program or activity receiving federal assistance.

1974 American Association for the Education of the Severely and Profoundly Handicapped was incorporated. This organization joined the Association for the Severely Handicapped (ASHA) was the first national association committed to making a difference in the lives of individuals with the most complex disabilities. ASHA led the educational community through the phases of access to public schools, integration into schools and classrooms, and, ultimately, the full inclusion of students with disabilities into neighborhood schools and classrooms.

1975 Passage of the Education for All Handicapped Children Act (EAHCA), a federal law that established the right to a free, appropriate public education for all children, regardless of the severity of their disabilities, in the least restrictive environment. The law was later renamed the Individuals with Disabilities Education Act (IDEA).

1977 Establishment of federal funding priorities to create a competitive grant program to fund colleges and universities to prepare special educators to teach students with severe disabilities.

1977 IDEA and Section 504 regulations issued.

1979 University of Maine College of Education awarded federal funding and establishes graduate study for education specialists in severe disabilities.

1981 Maine Department of Education develops certification requirements for teachers of students with severe disabilities.

1982 Passage of the Americans with Disabilities Act (ADA).

1994 Legislation extends the ADA to public schools nationwide.

2000 Amendments to the Higher Education Act establish opportunities for access to higher education and federal financial aid to students with intellectual disabilities.
A UNIVERSITY OF MAINE biological diversity survey, dubbed “Ant Blitz,” profiled ant distribution and diversity in Maine’s Acadia National Park in an effort to understand the impact of the exotic species of stinging red ants, Myrmica rubra, on native ants. The researchers, led by UMaine entomologists Eleanor Groden and Frank Drummond, found — among other findings:

- Favorite species in the park: Formica herculeanus, Formica argentea, Myrmica detritinodis, Camponotus floridanus, Dolichoderus mariae.
- 42 ant species live in 12 habitat types in the park. Favorite microhabitats? Logs and rocks.
- 7 species are most prevalent — Lasius alienus, Formica subserica, Myrmica denticrinita, Camponotus herculanus, Formica argentea, Formica aspina and Tapinoma sessile.
- 2 new ant species for Maine were found — Amblyopone pallipes and Dolichoderus mariae.

**Farm-to-school programs and school garden projects are sprouting throughout Maine’s 16 counties. Those programs will continue to grow and blossom thanks to FoodCorps and the service members who will enhance current efforts.”**

Ellen Libby, UMaine Assistant Extension Educator

**Horse health**

UNIVERSITY OF MAINE researchers will soon begin field testing diagnostic kits designed to detect the bacteria Streptococcus equi, the cause of equine strangles, within hours as opposed to days for current diagnosis confirmation.

**FoodCorps in Maine**

FOODCORPS, a new national AmeriCorps school garden and farm-to-school service program, has selected University of Maine Cooperative Extension as one of 10 partners to collaborate on a national launch in 2011. FoodCorps will focus on vulnerable children, improving access to healthy, affordable food while training young leaders for careers in food and agriculture.

**Ice time**

TIMING IS everything — especially when it comes to unlocking data found in ice cores used in climate change research.

That’s why Bess Koffman, a Ph.D. student in Earth sciences, and a University of Maine Climate Change Institute researcher, has helped develop a laboratory-based ice-core melting system to provide more exact, time-precise measurements than ever before.

The device, developed primarily by UMaine Ph.D. student Daniel Breton and Koffman, builds on work of alumnus Erich Osterberg. It is the latest UMaine innovation that is changing the way scientists worldwide evaluate and correlate climate change data.

The device tracks the time spans captured in the ice core down to the millimeter as the meltwater passes through a particle counter and conductivity meter. The dating of events can then be tied to other climate change records with greater accuracy.

**Commitment to water quality**

THREE YEARS ago, members of the University of Maine student chapter of Engineers Without Borders traveled to the small Honduran town of Dulce Viver to oversee installation of a drainage system they designed to prevent flooding. This spring, EWB-UMaine members are planning to return to Dulce Viver, this time to begin construction of a new UMaine-designed septic system.

The system will replace the cesspits that currently discharge sewage into backyards due to low soil permeability and a high groundwater table. The homes in Dulce Viver do not have indoor plumbing, but rather a pour-flush latrine behind each house that empties into a covered cesspit.

The new septic system, designed by UMaine students and mentors from Maine and Honduras, will pipe waste from the latrines into a communal septic system consisting of a series of tanks and a raised leach field. Community members will receive training on how to maintain the system; EWB-UMaine will provide continued technical support for at least five years.

**Ant Blitz in Acadia**

**Oldest domesticated dog in Americas discovered**

EVIDENCE OF THE OLDEST identifiable domestic dog in the Americas was recently discovered by Samuel Belknap III, a University of Maine graduate research assistant working under the direction of Kristin Sobolik in UMaine’s Department of Anthropology and the Climate Change Institute. Belknap found the 9,400-year-old skull fragment of a domestic dog during analysis of an intact human paleofecal sample.

The fact that the bone was found in human waste provides the earliest proof that humans in the New World used domesticated dogs as food sources.

