ABSTRACTS

(Listed in order of presentation. Please note not all speakers submitted an abstract.)

Tuesday, June 18

Day 2 Morning: Insulating the National Cabin

11:00am – 11:30am Creating High Resolution Land Cover as part of a National Framework

John McCombs, NOAA

The NOAA Coastal Change Analysis Program (C-CAP) produces authoritative land cover data and change products for the coastal areas of the US. In recent years, NOAA has established an operational, higher resolution land cover product line, allowing for site-specific, local applications through the production of 1-meter land cover data. Land cover is a foundational data set that provides valuable information for a range of applications, including floodplain and stormwater management, land use planning, disaster risk reduction, and climate adaptation.

C-CAP recently released over 1.5 million square miles of high-resolution land cover data for the entire coastal zone, including Alaska and the territories. This version of land cover includes impervious surface, tree, shrub, and water classes. Current work involves refining the land cover to include the full C-CAP class scheme (up to 20 classes) and has been completed in the Tampa, FL and Houston, TX areas. This year we are working in Maine, the Pacific and Caribbean territories, alongside multiple National Estuarine Research Reserves.

One defining characteristic of the C-CAP products are the wetland classes with up to 6 categories of wetland being mapped as part of our process. We have also partnered with Rhode Island and New Hampshire to produce salt marsh species level maps, and change data, for their coastal zones. These data are being used to track marsh losses and migration in response to sea level rise, estimate blue carbon stocks, monitor erosion rates, and detect and measure critical habitat losses.

This presentation will provide an overview of the production processes, data produced, uses, and highlight partnership opportunities.

11:30am – 12:00pm Tidal Restriction Protocol for Wetland Protection, Resiliency, and Planning

Amanda Santoni, EPA

Tidal restrictions are structures that disrupt natural flow between habitats that experience tides. Examples include undersized bridges or culverts; road causeways; and water control structures such as tide gates, weirs, levees, dikes, berms, and dams. Alteration of tidal exchange can lead to direct loss of tidal wetlands or their function. According to the 2020 U.S. Environmental Protection Agency *Tidal Restriction Synthesis Review*, data on the location and severity of tidal restrictions data in the U.S. are limited. To address this gap, The EPA partnered with the Federal Highway Administration to develop The *Tidal Restriction Prioritization Protocol for the Restoration of Tidal Wetlands* for New York, New Jersey, Puerto Rico and the U.S. Virgin Islands. The protocol was developed through virtual meeting and in-person workshops with regional stakeholders. The result is a screening tool that allows resource managers to evaluate tidal restrictions and take actions to restore tidal wetland habitat and functions. The Protocol can be used to help focus management and planning resources on achievable projects that rehabilitate, remove or replace tidally restrictive structures and provide restorative benefits to tidally influenced wetlands and built infrastructure.

Day 2 Afternoon: Building Strong State & Tribal Tide Gates

1:30pm – 2:00pm Reinterpreting Wetland Protection: Implications of the Sackett v EPA Ruling for Texas Wetlands

Rachel Fern, Texas Parks & Wildlife Department

On May 25, 2023, the Supreme Court of the United States (SCOTUS) issued an opinion in Sackett *v* EPA, a case that challenged the appropriate method for determining whether a wetland falls under the jurisdiction of the Clean Water Act (CWA). The CWA is a key federal law aimed at preserving the chemical, physical, and biological integrity of the nation's waters, including wetlands, by regulating the discharge of pollutants and fill material into the Waters of the United States (WOTUS). As most wetlands are characteristically dynamic, the CWA originally accommodated inherent hydrological variability caused by periodic drought, vegetation growth and senescence, and groundwater interaction. The recent SCOTUS ruling narrowed the definition of WOTUS to now include only those wetlands that, under normal conditions, maintain a constant surface water connection to a navigable waterway which significantly reduces the federal protection afforded to the nation's wetlands. The interpretation of the language used in both the official SCOTUS opinion and the subsequent adoption of the revised definition of WOTUS by the EPA is heavily contested within and among agencies, as courts and regulatory bodies are now confronted with defining terms such as 'constant' connection and determining under what conditions an intermittent hydraulic connection may suffice. Interpreted in its most literal terms, and according to the EPA's wetland classification schema in the National Wetlands Inventory (NWI), this ruling effectively eliminates federal protection for approximately 93% of wetlands in Texas. Here we discuss the status of Texas' regulatory bodies' interpretation and implementation of the revised WOTUS definition - specifically the four United States Army Corps of Engineers districts with state jurisdiction, the Texas Water Development Board, and the Texas Commission on Environmental Quality.

