



PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)

TO: Governance Committee (GC)
FROM: Independent Scientific Advisory Committee (ISAC) Selection Panel and Dr. Chadwin Smith, Executive Director's Office (EDO)
RE: ISAC Member Recommendations
DATE: May 31, 2022

The PRRIP ISAC Selection Panel, appointed by the GC in September 2021, forwards the following recommendations to the GC regarding new ISAC members and the composition of the ISAC going forward:

- *Recommends the appointment of Dr. Michal Tal* (private consultant) to fill the open fluvial geomorphologist (vegetation focus) seat on the ISAC. If appointed by the GC, Dr. Tal would serve an initial three-year term from July 2022 through June 2025.
- *Recommends the appointment of Dr. Aaron Pearse* (U.S. Geological Survey) to fill the avian ecology (whooping crane focus) seat on the ISAC, but only after the GC is informed about and can discuss two issues:
 - 1) How does the GC feel about adding a Department of Interior (DOI) employee to the ISAC? For discussion purposes – the Program has done this before when Dr. Robb Jacobson of the USGS served on the ISAC from 2008-2014.
 - 2) Ensuring a common understanding between the PRRIP and Dr. Pearse as to what it would mean to be an ISAC member. Namely, serving as an ISAC member and providing independent scientific counsel to the GC and thus not being able to do actual Program work, sign on as a co-author to Program-related publications, etc. This came up in the context of thinking Dr. Pearse might play a role as a collaborator on WC-related research planned in the Extension Science Plan that relates to more migration corridor-wide issues. Instead, if Dr. Pearse joins the ISAC, he cannot be this kind of collaborator. He will still be able to impart his avian ecology/WC wisdom to the Program, just in a more independent role. Dr. Pearse was alerted to this issue and he responded that he understands what his role would be as an ISAC member if appointed by the GC and that he would indeed refrain from engaging in direct Program-related work.
- If appointed by the GC, Dr. Pearse would serve an initial three-year term from July 2022 through June 2025.
- At the discretion of Dr. Smith of the EDO, *re-appoint Dr. Ned Andrews* (private consultant) to the ISAC for at least one more year. Dr. Jennifer Hoeting of the ISAC mentioned the idea of calling Dr. Andrews back for at least one more year. He has been much more engaged lately and the increasing focus on sediment would make his input on the ISAC very useful. Plus, he could jump back in without needing to climb up the steep PRRIP learning curve. The ISAC Selection Panel was generally indifferent to whether to add Dr. Andrews back and left it up to Dr. Smith of the EDO to decide



whether to pursue this option. Dr. Smith did ask Dr. Andrews whether he would be open to that idea and he responded he is willing, able, and eager to continue on the ISAC.

- If appointed by the GC, Dr. Andrews would serve a one-year term from July 2022 through June 2023 with possible extension at the discretion of the GC.
- The ISAC Selection Panel *did not make a recommendation* for filling the open river restoration (engineering focus) seat on the ISAC. Dr. Andrews would fill this open position for the next year and Dr. Smith and the Selection Panel would continue searching for potential candidates. The seat would remain “open” until a candidate is identified that the Selection Panel wants to recommend for appointment to the GC in place of or in addition to Dr. Andrews.
- As previously discussed with the GC, Dr. Jennifer Hoeting, Dr. David Galat, and David Marmorek would all retain their current membership on the ISAC.

Dr. Smith of the EDO developed the attached report (**Exhibit A**) in response to the Program’s request in 2021 for candidates to fill open ISAC seats. This report, group discussions, and candidate interviews by the Selection Panel were all used in the process of developing this set of ISAC member recommendations for the GC. More details on this process will be discussed with the GC during the June 2022 GC Quarterly Meeting.



