

WETLAND SCIENCE AND PRACTICE

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Traditional method of travel used by the local oyster farmers to reach the oyster beds located on the sand bars of the Changhua Coastal Wetland along the western shore of Taiwan in Dacheng Township, Changhua County.
Photo by Ben LePage.

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Aim and Scope of Wetland Science and Practice

The *WSP* is the formal voice of the Society of Wetland Scientists. It is a quarterly publication focusing on news of the *SWS*, at international, national and chapter levels, as well as important and relevant announcements for members. In addition, manuscripts are published on topics that are descriptive in nature, that focus on particular case studies, or analyze policies. All manuscripts should follow guidelines for authors as listed for *Wetlands* as closely as possible. All papers published in *WSP* will be reviewed by the editor for suitability. Letters to the editor are also encouraged but must be relevant to broad wetland-related topics. All material should be sent electronically to the current editor of *WSP*. Complaints about *SWS* policy or personnel should be sent directly to the elected officers of *SWS* and will not be considered for publication in *WSP*.

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2011-2012 CHAPTER PRESIDENTS

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WSP

PRESIDENT'S MESSAGE

2012 SWS Annual Meeting

This last year has been personally and professionally rewarding and many of the goals and objectives that I set out to accomplish have been realized. The transition to a new business office and installation of a new Wetlands Editor-in-Chief (EiC) were the two major changes that the Executive Board worked through this past year. It is safe to say that the transition of the Society's business operations from Burk to Association Management Partners (AMP) has been a positive experience. As is the case with any change of this magnitude, bumps in the road were expected, but AMP worked tirelessly to make the necessary corrections, which made the transition smooth. Getting the old database sorted out and the new database on-line in time for the membership drive was a priority and a target that we hit. Our ability to reach out quickly to members with e-mail blasts, monthly e-newsletters, and the recently launched Facebook and LinkedIn portals are all part of our commitment to bring value and keep the membership better informed. Dr. Marinus Otte took over the duties as Wetlands EiC from Dr. Darold Batzer. I would like to thank Darold and Dr. Steve Pennings for the time and effort they put into making *Wetlands* the journal that it is today.

Increasing membership continues to a major focus of the Executive Board because these fees determine the operating budget for Society and all of its programs. Membership for 2012 increased almost 11% from 2011 and I thank the individuals that took the time and made the effort to recruit the 293 new members. Student number remained unchanged and I urge Chapter President's to focus on student recruitment throughout the year. A breakdown of the membership by Chapter is provided below. Despite a slight increase in the membership I continue to urge members to keep up the effort to recruit new members, especially students. The breakdown by chapter is provided in the Table on the adjacent page and light blue cells denote an increase from 2011.



Chapter	2011 Members	2011 Student Members	2012 Members	2012 Student Members
Alaska	38	1	60	4
Asia	40	1	52	5
Australasia	44	6	53	5
Canada	80	13	75	8
Central	41	4	56	7
Europe	82	17	81	17
International	30	1	65	8
Mid-Atlantic	383	39	456	43
New England	223	12	259	12
North Central	361	72	350	52
Pacific	292	11	331	16
Northwest				
Rocky Mountain	123	17	147	13
South America	28	3	35	4
South Atlantic	515	53	535	59
South Central	315	60	324	55
Western	160	17	171	20
Total	2755	327	3050	328

The March issue of Wetland Science and Practice (WSP) is of particular importance because WSP published its first peer-reviewed article: *Solek, C.W., M.A. Sutula, E.D. Stein, C. Roberts, R. Clark, K. O'Connor, and K.J. Ritter. Determining the health of California's salt marshes using rapid assessment.* This paper is an important step towards high-lighting the valuable work that our members in the applied sector of the society perform. Andy continues to develop his editorial team and internal editorial processes and he is doing a fantastic job. We recently put out a call for rain (wet) garden papers to the members and the response has been outstanding. There is certainly interest in this topic and based on the response received, a special issue may appear in the fall. Given the interest that the rain gardens generated, we are considering the feasibility of identifying an annual "special topic". Not only will this provide great visibility for our members from the applied sector, but will help WSP establish a reputation for being a journal at the forefront of new wetland technologies and approaches. We will continue to poll the members for ideas and solicit papers that are focused on applied and innovative approaches.

PRESIDENT'S MESSAGE

This past fall I was asked by the Environmental Law Institute (ELI) to serve as a judge to select recipients for the prestigious National Wetland Awards. Reading about what people throughout the country have accomplished in the name of wetlands was amazing and for me it was a great experience. In the end, two SWS members received these awards. Dr. Chris Craft, Indiana University received the Science Research Award and Mr. Ronald Brockmeyer, St. Johns River Water Management District received the State, Tribal, and Local Program Development Award. My congratulations go out to both and please take a moment recognize them for their accomplishments.

In April Rob McInnes, Marinus Otte, and I were invited to Taiwan as guests of Taiwan's Construction and Planning Agency (CPA), Ministry of the Interior to participate in the International Workshop for Wetland Conservation 2012. We gave a series of lectures and keynote addresses and met with wetland enthusiasts, scientists, and policy makers over the week-long visit. I would like to extend my thanks to our hosts, the CPA and Dr. Wei-Ta Fang for their generosity and all that they did to make this such a memorable and rewarding trip.

Ben LePage
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June 3, 2012
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Editor's Note

After debuting our first refereed article last issue, we're without another for this issue. I suppose that's how it goes as you begin to change directions. We do have some things in the pipeline for September and December, but I still encourage everyone to look at what you're doing in the field and consider how you might publish your findings in WSP. Remember that we're trying to have an applied focus so as to increase the knowledge base on those types of issues. Please consider sending in your work to be reviewed for a future issue of WSP. Your colleagues are depending on you!