“This is an important scientific discovery that can tell us not only a lot about the genetic history of dogs, but of the interactions between humans and dogs in the past,” says Belknap. “Not only were they likely companions as they are today, they served as protection, hunting assistants and also as a food source.”

Belknap’s discovery will be documented in the American Journal of Physical Anthropology, as well as other scientific journals.

Belknap discovered the bone during the 2009-10 academic year while examining a paleofecal sample recovered in the 1970s from Hindu Cave, a major archeological site in southwest Texas. He was conducting his thesis research on ancient diet and nutrition of humans in the Holocene Era in the Lower Pecos Region of Texas.

**The age of the bone and fecal material was confirmed using accelerated mass spectrometry radio-carbon dating.**

**FoodCorps partners were chosen from 108 host site proposals submitted from 39 states and the District of Columbia. FoodCorps will put 82 members on the ground in 10 states to work 139,400 hours during the 2011-12 school year.**

**The device, developed primarily by UMaine Ph.D. student Daniel Breton and Koffman, builds on work of alumnus Erich Osterberg.**

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Injury reduction

A NEW BIOMECHANICAL laboratory at the University of Maine will help test and evaluate injury-reduction, repair and rehabilitation equipment under development by several small Maine companies. The lab will employ a family of state-of-the-art crash test dummies on which to perform impact and vibration tests to determine, for example, which new protective materials work best in reducing head trauma — from injuries incurred in falling to soldiers’ head wounds or people with disabilities.

The Biomechanics Laboratory for Injury Reduction and Rehabilitation in UMaine’s Advanced Manufacturing Center will be established in the next year with a $533,000 grant from the Maine Technology Asset Fund. The research is a part of the university’s commitment to help small mechanical engineering and expert in structural mechanics.

Click, crack, eat

THE SECRETS to getting the most out of your next lobster dinner are just a click away: Lobster University of Maine alumnus and Colby College web programmer Ben Greetey developed the new app, illustrated and designed by Colby graphic designer Robert P. Hernandez, to provide step-by-step instructions on how to cook and efficiently crack into a crustacean. The app for the iPhone, iPod Touch and iPad also can locate lobster restaurants in your area and put you in touch with Maine companies that ship crustaceans. A future release will connect you to resources like the Lobster Institute at the University of Maine.

Aiding aquatic health

A NEW HIGH-LEVEL containment facility for cold-water aquaculture research at the University of Maine will be the only laboratory of its kind in the U.S. and one of few worldwide. FISHLab, being built to Bio-Safety Level-III specifications, will be open to university researchers and private industry. It will more than double the amount of high-level containment space UMaine has for conducting experiments on pathogens of aquatic animals.

The new facility could lead to more U.S. approved vaccines to treat diseases in fish, frogs, lobsters, sea urchins and dozens of other species.

Construction of FISHLab is expected to start this spring adjacent to the Aquaculture Research Center on campus. It is funded by a recent $600,000 grant from the Maine Technology Asset Fund. Support for the grant came from international pharmaceutical giant Novartis and Richmond, Maine-based Micro Technologies, which use the Maine Aquatic Animal Health Laboratory on campus.

Rural women key to Ethiopia conservation

WITH INCREASED educational opportunities and active participation in policymaking, rural women in Ethiopia could hold the key to reversing years of tension and establishing positive outcomes for wildlife conservation and protected areas in their country, according to four international researchers.

To better understand the factors influencing a positive community attitude toward wildlife and protected areas, the researchers — Mekbeb Tessema, Zeinalem Achenaff and Nigel Leader-Williams of the University of Kent and Robert Lillihem of the University of Maine — examined Ethiopia’s conservation strategies and collaborative management practices. Ethiopia is one of only two African countries lacking colonial-era natural resource policies.

Their survey results, published in the journal Society & Natural Resources, found that establishing benefit-sharing programs to help reduce the burden on a community from the loss of usable land and resources fostered positive views on conservation areas. The results also showed that food security, shared tourism revenue, job creation and establishment of public works are among the most pressing local concerns.
A perfect opportunity to Rollover — our IRA!

The IRA Charitable Rollover Extension is available through Dec. 31, 2011. We encourage you to consult with your financial advisor about this law. For your gift to UMaine through the University of Maine Foundation to qualify for benefits under the extension:

- You must be 70½ or older at the time of your gift
- The transfer must go directly from your IRA to the University of Maine Foundation
- Your total IRA gift(s) cannot exceed $100,000 per year
- Your gift must be outright

For more information, contact Sarah McPartland-Good, director of planned giving; Daniel Willett or Daniel Williams, planned giving officers.

“We have been discussing ways to enhance the two scholarships at UMaine that are in our names. We found the perfect opportunity to benefit our funds by diverting some of our IRA required minimum distributions for 2011 to the University of Maine Foundation. By doing so, we are able to increase the value of our funds while taking advantage of the tax break that the extension of the IRA Charitable Rollover benefit offers.”

Wallace C. Dunham, Dean, Director, Professor Emeritus
Janet S. Dunham, ’77 M.Ed