

The Coastal Society

TCS Bulletin
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Record Gold and Copper Find in Alaskan Coastal Watershed

by Andrew de Valpine

Nestled amidst the rolling hills at the headwaters of two watersheds lies a gold, copper and molybdenum deposit that, if developed, would be the largest copper and gold mine in the United States and the second largest in the world.



Erin McKittrick

The deposit sits on state land within the boundaries of the Lake and Peninsula Borough, in southwest Alaska, about 160 miles (as the crow flies) from Bristol Bay. Northern Dynasty Minerals, a Canadian firm, hopes to turn the deposit into a very profitable metals mine. At the same time, various groups have aligned to oppose the project due to its potential harm to fisheries and water quality.

The minerals at Pebble are in a porphyry system, which are typically low-grade deposits, economically exploited as open pits because of the poor ratio of mineral to waste rock. Initial plans showed that at full development, the pit would be two miles long and more than 2,000 feet deep. Tailings from the development would be impounded behind two tailings dams that could ultimately

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Board Meets to Discuss TCS in the 21st Century

by Ellen Gordon

Under the threat of a winter storm, TCS Board of Directors gathered near Baltimore at the end of January to peer into the future. The long-planned meeting was an effort to develop a strategic agenda for the Society that actively moves us forward in the 21st century. Aably assisted by professional mediators from NOAA's Coastal Services Center in Charleston, SC, the Board met for nearly two days of discussing, proposing, arguing, questioning, compromising and agreeing.

Beginning with Board members expectations for the gathering, the group talked about making the most of TCS for members; connecting scientists and technology with managers; mentoring young professionals; expanding its reach by geography, discipline and diversity; and increasing member participation. Results from the membership survey in fall 2006 helped focus the Board's efforts. The survey indicated that members consider land use, planning and management; access; loss of habitat; protected area management; water quality and hazards; and education to be among the most important coastal issues for today. These results and others from the survey set the stage for discussions throughout the retreat.

Working on a long term vision for the Society, the Board agreed that the strength of TCS lies in empowering interdisciplinary coastal professionals, scientists and decisionmakers to promote and affect improved management of the coasts and oceans. Paralleling this is

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Either you decide to stay in the shallow end of the pool or you go out in the ocean.

--Christopher Reeve

I think many leaders would agree with me that it is a daunting task to address any group for the first time. However, with The Coastal Society, I know many of you and for those that I haven't met, membership in TCS shows your brilliance and foresight! All kidding aside, it's an honor to lead an organization of individuals who are working so diligently to protect and enhance ocean and coastal resources through pushing traditional boundaries, creating new tools and strategies, and going "out in the ocean" instead of staying safely in the shallow end of the pool.

The TCS Board of Directors found itself jumping into the ocean this winter with its first retreat in over ten years (see article on front page). There is much for TCS and its members to be proud: twenty biennial conferences, twenty-eight volumes of the Bulletin, four hearty student chapters (with another tropical one on the way!), many national and international partnerships, and a distinguished list of officers and members who have had enormous impact on the coasts, science and policy, and the lives of professionals in coastal fields.

With all of these achievements in hand, it is clear that TCS is on the cusp of important decisions about its future. And, what an incredible time to be pushing boundaries: a new Congress, a bipartisan Joint Ocean Commission Initiative, a growing interest in the US ratifying the UN Convention on the Law of the Sea, and a time when effects of climate change on coastal areas is receiving international attention. The role that TCS chooses for itself in the coming years can have an impact on these important policies and initiatives.

It is clear from the membership survey and the recent Board retreat that members of TCS care deeply about the coasts, its resources, and its significance in the larger global environment. TCS can also have an important role in the lives of people – those living on the coasts, those learning about the coasts for the first or the hundredth time, even those who may not know of the vitality of the coasts and oceans but who rely on them for food, weather, transportation or livelihoods. During the next two years, the initiatives TCS undertakes will have both coastal environments and people in mind: nurturing professionals young and seasoned, domestically and internationally, and providing opportunities to our members to go "out into the ocean" and tackle some of the pervasive social, scientific, technological, education, and policy issues of our time. Whether it is through new opportunities or through existing conference or regional activities, these are the challenges for TCS in the future.

I look forward to taking on these challenges with you and I hope you'll contact me with your ideas for how TCS can go out into the ocean!

- Kristen M. Fletcher
TCS President

The views expressed herein are those of the authors and do not necessarily represent TCS nor its Board.



And the seasons they go round and round... Which brings us to the Spring (northern hemisphere) issue of the 2007 Bulletin. With new faces and old, nearly the entire TCS Board gathered for a couple of days this winter to devote themselves to discussing the future of the Society—an effort you can learn about right on the front cover of this issue. Joining that cover story is an eye-opening discussion of a copper and gold mine that would rival the largest in the world, currently under exploration in the pristine south east Alaskan tundra, in the Bristol Bay watershed.

It's certainly a cliché; however, avid gardener that I am, I can't help but point out that Spring is a time of new beginnings and new growth. Besides preparing the ground and planting seeds, it's also the time for me to plan the three remaining Bulletin issues of 2007. I've had several article proposals, and different ideas for some regular features have come from TCS members. We are considering doing a thematic issue later in the year, with several articles focused on a single topic. While we update you every quarter on news from the student chapters, we're thinking of going a step further and creating a regular feature, written each quarter by a student member.

And the painted ponies go up and down. We're captive on the carousel of time.... This is my third year as editor of the Bulletin; I am always interested in suggestions for improvements. I began my tenure as editor as TCS switched to an electronic format, leaving behind the snail mail delivery of paper editions (excepting libraries or special requests). While a quarterly publication is never going to scoop current events, going electronic has been a real plus for the Society, allowing us to be timelier in our reporting.

We can't return, we can only look behind from where we came.... Having covered impacts and early recovery efforts in some places hard hit by the Indian Ocean tsunami, as well as the catastrophic one-two punch delivered to the Gulf Coast by Hurricanes Katrina and Rita, we want check in on progress. On page 9, you'll find a report on how TCS awarded the funds our members generously donated to the Coastal Resource Recovery Fund, allowing the Society to play a direct part in recovering the coast. In a future issue, expect to see an update on the success of those projects.