2:00pm – 2:30pm Navigating the murky waters of regulation under the changing Waters of the United States definition

Mackenzie Moore, Arizona Department of Environmental Quality

In the last decade, there have been four federal rules finalized by the U.S. Environmental Protection Agency (EPA) and the U.S Army Corps of Engineers (USACE) defining Waters of the United States (WOTUS) for purposes of Clean Water Act requirements and regulation. There have also been six Supreme Court cases related to this topic with decisions that impacted the WOTUS definition. However, a clear definition of WOTUS remains a topic of debate.

A portion of the most recent Supreme Court decision and subsequent EPA/USACE rule incorporating the decision in the WOTUS definition focused on relatively permanent waters (RPWs) and non-relatively permanent waters (non-RPWs). These terms are an especially important topic in arid states, where limited numbers of streams and rivers, especially smaller ones, have year-round flow and a significant portion of drainages are non-RPW. Without clear guidance defining these terms, it remains murky how states like Arizona implement the rule for the purposes defined in the Clean Water Act.

To make science-based decisions and add clarity for stakeholders, the Arizona Department of Environmental Quality (ADEQ) embarked on a journey of researching existing science, information and data sources related to flow permanence. The result is a weight of evidence approach that analyzes various data and information and scores the results of that analysis to assign a flow regime that identifies the water as an RPW or a non-RPW. To ensure precision and accuracy, ADEQ also conducted a validation study of various methodologies interpreting the scores.

This presentation will outline the weight of evidence approach developed by ADEQ, review the results of the validation study, and give examples of how ADEQ is utilizing the methodology developed to make decisions under the Clean Water Act.

2:30pm – 3:00pm Creating a Tribal Wetland Inventory

Sehoy Thrower, Parch Band of Creek Indians

Sehoy Thrower, Environmental Protection Specialist of the Poarch Band of Creek Indians (federally-recognized tribe in Alabama), worked with a contractor in 2023 to perform a Tribal Wetland Inventory and Assessment, through an EPA Wetland Protection Development Grant (WPDG). This included detailed floristic inventories and careful plant community classifications with priority given to species of cultural significance. This presentation would cover the story of prior engagement the tribe had with scientific wetland work and how very little work translated to meaningful cultural engagement with the landscape or detail-oriented specification to unique habitats of the local area. Here a detailed overview will be provided for the methodology of performing this inventory, in a way that optimizes practicality for tribal land stewardship practices. Overall findings and conclusions will be shared, including some surprising correlations found for high priority species, along with a unique approach to developing a tribal-specific Wetland Rapid Assessment Procedure for certain habitats. The presenter will also discuss how this inventory is working to carry the tribe forward with enhanced land stewardship practices in the future, by engaging with other departments in the tribal government, tribal leadership, and the community at large. The presentation will take time to overview key ideas of how this project demonstrated the unique perspective tribes can bring to redefining wetlands work, and also how state/federal/and others partners can play a role in our future efforts. The presenter will discuss their follow-up work through a pending WPDG.

Wednesday, June 19

Day 3 Morning: Moving Forward with Partnerships, Equity & Diversity

10:30am – 11:00am A history of collaborative wetland conservation in Nebraska

Ted LaGrange and Jessi Tapp, Nebraska Game and Parks Commission

Nebraska has a long history of collaborative conservation to deliver wetland conservation. We will review how this collaborative approach developed and evolved over the past 30 years. Over this time, five new partnerships were established, and 20 organizations added new funding and brought on more than 130 staff to help deliver conservation projects, many with a focus on wetlands. Collectively, there has been more than $130 million made available for wetland conservation, and the funding came from more than 230 awards from more than 30 different grant sources. The outcomes have been wetlands conserved and restored on both public and private lands, an increase in wetland science, and an increase in wetland outreach. We will summarize the lessons learned and the factors that led to success.