Andy Cole
WSP Editor

Shallow Permafrost and the Rehabilitation of Tundra on Alaska's North Slope: Lessons Learned from Case Studies

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Abstract

Alaska's North Slope oilfields, located above latitude 70° North, are underlain by permafrost with an active layer typically less than 50 cm thick. Environmental regulations require rehabilitation of disturbed tundra in the oilfields. Thawing of shallow permafrost during rehabilitation can lead to subsidence. Concerns expressed a decade ago about the importance of subsidence on rehabilitation projects appear to have been exaggerated for some types of projects but somewhat under appreciated for other types of projects. This paper underscores the importance of case studies and well documented field observations, especially when there is a paucity of data from well designed and replicated experiments.

Keywords

Active Layer; Alaska; Permafrost; Rehabilitation; Tundra.

Background: Alaska's North Slope Oilfields

Alaska's North Slope oilfields are concentrated between the Colville and Canning Rivers in the tundra biome above 70° North, an area underlain by permafrost to depths of as much as 600 m and with active layers typically less than 50 cm thick (Figure 1). Since oil production began in 1977, a complex of production facilities, pipelines, and over two thousand wells have sent more than 15 billion barrels of oil to refineries on the west coast of the United States. All of this has occurred under the scrutiny of multiple federal, state, and regional agencies tasked with overseeing environmental regulations. These regulations include requirements to rehabilitate tundra damaged by industry operations.

In general, post-excavation revegetation of sites on Alaska's North Slope is a slow process, requiring more than 20 years due to the slow growth of plants (Streever et al. 2003). While more research might improve revegetation methods and rates, this paper focuses on changes in shallow permafrost that can affect rehabilitation sites.

The two situations most commonly requiring rehabilitation efforts are (1) abandoned sites where gravel originally placed to provide a stable building foundation (i.e., a "gravel pad") has been removed, and (2) sites where cable and pipeline burial have required excavation and backfilling of trenches.



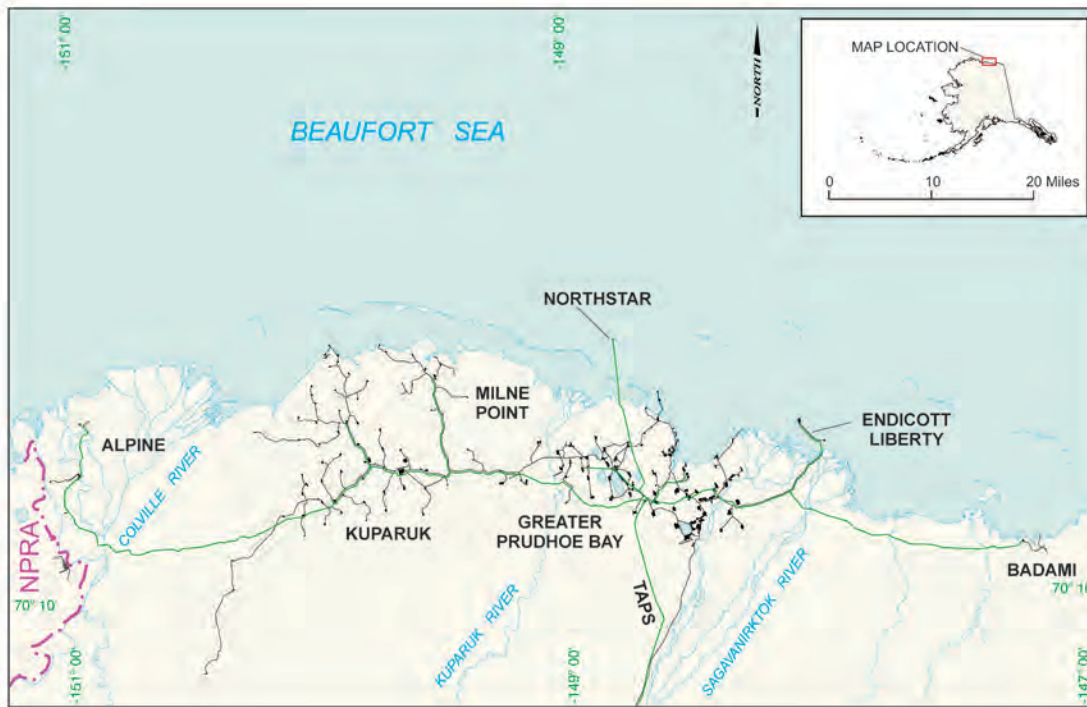


Figure 1: The North Slope oilfields of Alaska.

As recently as ten years ago, planners repeatedly raised concerns about the possibility that thawing of shallow permafrost could cause significant problems for gravel removal rehabilitation sites. Conversely, planners were less concerned about thawing ground ice and subsidence in backfilled trenches, because it was generally accepted that simply “mounding” soil over backfilled trenches would easily address subsidence. Over the past ten years, experience has shown that assumptions made about the importance of thawing ground ice were incorrect for both gravel removal sites and backfilled trench sites.

Changes in Shallow Permafrost that Can Affect Rehabilitation Sites

For rehabilitation sites where gravel has been removed, experience has shown that thawing of shallow permafrost can lead to limited subsidence and summertime waterlogging of soils. However, the waterlogging of soils is reversed when ice wedges thaw, establishing drainage networks.

For rehabilitation of backfilled trenches, experience has shown that thawing of shallow permafrost can cause substantial subsidence over long reaches of the original trench line. This subsidence has resulted in flooding of trenches with water that is often too deep to support vegetation, even when soil was mounded to heights as great as 50 cm above backfilled trenches. Thawing of ice wedges does not promote drainage as it does on larger rehabilitation sites with shallow

subsidence. Also, the thawing of ice wedges can extend laterally out from trench lines beyond the footprint of the original project.