And go round and round and round in the Circle Game... While the community of coastal professionals has long been concerned with the impacts of global warming on the oceans and the coasts, acknowledgement of the problem is finally rippling out into the general public. I've always included information in NewsNotes describing resources impacted by global warming, but I want to publish some lengthier articles where impacts of climate change are part of the focus. I'd also like to further explore energy issues and their effects on coastal areas. If you've got an idea for something you'd like to write, please send me an email. If I believe it's something we could publish, I will usually ask for a brief summary or abstract. Articles in the Bulletin are not necessarily written by TCS members, but I do want to strongly encourage members to publish in the Bulletin.

- Ellen Gordon, TCS Editor
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(and thank you, Joni Mitchell)

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be more than 700 feet high and more than seven miles long. At full operation, the mine would require 250 megawatts of electricity, a road to a port on Cook Inlet, and a port development. The extent of the mineral system of the original find is about 90 square miles of alpine tundra.

Exploration was first focused on an area now called Pebble West. Recent estimates show that within that ore body lies up to 31.3 million ounces of gold, 18.8 billion tons of copper, and lesser quantities of molybdenum and silver. Aside from the size of the deposit, an important consideration

is that the minerals are close to the surface, which means a relatively quick return on initial investment. Then, in 2005, exploration to the east found a richer deposit, though at much greater depth – beginning at around 1600 feet below the surface – that has added another estimated 39.6 million ounces of gold and 42.6 billion pounds of copper. An engineer with Northern Dynasty Minerals described this as a “re-deal,” with all the cards thrown up in the air and all previous plans on hold. The new, deeper, deposit would not be amenable to open pit mining. Consequently, the company is assessing block-caving, and how it might

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mesh with an open-pit mine, or even whether a pit will be necessary. This new deposit would radically increase the amount of tailings material to be managed over the course of the mine's life, should it become operational, but might also provide for some underground storage of tailings.

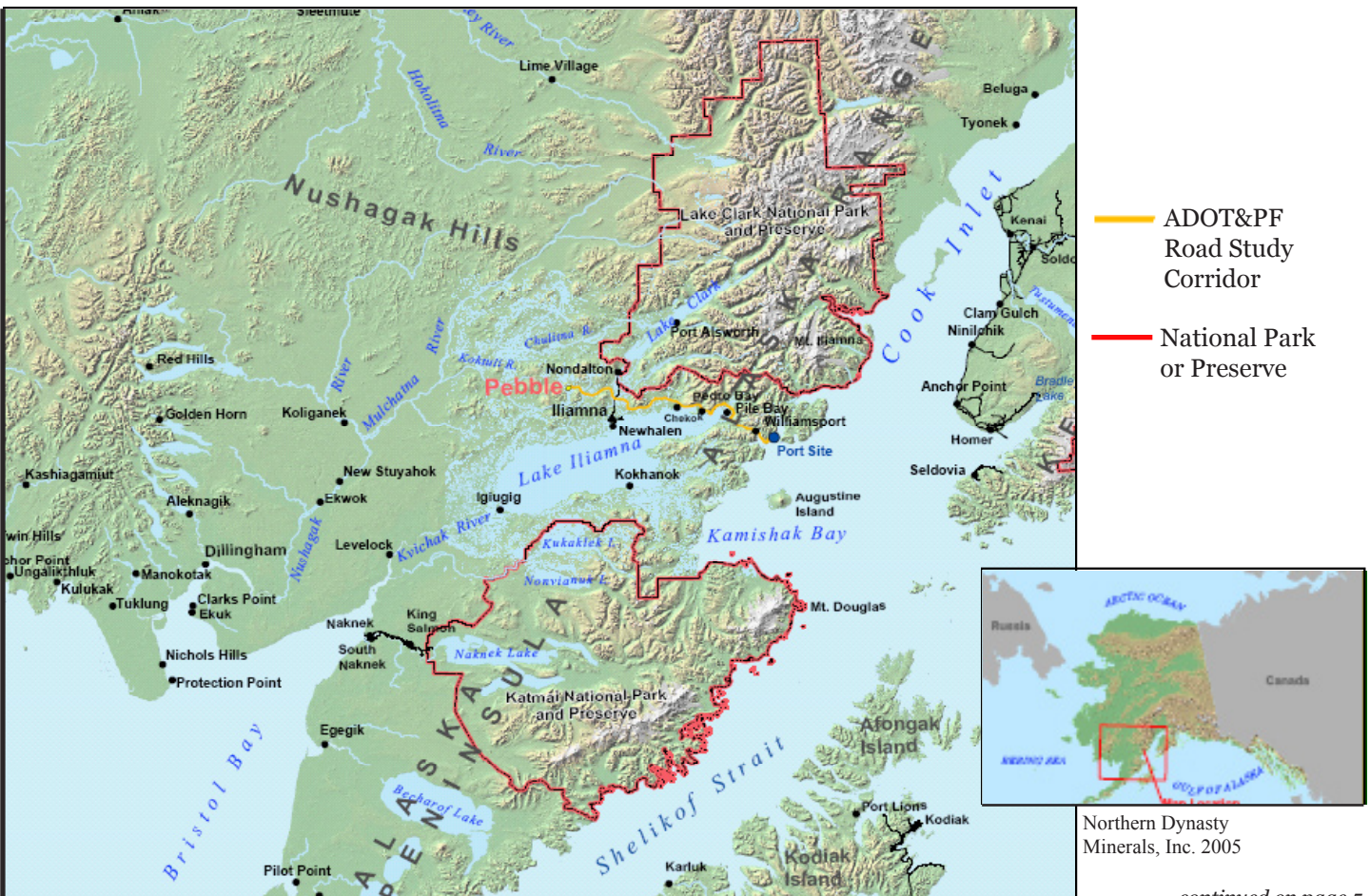
Northern Dynasty Minerals estimates the mine would operate for 50 to 90 years and create 2000 jobs over its lifetime, with 600 to 1000 full-time jobs during operation. So far, the company has spent \$128 million on the project, \$49 million of that on environmental studies.