11:00am – 11:30am Beyond Regulations: Building Public & Political Support for Voluntary Wetland Restoration

Erin O'Brien, Wisconsin Wetlands Association

Following a particularly bruising legislative session, in 2017 Wisconsin Wetland Association's (WWA) Board and staff convened to examine the question: *How well do our policy activities align with what's needed to achieve our vision?* Our vision is to help create a state where wetlands are healthy and plentiful and support ecological and societal needs. While defending wetland regulations will always be an important part of how we work to achieve this vision, we emerged with a strong commitment to set and pursue an independent and pro-active policy agenda focused on improving Wisconsin's wetland landscape.

In this talk, WWA's Policy Programs Director Erin O'Brien will share the story of what's been pursued and achieved in the ensuing years. and how EPA Wetland Program Development Grant funding has been. Topics covered will include the power of promoting wetlands as solutions; the use of EPA Wetland Program Development grants to build partnerships and evaluate opportunities; and examples of recent of policy improvements initiated by the Wisconsin's legislature, multiple state agencies, and local units of government. These include but will not be limited to: improved cost-share eligibility for restoring hydrology in agricultural landscapes; establishment of a state-sponsored, pre-disaster flood resilience grant program; and development of a new general permit for hydrologic restoration.

The politics behind the policy improvements will also be explored, including how and why this work has received strong bi-partisan support and is helping to establish a rural, conservative constituency for wetlands conservation. More information about Wisconsin Wetlands Association can be found at: wisconsinwetlands.org.

11:30am – 12:00pm Evaluating Environmental Justice Considerations in TMDL Prioritization

Mackenzie Moore, Arizona Department of Environmental Quality

The Arizona Department of Environmental Quality (ADEQ) currently has over 500 assessed surface waters in Arizona and nearly 25,000 parameter level decisions. Of these, there are currently nearly 200 impaired waterbodies. Total Maximum Daily Loads (TMDLs) are needed to address these impairments and determine pollutant reduction targets. However, it can be a challenge to prioritize which impairments to complete these reports for since there are several factors to take into account.

In a TMDL prioritization tool developed by ADEQ in 2022, environmental justice (EJ) is a weighted category for TMDL prioritization, but prior to the development of the tool, it was not intentionally considered. In order to determine if surface water quality impairments located in or around EJ communities had been historically overlooked when deciding where to complete TMDLs, ADEQ utilized R to assess whether there was an apparent bias in the impairments selected.

Using the parameters percent low income and percent minority, we compared assessed waters that are not impaired, waters that are impaired but do not have a TMDL completed, and waters that have a TMDL completed and evaluated whether more TMDLs were done in regions with higher income and lower minority populations.

This presentation will provide an overview of the approach taken by ADEQ to analyze the TMDL prioritization process for EJ considerations and highlight how R code was leveraged throughout the analysis to display the comparisons of EJ data and assessment decisions.

Day 3 Afternoon: Buffering Programs with Resiliency and Watershed Planning

1:30pm – 2:00pm Wetland and Floodplain Restoration in New Mexico – Part 3: Engaging the Next Generation of Wetland Restoration Professionals

Karen Menetrey, Rio Grande Return; Andy Robertson, Saint Mary's University of Minnesota Geospatial Services

2:00pm – 2:30pm The Blackfeet Nation Wetland Protection and Climate Adaptation Preparedness Efforts

Emerald Grant, Blackfeet Nation; Tyler Bell, Harvard University

The Blackfeet (Amskapi Pikuni) Nation in northwestern Montana is one of the ten largest Tribal nations in the United States. The Blackfeet Reservation—in Glacier and Pondera Counties—is headquartered in Browning, Montana, and comprises 1.5 million acres. Canada borders the Reservation to the north, the foothills of the Rocky Mountain and Glacier National Park to the west, the Great Plains to the east, and Birch Creek to the south. In 1993, the Blackfeet Nation formally recognized the importance of the wetland complexes occurring within their lands with the development of the Blackfeet Tribal Wetlands Program (Wetlands Program). Initially, the Wetlands Program's primary function was to assess, oversee, and reduce wetland impacts occurring on the Reservation. Over the past 30 years, the Wetlands Program has grown in staff

and scope and serves as a Tribal wetland protection and regulatory agency. The Agency is currently developing the Wetland Program Plan (WPP), a six-year, multi-faceted Tribal wetland protection, classification/inventory, water quality standard development, and restoration initiative. In 2019, the Blackfeet Nation published their Climate Change Adaptation Plan with the fundamental underlying theme that people and nature are one and the health of people is dependent on the health of the environment. Wetland protection and restoration are critical pieces of a larger Blackfeet Nation strategy for climate adaptation. To help achieve wetland protection and climate resiliency goals, Emerald and his team at the Blackfeet Environmental Office worked with Tyler Bell, Harvard University Sustainability graduate student, to systematically identify wetland conservation and restoration sites that will aid in the identification and establishment of climate resilient aquatic resources restoration projects that benefit the Blackfeet community and the environment. Identification and prioritization of suitable wetland restoration and conservation sites allows the Tribe to respond quickly to permitting and development needs and voluntary restoration opportunities.