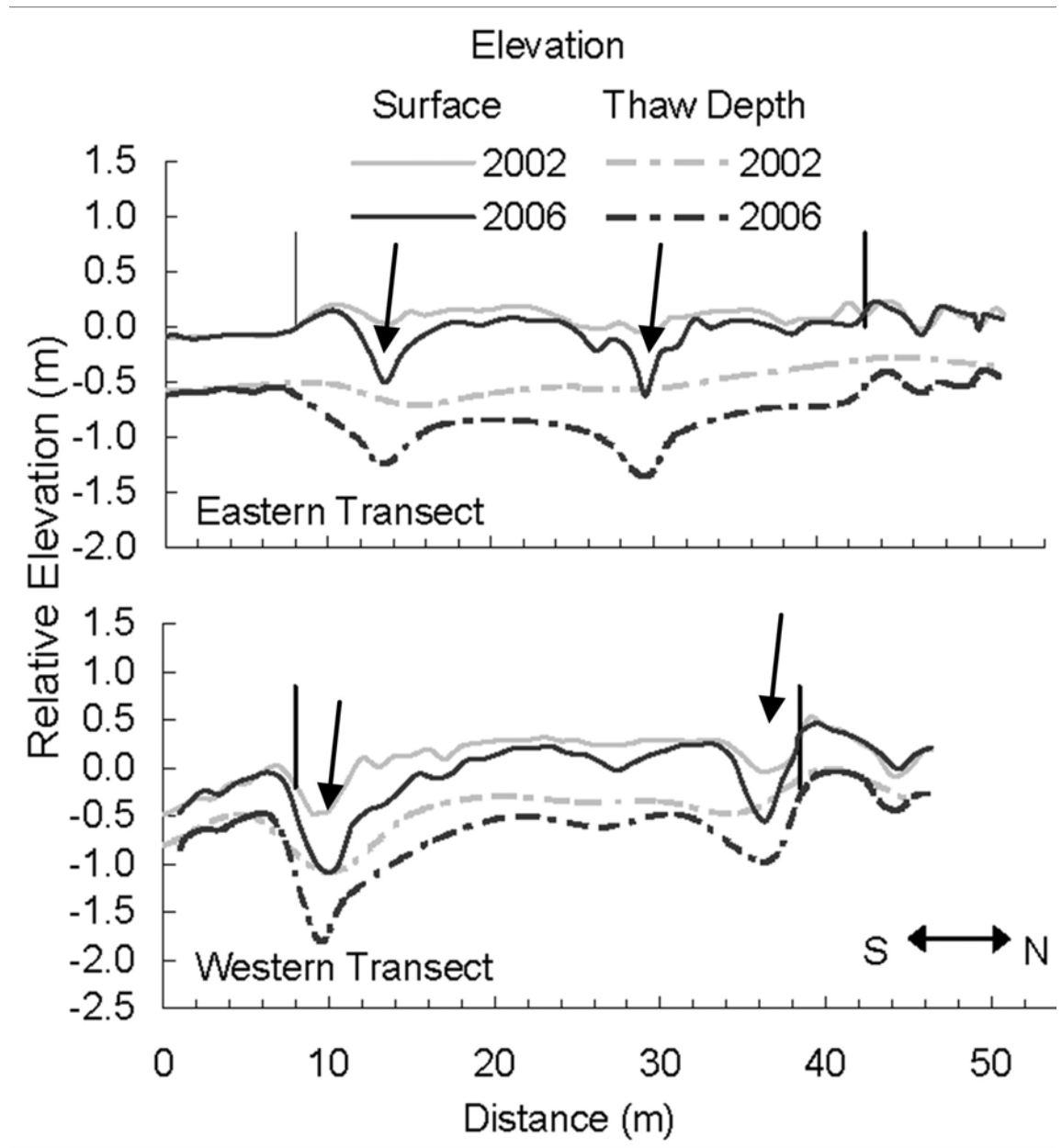


Figure 2: Thaw subsidence and change in active layer thickness at the Mobile Kuparuk Airstrip gravel removal rehabilitation site, showing both overall site subsidence from 2002 until 2006 and development of thawed ice wedge troughs (arrows) that drain saturated soils. Vertical bars mark the northern and southern edges of the site, with undisturbed tundra outside of the bars.



Thaw of Shallow Permafrost Creating Water Saturated Depressions and Ice

Wedge Thaw Creating Drainage Networks following Gravel Removal

More than 3,500 ha of gravel have been placed on the North Slope as airstrips, roads, and stable foundations for drilling and production facilities. As the oilfields mature, some of these sites are no longer needed. Over the past decade, gravel has been removed from more than fifty of these sites.

Ten years ago, concerns were frequently raised about the possibility of gravel removal resulting in extensive thermokarst and the creation of “square ponds”—that is, ponds taking the shape of the removed gravel pad. In many cases, up to 30 cm of gravel was left in place to prevent the creation of unwanted ponds. However, experience has shown that sites subside unevenly following gravel removal, leaving behind a surface that is often slightly lower than the surrounding tundra grade but with both high and low areas and an unusually thick active layer.

While no sites on which gravel has been removed to tundra grade have collapsed to create deep ponds over the entirety of the original excavation footprint, even the relatively minor subsidence that does occur results in soils saturated with water during the first and occasionally the second summer after gravel removal. However, within two years after gravel removal, thaw collapse of ice wedges creates drainage networks that remove unwanted water.

In short, soil saturation associated with gravel removal and subsidence due to melting of shallow permafrost is alleviated by thawing of ice wedges and subsequent site drainage. Figure 2 illustrates this pattern for one of the many sites on which it has been observed.

Thaw Collapse of Trenches and Extension of Ice Wedge Thaw into Surrounding Tundra

Dozens of miles of trenches have been excavated and backfilled on the North Slope to bury cables. While most pipelines are perched above the tundra on steel support members, a few gas pipelines have been buried. In addition, pipeline burial methods were tested at two North Slope sites in anticipation of eventually burying a large diameter gas export pipeline, leaving behind about 10 km of backfilled trenches.