The proposed mine has generated intense opposition among many in the region, largely because of potential threats to fisheries and water quality. The prospect sits astride two of the most productive river systems in the world for sockeye and king salmon; the Nushagak-Mulchatna river system.

Historically, village residents have depended primarily on the fishing industry as a way to support their families. Salmon and its role in the indigenous subsistence economy

has been essential to the local people for many hundreds of years. One important goal is to ensure the health of the aquatic and terrestrial ecosystems -- primarily salmon resources -- and other wildlife habitats. Concerns raised by opponents of the mine include destruction of salmon habitat, disruption of the water table, potential for acidification of rivers if the tailings dams were to fail, increased hunting and fishing pressures by an outside workforce, impact on the market image of wild Alaskan salmon, noise impacts and disruption on large land mammals, and socioeconomic impacts on Native culture.

Per capita income in the Lake and Peninsula Borough, comprised of several villages is about \$15,361. The population is comprised of 73% Native American or Indian --primarily Athabascan, Aleuts and Yup'iks. The entire region is facing many challenges as the economic and social landscapes change. The cost of living is high and economic opportunities are few. About 19 percent of the population lives below the poverty line; the mine could offer them employment close to home. A fully developed and operating mine could also mean revenues of \$12-20 million a year to



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the Borough, depending on the market value of the minerals being mined. These funds could provide much-needed improvements in local services, including schools.

Some villages within the borough oppose the mine, and many of the villages downstream of the project -- in the Nushagak watershed, and outside the Borough boundaries -- oppose the development. The view of mine opponents is that nothing is worth risking the water quality of the rivers that support the salmon runs. The late 1800s witnessed the beginnings of the commercial cash economy, a way of life mingled with subsistence hunting and fishing that is the basis of current socioeconomic conditions. Historically, the commercial fisheries have been the economic engine and primary source of cash for most area residents.

The sport-fishing industry is also rallying against the proposed mine. Though it employs few locals -- a source of tension over the years -- it, too, depends on a pristine wilderness experience to sell to its clients.

Opponents suspect that the regulatory climate of the state favors development. Two years ago, the State of Alaska revised its Bristol Bay Area Plan and classified the state lands around the Pebble deposit as "Mineral," implying that mineral exploration and development would be considered the best use of those lands. However, under the previous plan, the land was similarly open to mineral exploration.

Several significant structural changes were made in state resource agencies by the former administration: mixing zones (areas where treated wastewater mixes with a water body, theoretically diluting it to the point where pollutants are no longer detectable) are now allowed in anadromous streams, though not in streams that support Pacific salmon species. The habitat division of the fish and game department was moved into the Department of Natural Resources. Moreover, the Alaska Coastal Management Program (ACMP), originally designed to provide more substantial local input to activities that affected the coastal zone -- and operated that way for 20-plus years -- was reworked to concentrate input in state agency hands so that the agency would be the primary interpreter of the ACMP policies and standards. The state coordinating agency recently ruled, for example, that the Bristol Bay Coastal Resource Service Area was not an affected district for evaluating routine exploration activities, even though these activities occur within its watershed.

The discovery of rich gold and copper deposits near Iliamna, as well as gas and oil reserves in Bristol Bay have the potential to significantly alter the region's social, econom-

ic, environmental, and political landscape. To effectively participate in these unfolding projects, local environmental and socioeconomic expertise is critical. This is a concern voiced by many local community residents -- both those who favor development and those who oppose--primarily Alaska Native, who are place-based and who have a vested interest in the land and its resources.

The late Jay Hammond, former Alaska governor had three rules for development: Is it environmentally sound? Do most Alaskans favor it? Does it pay its own way? These standards may or may not come in to play, but watching how they are invoked in the coming years will be another part of the debate.

For more information on the project, check out these sites: www.northerndynastyminerals.com, www.dnr.state.ak.us (then follow the mining, land and water links), www.purebristolbay.com, www.renewableresourcescoalition.com, www.truthaboutpebble.org.

Susan Flensburg, Bristol Bay Native Association and Deborah McLean, University of Alaska, Bristol Bay Campus provided invaluable assistance with this article.

Andrew de Valpine, bbcrsant@nushtel.com, commercial fishes in the summer in the Nushagak. (Anybody with good ideas for wild salmon markets please let him know.) In the winter he is director of the Bristol Bay Coastal Resource Service Area.



Erin McKittrick



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the need to nurture professionals to fulfill these roles.

An unflinching look at the strengths and weaknesses of TCS helped guide an honest and open discussion. TCS members bring a wealth of expertise and experience to the table. Perhaps more than any other coastal-relevant organization, TCS fosters the development of students with the biennial conference, mentoring opportunities, and student chapters. The conference is also an important resource for professional networking. Via email and Bulletin publication, TCS provides useful information to its members about job opportunities, conferences, and various facets of coastal management. It is large enough to have some impact, yet small enough to encourage access.

On the other hand, TCS needs to increase networking opportunities outside of the conference, as well as to enhance communication in non-conference years. The organization would benefit from integrating international issues into its current activities and future strategies. Improving the Society's financial stability would enable it to be less dependent on conferences for support. Accomplishing more as a Society will require greater financial resources and an active and engaged membership base. The Board must continue to focus the Society's objectives, enhance its visibility, and improve members' and nonmembers' perception of who TCS is and what it does.

Both process and content received attention at the retreat. Given constantly increasing demands on time, being efficient means being more effective. Whether it's requests for collaboration or participation, or proposals for new initiatives, the Board needs to respond in a timely manner. That is a tall order for a Board whose members are scattered around the coasts, but one that the group worked hard to streamline.