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EXHIBIT A

PRRIP ISAC CANDIDATE REPORT



PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)

PRRIP Independent Scientific Advisory Committee (ISAC) Candidate Report

Prepared by: Dr. Chadwin Smith, Executive Director's Office (EDO)

February 2022

I. Introduction and Background

This report was prepared to assist the PRRIP in identifying candidates for three (3) open seats on the ISAC in 2022. The three open ISAC seats encompass the following areas of expertise:

- 1) Avian ecology (whooping crane focus)
- 2) Fluvial geomorphology (vegetation focus)
- 3) River restoration (engineering focus)

The ISAC is a standing Advisory Committee for the PRRIP and is comprised of six independent scientists knowledgeable in technical areas critical to implementation of the Extension Science Plan. The ISAC provides independent scientific counsel and advice to the Governance Committee (GC), the decision-making body for the PRRIP. The ISAC is currently composed of six (6) members covering a wide range of areas of scientific expertise important to evaluating the implementation and analysis of Program science. The categories of expertise are matched to the current primary scientific areas of interest for the Program and may be modified over time based on Program learning and updated areas of scientific and technical priorities. It is possible that an individual ISAC member may fulfill more than one of the areas of expertise below. To the extent possible, more than one ISAC member should have experience in the science and application of adaptive management (AM) within their area of disciplinary expertise.

- Avian ecology (whooping crane focus)
- Adaptive management and decision-making
- Ecological statistics
- Fish ecology (pallid sturgeon focus)
- Fluvial geomorphology (vegetation focus)
- River restoration (engineering focus)

New ISAC members will be evaluated by a Selection Panel appointed by the GC to develop criteria for evaluating potential ISAC candidates, review application materials, and recommend new members to the GC. The GC will make the final decision on ISAC member appointments. Dr. Smith of the EDO facilitates this process.

II. Identification of ISAC Candidates

The following is a brief summary of the process used by Dr. Smith to identify potential ISAC candidates for review by the Selection Panel

Step 1 – Develop an External Solicitation document seeking ISAC candidates for specific areas of expertise.

Dr. Smith developed an External Solicitation (**Appendix A**) in consultation with the PRRIP Executive Director, EDO staff, and members of the ISAC Selection Panel. That External Solicitation identifies the following specific expertise needs for the three open ISAC seats:



- 46 **1. Avian ecology (whooping crane focus).** Expertise in migratory waterbird ecology including current
47 understanding of habitat and life history requirements, migratory strategies and patterns of
48 resource use through migratory corridors, and ecological threats to these species and habitats.
49 Current understanding of how climate change may affect habitat availability, patterns of use, and
50 the status of migratory populations. Experience in the area of migratory bird population dynamics
51 including status of populations, differential survival and reproduction, and resulting effects on
52 species viability. Prefer experience with endangered species recovery and specifically with whooping
53 crane ecology and population dynamics.
54
- 55 **2. Fluvial geomorphology (vegetation focus).** Expertise in the physical dynamics and processes of
56 sandbed braided rivers including special emphasis on the complex relationship between vegetation
57 and channel morphology.
58
- 59 **3. River restoration (engineering focus).** Expertise in river restoration techniques including control of
60 invasive riparian vegetation, hydrology, eco-hydraulics, sediment dynamics/transport, and
61 hydrologic-hydraulic modeling. Familiarity with these techniques in the context of challenges related
62 to non-stationarity, channel capacity limitations, and infrastructure.
63

64 **Step 2 – Solicit ISAC candidates.**

65 ISAC candidates were solicited in the following manner:

- 66 • Dr. Smith’s personal expertise network.
- 67 • Recommendations from the PRRIP Executive Director and EDO staff.
- 68 • Recommendations from members of the PRRIP Governance Committee (GC), Technical Advisory
69 Committee (GC), Water Advisory Committee (WAC), Land Advisory Committee (LAC), and
70 current members of the ISAC.
- 71 • Distribute the External Solicitation to relevant refereed journals, expertise networks via listservs,
72 and professional societies.
- 73 • Requesting that contacted individuals distribute the External Solicitation to spread the request
74 more widely.
75

76 **Step 3 – Contact prospective ISAC candidates.**

77 ISAC candidates were contacted to determine their interest, availability, and willingness to serve. This
78 contact was electronic via email and also via phone calls. Each candidate was provided with a copy of
79 the External Solicitation and Dr. Smith discussed time commitments, experience, and potential conflicts
80 of interest with candidates.
81