As is the case with excavated gravel pad sites, trenches that are excavated and backfilled tend to subside after construction and ice wedges intercepted by

trenches tend to thaw. At the same time, the active layer thickens near the edges of trenches and the active layer in the backfilled trenches themselves tends to be deeper than those of surrounding undisturbed ground. However, perhaps because trenches form linear features that cross the landscape and are capable of capturing surface flows, thawing of shallow ground ice can be more extensive

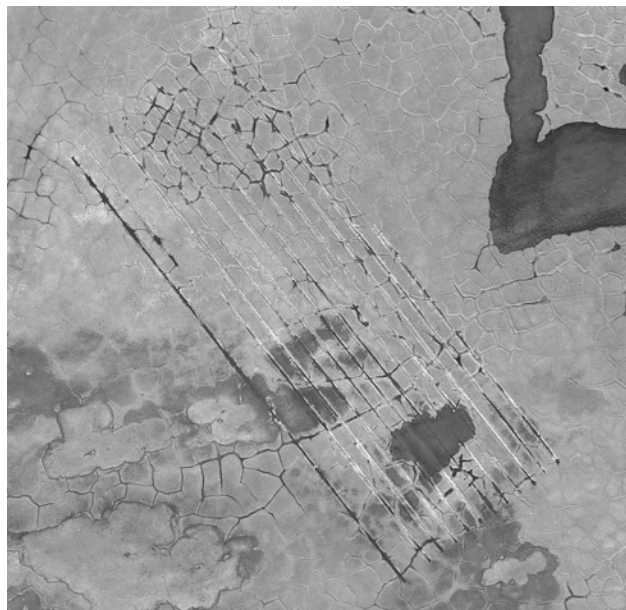
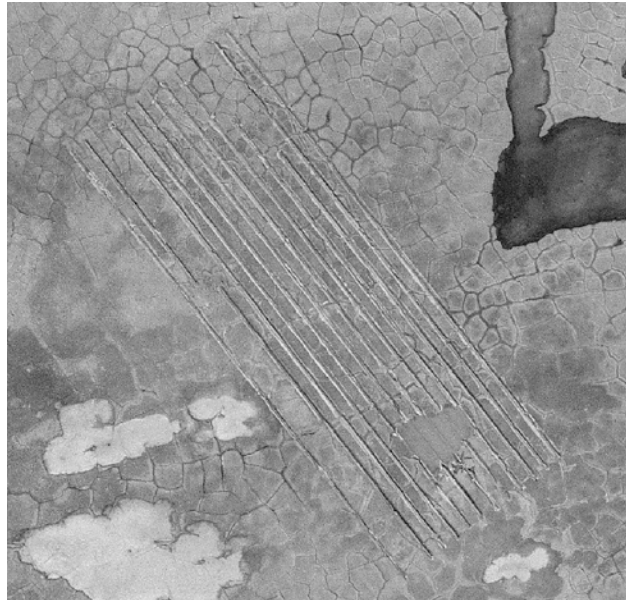


Figure 3: A site where trenching equipment and methods were tested in 2002, showing initial conditions (top) and conditions in 2011. After several attempts to backfill subsiding trenches subsidence continued, as can be seen at the trench on the left side of the bottom figure, and ice wedge troughs had thawed laterally from some of the trenches.

than that normally seen on gravel pad removal sites. More than 1 m of subsidence has been seen at some trench sites and subsidence can continue for at least a decade after construction. Thawed ice wedges do not drain subsided trenches, apparently because of the depth of subsidence. Furthermore, ice wedge thawing can extend laterally outward from trenches into the surrounding undisturbed tundra (Figure 3).

Land managers have tried different methods to control thermokarst degradation of trenches, including repeated backfilling using mineral soils trucked in during the winter season or transported in during the summer season on trucks designed for tundra travel (i.e., trucks with very low ground pressure). The only method that has worked with reasonable consistency involves placing backfill into subsided trenches to regain elevation loss followed by capping of the backfilled trenches with tundra sod (i.e., soil with intact plants harvested from nearby donor sites). The tundra sod appears to limit further ground ice degradation, probably through a combination of providing insulation, increasing albedo, and cooling through evapotranspiration during summer months.

Conclusions

On North Slope gravel removal rehabilitation sites, thawing of shallow permafrost has not presented the difficult challenges that were anticipated a decade ago. In fact, soil saturation that seems to be associated with limited thaw subsidence is often offset by drainage channels created when ice wedges thaw on gravel removal restoration sites, so, in a sense, the challenge created by thawing of shallow permafrost is solved by the thawing of ice wedges. Conversely, on trenching sites thaw subsidence appears to be a greater problem than was anticipated a decade ago, not only creating on-site subsidence but in some cases also extending beyond the trench edges into the surrounding tundra.

Well designed and replicated experiments might yield useful results and could, potentially, define relationships between the degree of thaw subsidence likely to occur in a given location, the existing pre-excavation ground ice conditions, and the planned rehabilitation activity. However, the value of case studies and well documented field observations should not be overlooked. As the North Slope oilfields continue to mature and the number of rehabilitation sites increases, an improved understanding of the dynamics of shallow ground ice on rehabilitation sites will increase in value. Because of the paucity of data from well designed and replicated experiments, improved understanding will have to come from case studies and well documented field observations. An effort to

systematically understand the information available in well documented case studies is warranted.

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www.wetlandcert.org

PROFESSIONAL WETLAND SCIENTISTS

Society of Wetland Scientists Professional Certification Program

Why Professional Wetland Scientist Certification Matters to Public Sector Employees

As certified Professional Wetland Scientists (PWS) employed by public agencies, we are often asked by colleagues why we bother to seek and pay the cost of professional certification. After all, there is no requirement to be certified, and there's certainly no financial incentive for us or our employers. Perhaps it all boils down to a strong desire to support the profession we have chosen, and the professionalism of all of us who work with wetlands programs or regulations.