How TCS can contribute to improved protection of re-

sources and stewardship of the coast was the thread that connected all of the discussions. The Board considered opportunities for TCS that ranged from preparing position papers to increased member benefits and/or membership categories, additional chapters, partnering with like-minded organizations (including internationally), providing issue-specific expertise, strengthening the affiliation with the Coastal Management Journal, and creating a financial development plan. An especially tricky issue with which the Board grappled is how to advocate on behalf of coastal resources, while avoiding conflicts resulting from political partisanship.

To maintain momentum, Board members agreed to spearhead efforts in a range of identified areas. These include:

- *retaining, expanding and diversifying the membership base,
- *exploring international opportunities,
- *updating the bylaws,
- *increasing member involvement in many aspects of TCS,
- *developing strategies for existing and future chapters,
- *preparing a strategic plan as well as a financial development plan,
- *developing guidance on advocating for resources, and
- *revisiting the vision and mission of TCS.

The future looks bright for The Coastal Society. The email call that members received in March, seeking a TCS member to consult on a U.S. Agency for International Development-funded Marine Protected Area in Sri Lanka is just one of the interesting new opportunities TCS hopes to provide in coming months and years for its members. Of course, the Society is only as vigorous as its membership; its needs members' energy, input and involvement. Please feel free to contact any Board member with ideas you might want to discuss or an effort you'd like to join.



Robert Goodwin



TCS Board Member Patrick Christie Named a 2007 Pew Fellow in Marine Conservation

How will climate change alter life for those dependent on Alaska's Bering Sea and Australia's Pacific Ocean for their food, traditions and incomes? How can marine protected areas safeguard migratory sea turtles, seabirds and whales in the Western Mediterranean Sea? Will a network of marine protected areas designed with local community input restore the severely degraded ocean habitats of the Philippines? How can an adaptive management plan conserve Japan's Shiretoko Natural Heritage site in the Sea of Okhotsk?

Five individuals from Australia, Japan and the United States will search for answers to these questions as recipients of the 2007 Pew Fellowship in Marine Conservation, awarded by the Pew Institute for Ocean Science. Each Fellow will receive \$150,000 to conduct a three-year conservation project designed to address critical challenges to

healthy oceans.

The recipients join more than 100 Pew Marine Conservation Fellows from 27 countries. TCS congratulates Board Member Patrick J. Christie, Ph.D., on receiving a fellowship. Patrick is an assistant professor at the University of Washington's School of Marine Affairs and the Jackson School of International Studies in Seattle, Washington. Patrick's Pew Fellowship project will address the unprecedented loss of biodiversity, habitats and ecological function in the Philippines by facilitating the formation and management of marine protected area networks in the region. Working in collaboration with the Coastal Conservation and Education Foundation, a non-governmental organization in the Philippines, he will conduct a multi-stakeholder process for the network design and implementation.

TCS Selects Recipients for Coastal Resource Recovery Funds

In 2006, TCS initiated a new effort to raise money to contribute to existing coastal resource protection, restoration, and education projects underway in areas devastated by hurricanes Katrina and Rita. Approximately \$2,100 was raised at The Coastal Society's 20th International Conference in St. Pete Beach in May 2006 and initiatives following the conference. Three entities from Louisiana, Mississippi, and Alabama were chosen via a competitive process, researched and recommended by a Selection Committee, and approved by the TCS Board of Directors. Each group selected will receive \$700 to contribute to an existing project that helps restore areas devastated during the 2005 hurricane season. You can also expect to see articles in future TCS Bulletins that describe how the donated funds were used to enhance their existing coastal resource protection, restoration, and education projects.



The **Alabama Coastal Foundation** (ACF) works to improve and protect the quality of Alabama's coastal resources

by identifying and solving problems through education, cooperation and participation. ACF has an active habitat restoration program that plans and coordinates habitat enhancement and restoration projects in south Alabama. TCS funds will be contributed to ACF's Cypress Tree Project and/or their emerging Sea Oats Project. The Cypress Tree Project enhances and restores degraded marsh habitat by planting a variety of trees including bald cypress, tulip poplar, southern magnolia, and live oak along Alabama's degraded coastal areas. The Sea Oats Project will restore habitat in areas damaged by Hurricane Katrina by using volunteers and other resources to replant native sea oats.



The **Coalition to Restore Coastal Louisiana** (CRCL) is a non-profit advocacy organization whose mission is the preservation, restoration and responsible stewardship of the coastal wetlands, waters, and barrier shorelines of coastal Louisiana. Fulfilling the role as responsible stewards of Louisiana's rich coastal wetlands, the CRCL facilitates and funds restoration projects to raise awareness and educate others about the importance of preserving and restoring coastal Louisiana. TCS funds will be used for CRCL's Vermillion Bay Reef Project, which will create a living reef that enhances fisheries habitat, absorbs wave

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energy, and protects Louisiana's coast from further shoreline erosion.



The **Mississippi Coast Audubon Society** (MCAS) is a charitable educational organization totally operated by volunteers. Its mission is to actively encourage the protection of wildlife and the preservation and restoration of native habitat, and to promote understanding through education of all aspects of our natural and urban environment. In 2005, it developed a program, Operation Backyard Recovery, to promote the recovery of habitat for birds and other wildlife in areas stricken by Hurricane Katrina. TCS funds will be used to develop the Least Tern/Black Skimmer Nesting Area Restoration Project, which will restore beach

grass in nesting areas and improve habitat quality for birds and wildlife along the Mississippi coast.

Many thanks again to all who donated to this important and timely effort— your contributions will help to enhance the habitat and lives of those affected by these natural disasters!!