82 **Step 4 – Obtain a cover letter and current curriculum vitae (CV) from each ISAC candidate.**

83 Each candidate was asked to provide a cover letter explaining their interest in the ISAC position and
84 their relevant expertise as well as their most current CV. All cover letters and CVs are attached in
85 **Appendix B.**
86

87 **Step 5 – Obtain a “no conflict-of-interest” statement from each ISAC candidate.**

88 Each individual choosing to pursue ISAC candidacy was asked to sign a PRRIP no-conflict-of-interest
89 form. All signed forms are attached in **Appendix C.**



III. ISAC Candidates

Table 1 provides a census list of all potential ISAC candidates recommended by various sources and contacted by Dr. Smith to evaluate their interest in and availability for ISAC membership. **Table 1** also indicates the response of each contacted individual to this inquiry.

Table 1. Individuals contacted regarding their interest in and availability for ISAC membership.

First	Last	Terminal Degree	Affiliation	Recommended by:	Status
ISAC seat: Avian Ecology (whooping crane focus)					
Jeb	Barzen	M.S.	Private Lands Conservation LLC	Matt Rabbe, USFWS	Candidate
David	Koons	Ph.D.	Colorado State University	Jennifer Hoeting, ISAC	Candidate
Aaron	Pearse	Ph.D.	USGS	Catherine Lindell, Ornithological Appl.	Candidate
Jane	Austin	Ph.D.	USGS	Matt Rabbe, USFWS	Declined
Bart	Ballard	Ph.D.	Texas A&M University - Kingsville	Dale Gawlik, Texas A&M	Declined
Dale	Gawlik	Ph.D.	Texas A&M University - Corpus Christi	Kate Schlepr, The Waterbird Society	Declined
Kyle	Horton	Ph.D.	Colorado State University	Jennifer Hoeting, ISAC	Declined
Anne	Lacy	Ph.D.	International Crane Foundation	Matt Rabbe, USFWS	Declined
Liz	Smith	Ph.D.	International Crane Foundation	Matt Rabbe, USFWS	Declined
Richard	Urbanek	n/a	n/a	Matt Rabbe, USFWS	n/a
ISAC seat: Fluvial Geomorphology (vegetation focus)					
Jason	Alexander	Ph.D.	USGS	Michelle Gess, State of Wyoming	Candidate
Sharon	Bywater-Reyes	Ph.D.	University of Northern Colorado	External Solicitation	Candidate
Michal	Tal	Ph.D.	European Center for Research and Education of Environmental Geosciences	Karen Gran, University of Minnesota	Candidate
Steve	Taylor	Ph.D.	Western Oregon University	External Solicitation	Candidate
Karen	Gran	Ph.D.	University of Minnesota	Jason Farnsworth, ED	Declined
Susan	Galatowitsch	Ph.D.	University of Minnesota	Jason Farnsworth, ED	Declined
Ryan	Morrison	Ph.D.	Colorado State University	Brian Bledsoe, ISAC	Declined
Andrew	Wilcox	Ph.D.	University of Montana	Karen Gran, University of Minnesota	Expressed interest; no materials
ISAC seat: River Restoration (engineering focus)					
Doug	Shields	Ph.D.	Shields Engineering LLC	External Solicitation	Candidate
Brad	Anderson	M.S.	Anderson Consulting Engineers	Jennifer Hoeting, ISAC	Declined
Craig	Fischenich	Ph.D., P.E.	FISCH Engineering	Dave Marmorek, ISAC	Expressed interest; no materials
Kim	Lennberg	M.S.	Alba Watershed Consulting	Bill Taddicken, Audubon	n/a



From the list of potential candidates identified in Table 1, **Table 2** identifies the individuals choosing to pursue candidacy for each of the three (3) open ISAC seats in 2022. Candidates are listed alphabetically by last name in each category. Dr. Smith critically reviewed each ISAC candidate to identify and attempt to avoid all conflicts of interests and ensure availability to serve. Immediately following **Table 2** are short biographical sketches for each proposed ISAC member based on information in their cover letters and CVs. For additional information about each candidate, please refer to their submitted cover letters and CVs in **Appendix B**. **Appendix C** contains a signed no-conflict-of-interest form for each ISAC candidate.