Unlike some professions that have well-established curricula and degree programs, wetland scientists come from a wide variety of educational programs and backgrounds. We may have a degree in botany or soil science, in geography or geology, in wildlife management or even education. We often cobble together relevant course work and obtain wetland-specific training where we can find it or on the job. A certification program provides a framework for educational standards, necessary skill sets and ethical standards for the profession.

The Society of Wetland Scientists Professional Certification Program (SWSPCP) is the only widely available wetland scientist certification program. SWSPCP works to meet the needs of professional ecologists, hydrologists, soil scientists, educators, agency professionals, consultants, and others who practice wetland science. The program also is aimed at serving the public's need to identify qualified individuals to assess and manage the Nation's wetland resources.

As agency staff, we are confronted regularly by landowners or developers who assume that whomever they hired to conduct a wetland delineation or assessment for their property or develop a wetland mitigation plan not only has the specific skill set, but must be licensed or certified. They are sometimes shocked to discover otherwise, which is usually when something goes awry. The

public may or may not have that same expectation of natural resource agency staff, but professional certification encourages continued skill development and can lend credibility to agency decisions.

Certification signifies that the academic and work experience of a Professional Wetland Scientist meets the standards expected by his or her peers of a practicing wetland professional and provides acknowledgment of adherence to standards of professional ethics with regard to the conduct and practice of wetland science. We believe that the SWSPCP plays an important role in establishing standards for the profession to the benefit of all—the public, communities, and our wetlands resources.

What can we, as public employees, do to encourage and support PWS certification in the private and public sectors? Here are a few suggestions:

- First, if you are not a certified PWS and you meet the requirements, become certified! Then, encourage PWS certification by other staff in your agency or agencies you work with.
- If you develop Requests for Proposals for wetlands work, require or establish a point preference for certified PWS. Note the requirement or preference for a PWS on the agency web site, if allowed.
- It's usually not possible to require certification for government positions, but you may be able to include in the recruitment a preference for a certified PWS or Wetland Professional in Training (WPIT).
- Refer to the Body of Knowledge that was recently developed by SWSPCP as a training guide for staff development. It may also be useful in developing position descriptions. It's on the SWSPCP web site: <http://www.wetlandcert.org/bok.html>
- When contacted by students for information about course work or getting into wetlands work, refer them to the Body of Knowledge and the educational requirements for PWS certification as a guide. Let them know about the Wetland Professional in Training certification for persons who have completed the academic requirements but do not yet have the required experience.
- If you are active in your SWS Chapter, talk about why PWS certification is important! Hold a session on professional ethics, sponsor trainings that may be used for continuing education credits for certification renewal, or contact a SWSPCP Board member about providing information about certification at a chapter meeting.



PWS certification has enhanced our professional lives and relationships. We encourage other public employees who meet the education and experience requirements to set a positive example by becoming certified, and to support PWS certification for the benefit it provides to the public, the profession and the public trust.

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The need to consider geoengineering techniques using peatlands

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The co-founder of the Nobel Prize-winning IPCC, Sir John Houghton, claims global warming represents the “single greatest threat mankind has ever faced” (Houghton, 2010). Such assertions suggest it is the obligation of world leaders and scientists to help safeguard the lives of the planet’s seven billion people. Any “war on climate change” may mean making decisions and implementing actions which would be unnecessary and even un-palatable in “peace-time”.

As it is widely accepted that anthropogenic increases in the production of greenhouse gas (GHG) emissions are the major contributing factor to current global warming, the obvious and, arguably, most important action should be a drastic rethink in our consumption and use of the world’s resources (IPCC, 2007). However, it is feared that emissions will not be reduced at the rate or magnitude required to prevent some of the more apocalyptic climate predictions from becoming reality (Royal Society, 2009). Something must therefore be done now to reduce the amounts of GHGs in our atmosphere.

In a lecture last year Professor Chris Freeman suggested several geoengineering techniques to harness and improve the carbon sequestering characteristics of peatlands as a way of removing significant amounts of these excess GHGs (Freeman, 2011). Indeed, by increasing the concentrations of phenolics in peat soils Freeman predicts an extra 1.7×10^{15} g yr⁻¹ of carbon can be sequestered - equivalent to around one-and-a-half times the current emissions produced by transport. Methods to do this include storing phenolic material in the peatlands themselves and using genetically modified Sphagnum species to amplify phenol production. Like all geoengineering techniques, because of the expense and any potential unforeseen consequences, the hope is they will never need to be used on a large scale due to a global census to reduce GHG emissions. However, a detailed report by the Royal Society (2009) concluded that further research into “low risk” geoengineering methods should be undertaken in case their



implementation is needed within this century. This should include “carefully planned and executed experiments”. Using the criteria laid out by the Royal Society the techniques suggested by Freeman are likely to fall into the “low risk” geoengineering category; they are also likely to be cheaper and more cost effective than techniques such as space reflectors and mechanical carbon dioxide removers.

Responding to the ideas in Freeman’s lecture, Runkle (2012) gave a well-argued call for caution in the use of peatland geoengineering techniques. I wholeheartedly agree with many of the issues raised in Runkle’s discussion, in this publication. However, subtle modifications of peatland ecosystems and use of only restored peatlands for carbon sequestration projects (as Runkle suggests) may not remove the significant amounts of carbon from the atmosphere that could otherwise be achieved. Clearly this is only an issue if we accept some of the more dire of global warming predictions, but can we afford not to take these threats seriously and at least start to investigate all preventative avenues? As Runkle points out, the history of ecological interventions is littered with unintended consequences and any research into geoengineering techniques must do all it can to prevent falling into this trap too. It has even been mooted geoengineers should sign a form of Hippocratic oath before undertaking research because of the potential for widespread harm (Lovelock, 2008).