Courtesy Alabama Coastal Foundation

NINTH CIRCUIT DECLINES TO EXTEND CWA JURISDICTION TO “ADJACENT WATERS” OTHER THAN WETLANDS

Excerpted from Marten Law Group Newsletter, by Laura Fandino: The Ninth Circuit Court of Appeals last month refused to extend the federal government's jurisdiction under the Clean Water Act (CWA) to ponds adjacent to navigable waters. The decision in *San Francisco Baykeeper v. Cargill Salt Division*, also interprets the Supreme Court's ruling last term in *Rapanos v. United States* to extend only to wetlands, and not to non-wetland waters. The Cargill decision provides additional clarity with respect to the reach of federal CWA jurisdiction over ponds, streams, and other waterbodies adjacent to protected waters. The Court's conclusion that the “significant nexus” test advanced in *Rapanos v. United States* applies to wetlands only, and not ponds or other non-wetland waters, provides additional insight into the limits of that recent ruling. www.martenlaw.com/news/?20070411-cwa-jurisdiction

TIDAL POWER DEVELOPMENT IN NOVA SCOTIA

From the ACZISC Coastal Update: The Government of Nova Scotia is moving forward on in-stream tidal power and offshore renewable energy by sponsoring a strategic environmental assessment. This effort will review the social, economic and environmental effects and factors associated with potential development of renewable energy in the Bay of Fundy, with an emphasis on in-stream tidal and on creating a streamlined policy framework for developers.

For information, access <http://www.gov.ns.ca/energy/Ab-sPage.aspx?siteid=1&lang=1&id=1346>.

ICELANDIC WHALERS DON'T SELL ANY WHALE MEAT

From EUCC Coastal News: Some 100 tons of whale meat is sitting unsold in Icelandic freezers, three months after Reykjavik sparked global ire by resuming commercial hunts. Kristjan Loftsson, manager of whaling firm Hvalu said the delay was because firms must first test the meat for dangerous chemicals to see if it meets food industry standards. Loftsson and Iceland's Fisheries Minister Einar Gudfinnsson said they were confident that whaling firms would ultimately find buyers, particularly in Japan. Gudfinnsson told Reuters the delay in sales did not change the decision to allow the hunts.

MITIGATING SHORE EROSION ALONG SHELTERED COASTS

From the ACZISC Coastal Update: The US National Research Council report calls for a regional management approach that considers the environmental impacts that could accumulate if hard structures are permitted on a site by site basis. The report also recommends changing the current permitting system to encourage the use of more ecologically beneficial erosion control methods, such as planting of marshes. http://www.nap.edu/catalog.php?record_id=11764.

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OBERSTAR TO INTRODUCE BILL CLARIFYING WETLAND JURISDICTION

From CSO Weekly Report: Rep. James Oberstar (D-MN), chair of the House Transportation and Infrastructure Committee plans to introduce a bill titled the Clean Water Authority Restoration Act. The bill aims to clarify the scope of the Clean Water Act and its applicability to wetlands by codifying broad protection and specifically stating the law extends to intermittent streams, wet meadows, and several other types of water. The bill may also amend the phrase "navigable waters" by removing the word "navigable." A version of the Oberstar bill was included in Great Lakes legislation (H.R. 1350) introduced last month by Reps. Vernon Ehlers (R-MI) and Rahm Emanuel (D-IL). The bills would codify a specific definition of "waters of the United States" to include all interstate and intrastate waters and their tributaries. This includes not only lakes and rivers but intermittent streams, mudflats, wetlands, sloughs, prairie potholes, playa lakes, natural ponds, and more. Supporters of the bill say it affirms the CWA's original intent to provide broad protections and clarifies jurisdictional questions. Opponents worry the bill will result in regulations of ditches, gutters, and groundwater and result in permitting delays and impede development. The water law's reach over wetlands was called into question in the Supreme Court case's Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers and most recently by Rapanos v. United States and Carabell v. U.S. Army Corps of Engineers.

A WARMER OCEAN WILL LEAD TO PHYTOPLANKTON DECLINES, SAYS STUDY

Excerpted from Seaweb: The productivity of phytoplankton is geared to fluctuations in the global climate, and recent warmer temperatures correspond to lower oceanic biomass and productivity. This is the conclusion of a study published in the journal "Nature." The study analyzed a decade of data from satellites which measured surface chlorophyll. The authors combined these readings with empirical data to estimate phytoplankton growth rates and net primary production. Using this method, the study found that global chlorophyll and productivity increased sharply from 1997-98, and then declined steadily until 2005. The sharp increase occurred during a negative, or cold, phase of the El Niño- Southern Oscillation (ENSO), and the subsequent slow drop occurred as the planet moved into a warm phase. A companion article in "Nature," explains that the climate-plankton link is found primarily in the tropics and mid-latitudes, where there is limited vertical mixing because the water column is stabilized by thermal stratification in these areas, the typically low levels of sur-

face nutrients limit phytoplankton growth. Climate warming further inhibits mixing, reducing the upward nutrient supply and lowering productivity. Extrapolating these observations into the future suggests that marine biological productivity in the tropics and mid-latitudes will decline substantially. However, ecosystem dynamics are complex and nonlinear and unexpected phenomena may arise.

DIAGNOSING MARINE ANIMAL DIE-OFF

Excerpted from the Washington Post: In the summer and fall of 2005, marine animals suddenly started dying off the southwest Florida coast, with scores of bottlenose dolphins, manatees and turtles washing up on shore. In October '05 alone, 22 dolphins became stranded and died, compared with the usual monthly average of three. Hoping to unravel the mystery, nearly 50 researchers, part of the Working Group on Marine Mammal Unusual Mortality Events, undertook a study of the deaths. After taking samples from 130 stranded dolphins, they concluded that red tide--an algae bloom that creates a neurotoxin known as brevetoxin--caused the massive die-off. In the 16 years since it was formed under the auspices of the National Oceanographic and Atmospheric Administration, the working group has investigated scores of similar events. Experts believe a range of factors are contributing to the algae blooms and viruses linked to the die-offs, including nutrient runoff from farming, rising ocean temperatures and discarded waste such as cat litter. http://www.washingtonpost.com/wp-dyn/content/article/2007/03/25/AR2007032500732_pf.html

CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY

From the ACZISC Coastal Update: The Working Group II contribution to the "Climate Change 2007 Assessment Report" of the Intergovernmental Panel on Climate Change (IPCC) was presented in Brussels on April 6, 2007. The report provides a comprehensive analysis of how climate change is affecting natural and human systems, what the impacts will be in the future and how far adaptation and mitigation can reduce these impacts. It also contains chapters on specific systems, sectors and regions. <http://www.ipcc.ch>.