2:30pm – 3:00pm Protecting Wetlands at the Local Level: coastal Community Case Studies

Portia Osborne, National Association of Wetland Managers)

Wetlands play an integral role in protecting coastal communities from flooding and storm damage, improving water quality, and providing habitat for fish and wildlife. However, coastal freshwater and saltwater wetlands are being lost at a rapid rate due to development and other factors. While federal and state regulations provide protection for many coastal wetlands, there is great variation state-to-state in the extent of protections and types of wetlands that are covered. Coastal communities can further protect their wetlands from development and safeguard their communities using local ordinances. This presentation will provide an overview of eight case studies of coastal communities across the country with local wetland protections. The case studies were developed to highlight the challenges and successes that local governments face when enacting and implementing wetland protections. The local governments included in these case studies vary in size, geography, and regulatory context; however, common themes were observed across the communities. This presentation will focus on lessons learned from the eight communities profiled in these case studies and will provide examples that may be useful for other coastal communities interested in protecting their wetland resources.

Thursday, June 20

Day 4 Morning: Creative Caulking with Geospatial Analysis, Tools & Technology

9:00am – 9:30am Mapping Alabama's Coastal Headwaters using Wetland Intrinsic Potential

Kurtis Fisher[1], Christopher J. Anderson[2], Meghan Halabisky[3]

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Headwater wetlands along the northern Gulf of Mexico coast are a ubiquitous landscape feature but are difficult to map because of their transitional nature. Upwelling of groundwater through hillslope drainage exerts a strong control on slope wetland hydrology, where soils can remain saturated continuously via shallow water tables. These are important elements for regional drainage and there is a need for local and regional managers to better document their occurrence on the landscape. Due to various limitations on headwater wetland detection, we utilized the Wetland Intrinsic Potential (WIP) tool for its use of multi-scale topographic indices, hydrologic proxies, and random forest procedures that contribute to 'cryptic' wetland detection. Our resulting WIP model identified metrics which most accurately depicted the wetland-upland matrix within the Bushy Creek – Dyas Creek watershed, located near Bay Minette, Alabama. An initial model was trained and validated with an out of bag (OOB) accuracy assessment on a spatial subset of the watershed to predict wetland presence, absence, and extent. Our model resulted in an OOB accuracy rate of 96.0%, with wetland omission and commission errors of 7.0% and 2.5%, respectively. The model was then applied to the remaining spatial extent of the watershed for a secondary validation assessment. Overall accuracy for the secondary validation dataset was 92.3%, with wetland omission and commission errors of 14.0% and 4.5%, respectively. Early indications suggest the WIP tool reliably discerned wetlands from uplands, with an AUC of 0.98 and kappa coefficient of 0.83. Further analyses resulted in considerations for practitioners to address in model building, such as thresholds below 0.5 to better detect slope wetlands. Our findings can be used to infer the applicability and limitations of this method for wetland mapping along the northern Gulf of Mexico and support future models which explore land use/cover and hydrogeomorphic relationships with wetlands.

9:30am – 10:00am How Wet Must a Wetland Be to Have Federal Protections? Estimating a Range of Potential Impacts from Sackett vs EPA Using Flood Frequency

Adam Gold, Environmental Defense Fund

In 2023, the Supreme Court's majority opinion in Sackett v. EPA created an unclear requirement that federally protected wetlands must have a "continuous surface connection" to federally protected waters. This study estimates the potential impact of interpretations of the ruling on federal wetlands protections, using wetland flooding frequency as a proxy for the new requirement. An estimated 17 million acres (19%) to nearly all 90 million acres of non-tidal wetlands in the conterminous US could be without federal protections, and variability in state protections creates hotspots of risk. The high-level estimates provided here represent a first step towards understanding the potential extent of the impact of Sackett v. EPA on federal wetlands protections and highlight the uncertainty introduced by the ruling.

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