As an admirer of our planet’s unique peatland ecosystems, do I want to do anything that could damage them? No; but the debate on whether we should use peatlands in geoengineering presents a serious moral dilemma which the wetland and biogeochemistry community must answer: *should we leave our pristine peatlands untouched, while average global temperatures continue to rise, if they have the potential to significantly reduce GHGs levels?* I acknowledge that we must ensure our most important peatlands continue to be protected and conserved to some level, but it is essential to realise we may have the ability to prevent the catastrophic effects of climate change that have been predicted. So should we stand by and wait for unprecedented political change or another area of science to come to the rescue? I would argue not. We as wetland scientist have a duty to care for our valuable peatland environments, but we also have a duty to formulate a “Plan B” for the planet, that could be put in place quickly and effectively should the need ever arise.

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30 YEARS OF WETLANDS: COMMEMORATIVE ISSUE

Development of wetland science as a distinct field required consolidation of wetland-related publications in a recognized wetland journal. Growth of the Society of Wetland Scientists was thus tied to developing its own publication outlet. *Wetlands* debuted as the proceedings of the SWS meeting held in 1981, became a peer-reviewed proceedings in 1982, and was opened to outside submissions in 1983. As manuscript submissions increased, more papers were published, and more pages were produced. The journal moved to two issues in 1988, three issues in 1989, four issues in 1993, and six issues in 2010. Growth of the journal transformed it into the top journal in wetland science, with submissions coming from around the globe. The journal is multi-disciplinary in scope, exposing readers to a variety of ideas, methods, and applications.

In commemoration of the first 30 years of publication, we decided to prepare a virtual issue of *Wetlands* (see link below) containing 30 papers from Volumes 1-30 deemed the most important in furthering the field of wetland science. “Important” can have many meanings, but the key factor is expanding our knowledge of the science and therefore influencing the direction of future work. To identify candidate papers for this issue, we prepared a rather lengthy list of papers with large numbers of citations. However, citation rate does not necessarily reflect importance, so we made inquiries to a selection of well-respected wetland scientists (many of whom served as Associate Editors for the journal and had reviewed the papers in manuscript form) and asked for input on our list, as well as additions that they might recommend. Ultimately, we developed independent lists of candidate papers and then reached agreement on the 30 to include in this issue. As our process likely excluded more recent papers, we additionally included 5 newer articles that received high praise during the review process and are anticipated to rise to the top. Regrettably, we are unable to list all papers clearly worthy of respect, of which there are many.

Link:

<http://www.springer.com/life+sciences/ecology/journal/13157?detailsPage=press>

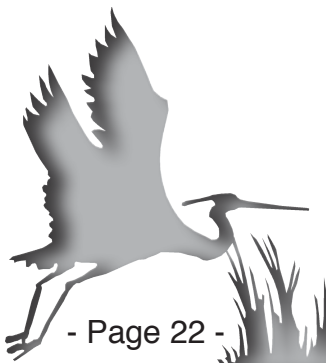
SWS FYI

As Editors-in-Chief that ushered these papers from authors to publication, we hope that bringing them to the forefront again will encourage wetland scientists to give them another look. Literature buried in boxes, sitting on shelves, or archived in cyberspace serves little purpose. We hope that you will revisit these papers and reincorporate them into your thought processes to produce better science in the future.

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2012 National Wetlands Awards

(Washington, DC) —

The Environmental Law Institute announced today the recipients of the prestigious National Wetland Awards—individual stewards from across the country who have been recognized for their exceptional and innovative contributions to wetlands conservation. “I congratulate the winners of the National Wetlands Awards for demonstrating how citizens and communities can—and do—make a difference,” stated ELI President John Cruden. “With our partners from six federal agencies, we look forward to an awards ceremony that showcases the remarkable contributions they have made to a healthy and productive environment.”

The 2012 National Wetlands Awards recipients will be (were) honored at a ceremony on May 10, 2012 at the U.S. Botanic Garden starting at 6 pm. The public is invited to attend. U.S. Senator Tom Udall will be the keynote speaker.

This year’s recipients are:

Conservation & Restoration

Tim Swanson has worked tirelessly to bring divergent interests to the table in order to protect land threatened with development in southwest Montana. His work has helped to protect almost 70,000 acres of land, including over 11,000 acres of critical wetland habitat.

Education & Outreach

Education coordinator for the Delaware Division of Fish and Wildlife’s Aquatic Education Center Gary Kreamer has developed numerous wetlands programs that have educated and inspired tens of thousands of students and teachers across Delaware and beyond.

Landowner Stewardship

Arizona landowner John Anthony Sedgwick has collaborated with federal, state, and local partners to restore wetlands on his property, developing the site into an environmental and historical educational destination for the public.

Science Research

Indiana University professor Dr. Christopher Craft is a world-renowned wetlands scientist. His research has produced almost 90 highly cited peer-reviewed publications, and has made a significant contribution to our understanding of how wetlands function.

State, Tribal, and Local Program Development

St. Johns River Water Management District's coastal wetland program manager Ron Brockmeyer has led efforts with federal, state, and local partners to rehabilitate more than 20,000 acres of severely impacted coastal wetlands in East Central Florida.

Wetland Community Leader

Grassroots activist Florence LaRiviere has worked countless hours to protect wetlands in the San Francisco Bay area. Her efforts helped create the San Francisco Bay National Wildlife Refuge in 1972, and then expand that refuge by 20,000 acres in 1988. At the age of 88, she continues her work defending wetlands.

The National Wetlands Awards program is administered by the Environmental Law Institute and supported by the U.S. Environmental Protection Agency, NOAA Fisheries Service, U.S. Fish and Wildlife Service, Natural Resources Conservation Service, Federal Highway Administration, and USDA Forest Service.

"The recipients of the 2012 National Wetlands Awards demonstrate an exciting level of personal commitment to conservation which is both motivating and outstanding. This varied group of awardees is involved in wetlands conservation making a difference for people working the land, the students in the classroom, and the people of the community. These leaders recognize the importance of wetland habitats and the ecosystems they sustain," said Dave White, Chief of the Natural Resources Conservation Service (NRCS). "NRCS is pleased to join the Environmental Law Institute in recognizing this year's award recipients for their distinctive conservation of wetlands."