STUDY SAYS DEPLETION OF SHARKS HURTS ECOSYSTEMS

Excerpted from Seaspans Marine Newsletter: For years, conservationists have warned about overfishing of large sharks in the northwestern Atlantic, as the demand for meat and fins, coupled with slow growth and reproduction rates of many species has caused sharp declines in popula-

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tions of hammerheads, duskies and others. Researchers are now reporting repercussions beyond the declining shark populations. Depletion of large sharks, they write in the most recent issue of the journal *Science*, has led to the destruction of the bay scallop fishery along parts of the United States' eastern seaboard. The study documents a trophic cascade, demonstrating the loss a top predator can have on a marine ecosystem. In the absence of large sharks, the researchers say, the smaller sharks, skates and rays that they feed upon have thrived. In turn, one of the middle links in the food chain, the cownose ray, has become more abundant, wiping out scallop beds in North Carolina. But Steve Murawski, director of scientific programs and chief science advisor at the National Marine Fisheries Service, said the study had not conclusively shown a connection between declines in certain species and increases in others. "It certainly shows correlation," he said. "What we don't have is a smoking gun in terms of a predation link."

ESTABLISHING NETWORKS OF MPAs

From the ACZISC Coastal Update: The publication "Establishing Networks of Marine Protected Areas - Making It Happen" concludes that connecting marine reserves to large networks will make marine species and ecosystems more resistant to threats such as climate change, overfishing or pollution. It reviews the need for MPA networks, the ecological design criteria for the networks, the broader considerations needed to ensure that they are set in context, and the key elements needed to make MPA Networks happen and achieve their goals. <http://www.iucn.org/themes/wcpa/biome/marine/mpanetworks/networks.html>.

ORKNEY TO GET BIGGEST WAVE FARM

From BBC News: Scottish ministers have announced funding for what has been described as the world's biggest wave energy farm. The Pelamis device has been tested at the European Marine Energy Centre (EMEC) on Orkney by Leith-based company Ocean Power Delivery. Scottish Power wants to commission four more at the same site. Deputy First Minister Nicol Stephen announced a £13m funding package that will also allow a number of other marine energy devices to be tested. http://news.bbc.co.uk/2/hi/uk_news/scotland/6377423.stm

GROUP SUGGESTS GUIDELINES TO PROTECT GREAT LAKES FROM ENERGY PROJECTS

From CSO Weekly Report: A panel advising the Great Lakes Fishery Commission is urging the eight Great Lakes states and the province of Ontario to protect vital Great

Lakes aquatic habitat from disruptions caused by a growing number of energy projects. The panel said growing interest in crossing the beds of the Great Lakes with pipelines, installing wind turbines, and other proposed lakebed alterations raises important questions about protection of aquatic habitat that should be addressed through revisions in state and provincial policies. The report recommends steps to assure protection of vital Great Lakes aquatic habitat from disruptions caused by a growing number of proposed energy projects. Some of the recommendations include: identify and map areas that should be protected from any significant lakebed alterations due to the sensitivity of their biological, physical, archaeological, or other values, and designate them for legal protection; promote the siting of alteration projects in areas that can tolerate such disturbances; prohibit uses of the lakebed that are not water dependent; require a demonstration of clear and substantial public benefit, including but not limited to environmental benefit, before authorizing such uses; and require long-term ecological monitoring be paid for by those who undertake projects that alter lakebed habitat, and provide for adjustment or disapproval of projects that impair the trust values of bottomlands. For more information go to <http://www.gllfc.org/research/reports/Dempsey.pdf>.

JRC REPORT ON CLIMATE CHANGE AND EUROPE'S COASTAL AND MARINE WATERS

From EUCC Coastal News: The European Commission's Joint Research Centre (JRC) has drafted a report detailing the effects climate change is having on Europe's coastal waters and regional seas. The report deals with the effects of climate change and the human impact on European coastal and marine habitats. It also identifies gaps in the current scientific and technological knowledge base regarding climate-related impacts, along with policy recommendations to address them. The report stresses that any policies designed to mitigate climate change impacts will have to address human exploitation of the seas and coasts, to ensure sustainable management of marine resources. <http://ies.jrc.ec.europa.eu/>

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University of Rhode Island

New officers for our chapter include co-presidents Matt Nixon and Willie Whitmore; Azure Westwood is the Secretary; and Kate Mulvaney is the Treasurer. Upon the request of the new officers, Chrissy Patrick will serve as the Chapter Liaison with National TCS. Our chapter will be holding Forums on a weekly basis between now and the end of April. In total, the spring semester will feature at least eight speakers!

Already, we have enjoyed hearing John Pappalardo, Chair of the New England Fisheries Management Council at a Forum, and were lucky to have plenty of time for questions and answers. John joined our chapter for a more informal conversation in the Student Union coffee shop after his presentation was over. His session was by far the best attended of any Forum since our chapter incorporated, due in large part to Jess Dominguez' and Azure Westwood's great publicity efforts.

Our chapter also enjoyed an outing to Providence in early February to see the IMAX movie "Hurricane on the Bayou." Its conservation message hit home to our members, and especially so to new Co-President Willie Whitmore, who recently moved to Rhode Island from New Orleans. Many members of our chapter signed up for a recent seal watch and lighthouse tour run by Save the Bay, only to have the event cancelled due to rough waters. We hope to have another outing on the vessel before the seals leave the area!

On two occasions, chapter members scrapped their designated social time at a local pub to join with the Rhode Island chapter of the Surfrider Foundation in registering complaints against the dredging project of Point Judith salt pond, which has gone awry. The Army Corps of Engineers had planned to dredge sand from the salt pond and deposit it offshore of beaches in Washington County, but didn't plan for the mountains of trash intermixed with the sand to wash up onshore. The opposition to the outcome of the dredging project was strong enough that the Coastal Resources Management Council has already begun denying proposals from the Army Corps to dredge for sand in areas that are high-risk for trash. TCS members also participated in two cleanups of local beaches organized by the Surfrider Foundation.

The combined efforts of past co-president Chrissy Patrick and new co-president Matt Nixon – and the careful editing of Treasurer Kate Mulvaney – produced a 10-page version of the Bylaws for the chapter, which will go a long way in

helping future officers understand how to run the organization and will help assure the chapter's longevity. Along with approving the Bylaws, the chapter is investigating what kind of support can be gained from the Graduate Student Association.

Chrissy Patrick has continued efforts to resolve the question of the Black Point right-of-way, an access area in Narragansett that the chapter had originally sought to adopt through the Coastal Resources Management Council's Adopt-an-Access program. The Black Point right-of-way has a complicated history that includes contested designations and an eminent domain taking of the property containing the potential right-of-way. Although the property and the right-of-way have not been questioned for over 10 years, the CRMC has insufficient legal or practical information to remove it from its "on appeal" status. Basically, the case has "gone cold." After extensive research by both past co-Presidents, Chrissy is drafting a letter to the Rhode Island Department of Environmental Management, the current owner of the land surrounding the right-of-way, requesting the involvement of the Legal Services Department in resolving the matter.

While helping to resolve this right-of-way, the chapter has decided to move forward in adopting the nearest uncontested right-of-way to Black Point: the Bass Rock site. Adoption of Bass Rock requires the approval of a CRMC representative and the Town Manager from Narragansett. Upon the advice of the Narragansett Town Planner, the chapter will be making a motion regarding the adoption to the Narragansett Town Council, who will authorize the Town Manager to sign the Memorandum of Understanding for the Bass Rock adoption. Before making the motion at the Town Council meeting, Chrissy has been documenting the breadth of the site to demonstrate the chapter's familiarity with it and is pursuing support for the adoption from the nearest landowner. The past officers also worked hard on organizing the chapter's First Inaugural Marine and Coastal Career Panel, which was held on Friday, March 9. Look for a report in the next Bulletin. We are hoping this will become an annual event, as many invitees who could not attend noted that they would be happy to participate in a future Career Panel. Chrissy has also constructed a website, to be hosted by a generous Marine Affairs graduate student with web space. The website contains a listing and photos of events from the 2006-2007 year, along with a history of the chapter and information on membership, officers, official documents, and helpful links. We will be sure to publicize our website address once it goes live!

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University of Washington (UW)

Continuing our tradition of Brown Bag Lunches, TCS UW's first speaker this year was Steph Frenzl of the Snohomish County Marine Resources Committee (MRC). On February 13th, he provided us with background on the Northwest Straits Commission as well as an update on the projects being worked on by the Snohomish MRC. On February 27th, Fan Tsao of the Marine Conservation Biology Institute (MCBI) spoke on the work she has been conducting on deep sea coral conservation. They have spearheaded an effort to protect deep sea corals and sponsored several important workshops at the recent American Association for the Advancement of Science meeting. Fan gave UW's students the cutting-edge scoop on these developments. She also provided some insights into finding a job and working in the non-profit sector. An interdepartmental happy hour was held on February 7th with Daniel J. Evans School's Graduate Environmental Policy Group bringing additional networking opportunities to TSC members. Blue Drinks, the UW chapter's regular happy hour networking opportunity convened in the evening on Wednesday, February 21st. These gatherings provide a chance for students and professionals in water and marine-related fields to meet in a casual setting and discuss current issues in science and policy. Blue Drinks is a young event that we hope will catch on and grow. As such, we especially encourage new participants and are working to spread the word both inside and outside UW. TCS UW Chapter also tries to incorporate ser-

vice projects into the work of our chapter members. Four members (Amy Embree, Nissa Ferm, Katrina Hoffman, and Maile Sullivan) did such by volunteering at the 2007 Orca Bowl, the Washington State segment of the National Ocean Science Bowl.

We have several other spring service projects (Hazel Wolf Environmental Film Festival, Earth Day Coastal Clean-up) planned for our members in the coming months.

Duke University

The Duke University chapter is looking forward to spring activities. In January, we elected our new Board for the 2007-2008 school year:

National Chapter Liaison Carly Knoell came straight to Duke University after receiving a BA in Biology and Environmental Studies at St. Olaf College in Northfield, Minnesota. While attending St. Olaf she was a varsity swimmer and very interested in the environment. Her shared passion for water and the environment led her to Duke and her concentration in Coastal Environmental Management. She is excited to apply her energy and dedication to The Coastal Society and to improving the coastal environment.

Duke TCS secretary David Carlson graduated with a degree in geology from Hamilton College in 2001. After graduating he worked for Sea Education Association aboard their



Kathy Newell

Katrina Hoffman gives a lesson about the University of Washington's Puget Sound model while volunteering at the Orca Bowl, the Washington State portion of the National Ocean Science Bowl.

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oceanographic-research sailing vessels in the Atlantic and Pacific Oceans. His interests at Duke include marine renewable energy technologies and coastal zone management at the state and local level.

Beaufort events coordinator Beth Pike received her Bachelor's degree in Psychology/Biology at Long Island University-Southampton College. Beth worked as a naturalist and captain on charter boats in Maui, Hawaii. She also conducted research on North Atlantic right whales for the New England Aquarium in Boston, Mass. Her interests at Duke include marine GIS, marine conservation and policy. Durham events coordinator Daniella Hirschfeld graduated from Dartmouth College with a dual degree in psychology and philosophy. She followed her passion for nature to Lake Tahoe where she started out as an AmeriCorps volunteer for the Nevada Conservation Corps. Following that she got a position as the Tahoe Rim Trail Association's educational outreach coordinator. Finally, before returning to graduate school she worked in Maine as a wilderness therapy guide. In an effort to change her focus from education to environmental policy she returned to school. Currently at Duke she is studying global climate change, and is hoping to eventually work in the field of water conservation.