Collectively, the impact of the 2012 National Wetlands Awards recipients is substantial—their expertise, experience, and examples have profoundly shaped the landscape of wetlands conservation. "We look forward to meeting this year's award winners and honoring their extraordinary achievements in wetland conservation," said Sam Rauch, Acting Assistant NOAA Administrator for NOAA's Fisheries Service. "We are proud once again to support the Environmental Law Institute's National Wetlands Awards, recognizing individuals for their contributions to society and the aquatic environment. Wetlands provide essential support for self-sustaining ecosystems, valuable fisheries and protected resources, water quality and resilient coastal communities."



“The Forest Service is proud to partner with ELI in its National Wetlands Awards program.” said Tom Tidwell, Chief of the USDA Forest Service.

“Wetlands provide an array of benefits to society and are integral to healthy, sustainable watersheds by protecting and improving water quality, providing fish and wildlife habitats and mitigating floodwaters. We are excited to recognize this year’s awards recipients and appreciate their important contribution in this area.”

“Safeguarding America’s wetlands is an important part of our ongoing commitment to balancing the public’s transportation needs with environmental responsibility,” said Federal Highway Administrator Victor Mendez. “The FHWA takes wetlands protection seriously, and we applaud this year’s award recipients for their success.”

“Wetlands provide tremendous services to society, in addition to their vital importance for functioning ecosystems. We are so proud to be a part of the celebration for those people who protect and restore our nation’s wetlands for the benefit of all Americans,” said U.S. Fish and Wildlife Service Deputy Director Rowan Gould.

“It is especially exciting to reflect on the accomplishments of this year’s winners as 2012 marks the 40th anniversary of the Clean Water Act, the nation’s law for protecting our most irreplaceable resource,” said EPA Acting Assistant Administrator for Water Nancy Stoner. “The extraordinary actions of National Wetlands Awards winners past and present provide continued inspiration in our efforts to protect and restore our nation’s wetlands. EPA commends the winners for their incredible work.”

For more information about the National Wetlands Awards, visit www.nationalwetlandsawards.org or e-mail wetlandsawards@eli.org. The Environmental Law Institute® is an independent, non-profit research and educational organization based in Washington, DC. The Institute serves the environmental profession in business, government, the private bar, public interest organizations, academia, and the press. For further information from the Environmental Law Institute, please contact Brett Kitchen at 202-939-3833 or pressrequest@eli.org. [Reprinted from an ELI press release.]

Call for Papers – Wetland Science and Practice

In an effort to bring value to the applied sector of our membership the editor and editorial board of Wetland Science and Practice (WSP) is requesting papers that demonstrate the effective transfer and implementation of knowledge and regulations into practical and innovative wetland projects.

Periodically, WSP will focus on new trends within the industry. At this time we are looking for articles that are focused on small constructed wetlands (rain gardens) that are designed to manage storm water runoff from homes and businesses. The management of storm water for residential and commercial properties, especially in the urban setting is important and rain gardens are being promulgated as an excellent best management practice. That being said, we are looking for projects where the rain garden concept has been used to manage storm water, improve water quality, and create small residential wetlands.

Please contact Andy Cole (editor, WSP (cac13@psu.edu)) or Ben LePage (Ben.Lepage@exeloncorp.com) for more information.



Student Research Award Winners

Dear SWS Members:

A primary goal of the Society of Wetland Scientists is to support student education and wetland-related research conducted by students worldwide. The SWS Student Research Grant webpage is used to support the international SWS student grant competition, as well as the student grant competitions conducted by the North Central Chapter, the Pacific Northwest Chapter, the Ramsar Section, and the South Atlantic Chapter. Based on the reports from the proposal review teams, we are pleased to report the following research grant recipients, listed in alphabetical order below.

Thank you,

Dianna Hogan
Chair, Student Grants Subcommittee
dhogan@usgs.gov

2012 SWS Student Research Grant Winners – International Competition

Name	Institution	Proposal Title	Award Amount (USD\$)
Jennifer Anderson-Cruz	Iowa State University	Evaluation of Techniques for the Restoration of Sedge Meadow Vegetation	1000
Roberto Brenes	University of Tennessee	Determining the Impact of Disease Emergence on Wetland Function	1000
Keri Caudle	Fort Hays State University	Physiological, Anatomical, and Ecological Responses of Salt Marsh Communities to Spilled Oil Using Experimental Mesocosms	989
Kenneth Gouvion	Pittsburg State University	A Comparison of Microbial Communities in Natural and Restored Wetlands Utilizing PCR-DGGE Analysis	1000
Eric Hazelton	Utah State University	Restoration Potential of Phragmites-Dominated Wetlands in the Chesapeake Bay: Interactions between Disturbance, Nutrients, and Genetic Diversity	1000

EDUCATION

Name	Institution	Proposal Title	Award Amount (USD\$)
Brent Johnson	State University of New York	Assessing the Potential of Habitat Manipulations as a Conservation Strategy for Eastern Massasauga Rattlesnakes at Cicero Swamp Wildlife Management Area	1000
Joshua Jones	University of Alabama	Global Climate Change and Coastal Eutrophication: Potential Interactions Affecting Rates of Organic Matter Processing and Surface Elevations in Coastal Wetlands	1000
Jessica Kissner	Texas Tech University	Interactions of Temperature and pH On Anuran Development in the Changing Climate of the Southern Great Plains	1000
Maara Packalen	University of Toronto	Carbon Cycle Dynamics and Holocene Climate Forcing in Response to Northern Peatland Expansion and Paleoenvironmental Change in the Hudson Bay Lowland, Canada	1000
Cassie Pinnell	San Francisco State University	The Effectiveness of Restored Eelgrass (<i>Zostera marina</i>) Beds in Providing Aquatic Invertebrate Habitat in the San Francisco Estuary	920
Anastasia Shippey	California State University	Effect of Altered Precipitation and Increased Warming on Function and Structure of a Restored Southern California Salt Marsh	1000
Taylor Sloey	University of Louisiana at Lafayette	The Role of Flooding Depth on <i>Schoenoplectus Acutus</i> and <i>Schoenoplectus Californicus</i> Seed Germination and Seedling Establishment: Applications for Restoration of a Tule Marsh	1000