Additionally, we will have a booth on Earth Day at the main campus in Durham explaining what TCS is, and providing information on responsible environmental stewardship of our coasts and oceans. We are looking forward to this, and are truly excited to have these new, talented folks to carry on the torch.

East Carolina University (ECU)

We have focused efforts this semester on capitalizing on ECU's newly formed Graduate Student Council. TCS members serve as both officers and committee members, and have become active participants in this university-wide organization. We applied for, and have been awarded a generous operating budget for the 2007-08 academic year.

Next year's activities intend to focus on using these funds to encourage broader participation by our students: in TCS, GSC, throughout the campus community and in national organizations.

We are continuing our efforts to broaden our impact as a chapter by coordinating and cooperating with other organizations. This spring we intended to organize a beach clean-up with the ECU chapter of the American Fisheries Society, but had to postpone this event until a later date.

In April, our chapter sponsored a Virtual Rally for Climate Action, in conjunction with the National Day of Climate Action. Ours was one of over 1,400 such rallies held across the country. More than a dozen volunteers, including non-TCS members, came out to help distribute fliers and collect signatures on a petition encouraging Congress to take action to reduce carbon dioxide emissions. Over a hundred and fifty signatures were collected.

At the end of April, we have planned a gala picnic for all Coastal Resources Management students and faculty. One of our members generously agreed to host the event at his farm, complete with field, forest and stream available for a multitude of outdoor activities.



Laura Edwards

Chapter Advisor Dr. Lauriston King (front left) with some of the members of the ECU Chapter.

Announcing TCS21

The Coastal Society's 21st International Conference
 Sunday, June 29-Wednesday, July 2, 2008
 Crowne Plaza Redondo Beach, Los Angeles, California

Calling all volunteers: Those with ideas, energy and/or interest in serving on the TCS21 Planning Committee are asked to send an email to Kristen Fletcher, kfletcher@rwu.edu regarding their interest. Planning Committee conference calls will take place approximately once a month beginning in May 2007. Thanks! We look forward to seeing everyone next summer!



Working Waterways & Waterfronts – A National Symposium on Water Access

May 9 to 11, 2007, Norfolk, VA
Local government officials, coastal management planners, legal scholars and boating industry representatives will gather in Norfolk, Virginia next May to explore solutions to the loss of water access that is hindering recreational boaters, commercial fishermen and water-dependent businesses around the nation's coasts.
www.wateraccess2007.com

CARICOSTAS 2007 -- 3rd International Conference on Integrated Management of Coastal Zones

May 9-11, 2007, Santiago, Cuba
Organized by Univ. of Oriented, et al.
<http://www.uo.edu.cu/centros/CEMZC/Ing/Caricosta2007.htm>

Third Annual Atlantic Canadian Coastal & Estuarine Science Society (ACCESS) Conference and Workshop

May 16-18, 2007, Sydney, NS.
Theme: Our Changing Ecosystems. Hosted by Cape Breton University.
<http://faculty.capebretonu.ca/mjones/access/>

5th International Symposium on Digital Earth

June 5-9, 2007, San Francisco, CA
Global partnership collaborating for a better future.
www.isde5.org

International Symposium on ICZM

June 11-14, 2007, Arendal, Norway
This international multi-disciplinary conference is intended to promote science and integration of knowledge for the sustainable management of coastal resources. It will provide a venue for scientists, engineers, managers and policy-makers to discuss recent advances and innovative ideas, share experiences and develop networks.
<http://www.imr.no/iczm/home>

Oceans 2007

June 18-21, 2007, Aberdeen, Scotland
<http://www.oceans07eeeeaberdeem.org>

13th International Conference on the Environment

June 30 - July 3, 2007, Portland, Maine
www.ieaonline.org

Coastal Zone 07

July 22-26, 2007, Portland, OR
Brewing Local Solutions to Your Coastal Issues.
www.csc.noaa.gov/cz

17th World Conference on Disaster Management

July 8-11, 2007, Toronto, Canada
Addressing issues common to all aspects of disaster/emergency management.
www.wcdm.org

15th International Conference on Aquatic Invasive Species

September 23 - 27, 2007, Nijmegen, The Netherlands
<http://www.icaiss.org/index.html>

European Symposium on Marine Protected Areas

September 25-28, 2007, Murcia, Spain
Present and discuss the results from ongoing European and international marine protected area (MPA) research, aiming to contribute to the development of a range of new tools required to design, implement, monitor and evaluate the effects of different types of MPAs.
<http://www.mpasymposium2007.eu/index.html>

Scientific Workshop on the Impact of Global Climate Change on the Arctic Coastal Zones

Oct 1-3, 2007, Tromsø, Norway
Theme: Arctic Coastal Zones at Risk. Organized by LOICZ, AMAP and IASC.
<http://w3k.gkss.de/events/arctico7/>

International Conference on Management and Restoration of Coastal Dunes

October 3-5, 2007, Santander, Spain
<https://www.iccd07.com>



Christopher Hawkins



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MEMBERSHIP APPLICATION TO THE COASTAL SOCIETY

(Please print out and complete all blanks.)

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Present Occupation: _____

Primary Interest: _____

Sponsored/Referred by: _____

Signature: _____ Today's Date: _____

Type of Membership:

Individual Regular: ___ \$35 U.S. 1-year ___ \$68 U.S. 2-year ___ \$99 U.S. 3-year

Student: ___ \$15 U.S.

U.S. Library: ___ \$50 U.S.

Corporate/Agency: ___ \$250 U.S.

Dues Payment:

Select membership category and number of years (discount for 2 or 3 years).

To pay by check: Make check payable to: The Coastal Society. Please mail check and application to: PO Box 3590, Williamsburg, VA 23187-3590.

To pay by credit card: We cannot accept credit card information other than through the PayPal option. Please go to the TCS online membership form if you wish to pay by credit card (<http://www.thecoastalsociety.org/membersub.html>).

Thank you for your support.

The Coastal Society is an organization of private sector, academic, and government professionals and students dedicated to actively addressing emerging coastal issues by fostering dialogue, forging partnerships, and promoting communication and education.