2012 North Central Chapter Research Grant Winners

Name	Institution	Proposal Title	Award Amount (USD\$)
Jennifer Anderson-Cruz	Iowa State University	Evaluation of techniques for the restoration of sedge meadow vegetation	720
Paul Hartzog	Northwestern University	Effects of plant-community change on denitrification services performed by wetlands	750

2012 Pacific Northwest Chapter Research Grant Winners

Name	Institution	Proposal Title	Award Amount (USD\$)
Bridget Deemer	Washington State University Vancouver	Nitrogen Retention Along a Nitrogen Saturation Gradient in the Klamath Hydroelectric Project Reservoirs	1000
Steven McAllister	University of Oregon	Microbial Community Structure and Ecosystem Function: Linking Methanogen Community Composition to Methane Production Rates in Wetland Soils	1000

2012 Ramsar-SWS Student Research Grant Winner

Name	Institution	Proposal Title	Award Amount (USD\$)
Adewole Olagoke	Technische University Dresden	Vegetation Recovery and Carbon Distribution in a Heavily Impacted Peri-Urban Mangrove Forest in Tudor Creek, Kenya	1000

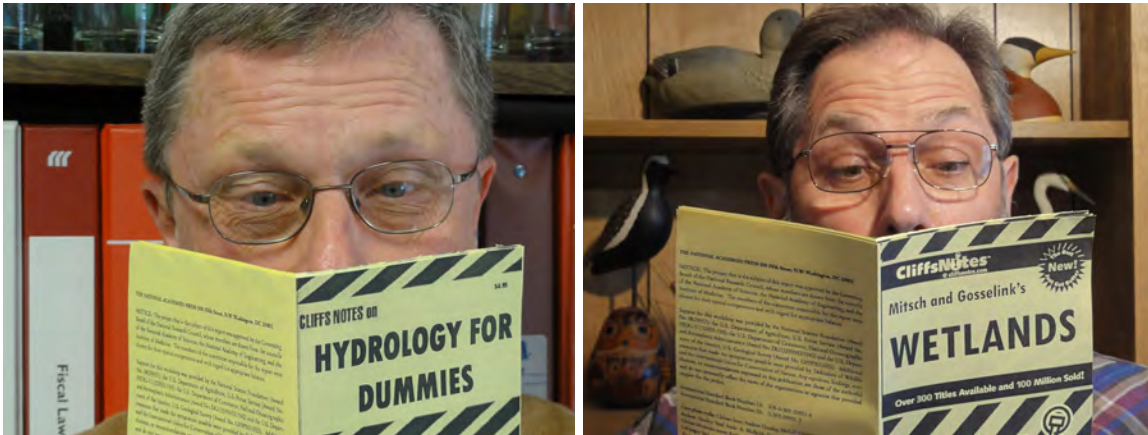
SWS FYI

2012 South Atlantic Chapter Research Grant Winners

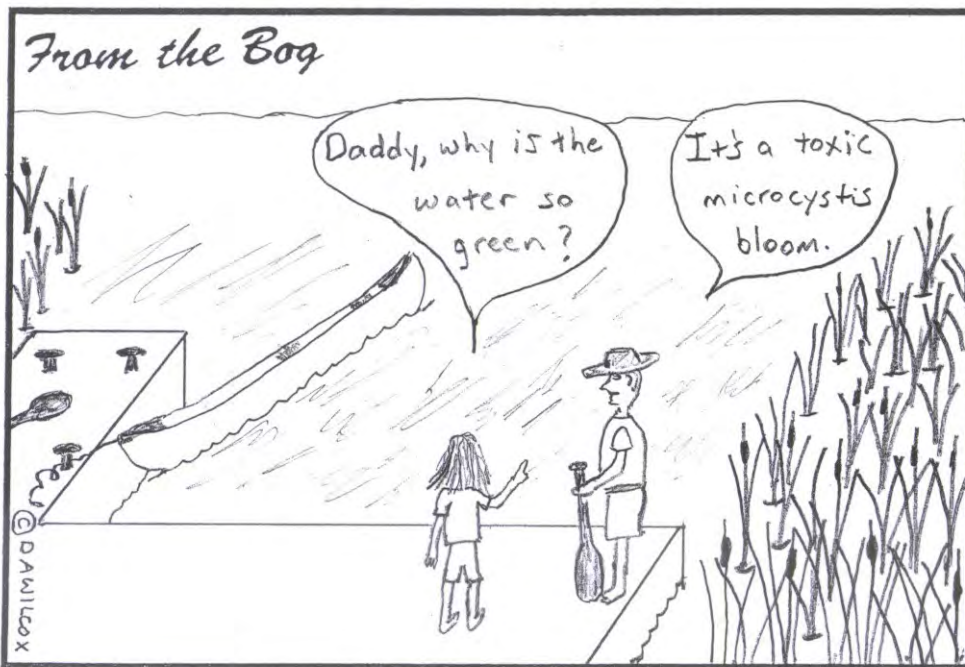
Name	Institution	Proposal Title	Award Amount (USD\$)
Jaimie Gillespie	Virginia Commonwealth University	Structure-Function Relationships Of Methane-Cycling Microorganisms In Tidal Wetlands Of The Eastern United States	750
Thomas Luhring	University of Missouri	Of Fish And Drought: Modeling Influences Of Hydroperiod And Predators On Amphibian Productivity In Wetlands Of The Southeastern United States	750



Cliffnotes



From the Bog



A tea party on Lake Erie.



WETLAND SCIENCE AND PRACTICE



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