Table 2. ISAC candidates presented to the ISAC Selection Panel for consideration.

First	Last	Terminal Degree	Affiliation	Recommended by:
ISAC seat: Avian Ecology (whooping crane focus)				
Jeb	Barzen	M.S.	Private Lands Conservation LLC	Matt Rabbe, USFWS
David	Koons	Ph.D.	Colorado State University	Jennifer Hoeting, ISAC
Aaron	Pearse	Ph.D.	USGS	Catherine Lindell, Ornithological Applications
ISAC seat: Fluvial Geomorphology (vegetation focus)				
Jason	Alexander	Ph.D.	USGS	Michelle Gess, State of Wyoming
Sharon	Bywater-Reyes	Ph.D.	University of Northern Colorado	External Solicitation
Michal	Tal	Ph.D.	European Center for Research and Education of Environmental Geosciences	Karen Gran, University of Minnesota
Steve	Taylor	Ph.D.	Western Oregon University	External Solicitation
ISAC seat: River Restoration (engineering focus)				
Doug	Shields	Ph.D.	Shields Engineering LLC	External Solicitation



ISAC Candidate Biographical Sketches



CANDIDATE FOR PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM ISAC
Avian Ecology (Whooping Crane Focus)

NAME: John ("Jeb") Anthony Barzen
TITLE: Private consultant
AFFILIATION: Private Lands Conservation LLC
ADDRESS: S-12213 Round River Trail
Spring Green, WI 53588
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EMAIL: jeb@privatelandscconservation.org

EDUCATION:

University of Minnesota, 1982	B.S. Wildlife Biology
University of North Dakota, 1989	M.S. Biology (major in Wildlife Biology)

UNIQUE QUALIFICATIONS FOR ISAC:

- Member of National Research Council (NRC) panel that evaluated the Big Bend stretch of the Platte River as critical habitat for the Whooping Crane, Piping Plover, Least Tern and Pallid Sturgeon.
- Currently working on paper related to powerlines and whooping crane mortality.

KEY POINTS FROM BIOGRAPHY:

- Spent a 35-year career studying cranes and the restoration ecology of the ecosystems that serve as crane habitat. My research and conservation efforts have occurred in Southeast Asia, China, Russia, and North America. Though I have studied Siberian, Sarus, White-naped, Hooded, and Eurasian Cranes abroad, most of my research has focused upon Whooping and Sandhill Cranes.
- Themes of my research have included reintroduction, population ecology, habitat use, crop damage deterrence, integrating agriculture with conservation, restoration ecology and long-term study of marked individuals.
- I have published 45 non-peer reviewed and 51 peer-reviewed papers, most of which are focused upon cranes, 11 of which specifically focused upon Whooping Cranes.
- Director, Field Ecology Department, International Crane Foundation (1987 – 2015).



CANDIDATE FOR PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM ISAC Avian Ecology (Whooping Crane Focus)

NAME: David N. Koons, Ph.D.
TITLE: Professor, James C. Kennedy Endowed Chair of Wetland & Waterfowl Conservation, Department of Fish, Wildlife, and Conservation Biology
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 Colorado State University
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EDUCATION:

Montana State University, 1998	B.S. in Biology, minor in Statistics
Montana State University, 2001	M.S. in Fish and Wildlife Management
Auburn University, 2005	Ph.D. in Wildlife Science, minor in Statistics

UNIQUE QUALIFICATIONS FOR ISAC:

- I have not worked on whooping cranes specifically but am a globally recognized leader in studying population dynamics from both basic and applied vantages. In fact, a relatively small group of biologists and managers work on whooping cranes directly, and by being external to this group, I feel well positioned to provide unbiased insights into the information needs for managing and recovering this endangered species. A key challenge with migratory species such as whooping cranes is the need to decouple the relative influence of seasonal impacts on their demography, including carry-over effects of wintering and migratory ecology on subsequent reproductive success.
- Research conducted by my former Ph.D. student Kristen Ellis led to eventual collaborations involving PRRIP target species. Kristen’s dissertation research focused on the demography and breeding behavior of at-risk snowy plovers, which then launched her into a fulltime position with the USGS Northern Prairie Wildlife Research Center that produced collaborations on seasonal and cross-seasonal demographic studies of piping plovers.
- Ability to work with public and private landowners to create “recharge wetlands” or “augmentation ponds” in a manner that produces high quality habitat for waterbirds at key times along migration (e.g., moist-soil wetlands or wet meadows) while recharging groundwater flow into the N. Platte and S. Platte Rivers for downstream users during particular times of need. For example, research similar to that of my current Ph.D. student Casey Setash in the N. Platte Basin that is evaluating the benefits (or lack thereof) of flood- irrigated hayfield meadows for waterfowl reproductive success.

KEY POINTS FROM BIOGRAPHY:

- 85 peer-reviewed publications: 22 as 1st author, 38 in advisory role.
- 2006: Statistical Survival Analysis; International Max Planck Research School for Demography.
- 2005 – 2006: Biodemography: matrix population models, quantitative genetics, mark-recapture/recovery survival analysis; International Max Planck Research School for Demography.
- I have recently become Co-PI on a long-term study of black brant that has produced some of the highest quality data on seasonal carry-over effects and how they shape cross-seasonal population



dynamics. These areas of research have recently become my focus for the next 5-10 years. If selected to serve on ISAC, I will be able to draw on my aforementioned experiences to evaluate scientific shortcomings, progress, and future needs for adaptively recovering whooping cranes and other species that depend on the Platte River ecosystem while also making sure that adaptive management is leading to the information that it is believed to produce (see recent Koons et al. 2022 publication – **Koons, D.N.**, T.V. Riecke, G.S. Boomer, B.S. Seding, J.S. Seding, P.J. Williams, and T.W. Arnold. 2022. A niche for null models in adaptive resource management. Ecology and Evolution 12:e8541).

- I have informally helped the USFWS interpret monitoring data and research to aid in their decision of whether or not to delist spectacled eiders, and I currently serve on the Delta Waterfowl Science Advisory Board.



CANDIDATE FOR PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM ISAC

Avian Ecology (Whooping Crane Focus)

NAME: Aaron T. Pearse, Ph.D.
TITLE: Research Wildlife Biologist
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 Jamestown, ND 58401
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EDUCATION:

Kansas State University, 1998	B.S. with honors, Fisheries and Wildlife Biology
University of Idaho, 2002	M.S., Wildlife Resources
Mississippi State University, 2007	Ph.D., Forest Resources (Wildlife & Fisheries)

UNIQUE QUALIFICATIONS FOR ISAC:

- I provide expert advice regarding the status, conservation planning, research needs, and management of migratory birds, primarily waterfowl, sandhill cranes, and whooping cranes. Since 2017, I have served on the International Whooping Crane Recovery Team as a scientific advisor to team co-leads at the U.S. Fish and Wildlife Service (USFWS) and Canadian Wildlife Service (CWS). In this role, I have participated in development and parameterization of a population viability analysis for whooping cranes and provided review of a recently drafted USFWS species status assessment.
- I have a previous relationship with the Program as a research partner on tracking efforts and directed funding to characterize roosting locations across the migration corridor. I believe my familiarity with past Program activities, the Platte River, and migratory species that use the river will be an asset to the Program.
- I have authored or coauthored 12 peer-reviewed publications and 19 technical presentations that have addressed habitats, migration strategies, migration corridors, demographic vital rates, and threats to whooping cranes.
- A portion of my current research efforts address potential climate change threats to whooping cranes and other migratory birds in the midcontinent of North America. I am leading a team quantifying changes in wetland use by migrating whooping cranes with respect to geography and drought severity. Follow-up work will include a network analysis of more consistently available surface water resources (for example, reservoirs and river systems) and how these sites may serve to maintain a viable migratory network of stopover sites for migrating whooping cranes and other birds if drought conditions severely limit more ephemeral surface water resources.

KEY POINTS FROM BIOGRAPHY:

- I also have led or coauthored eight research products on sandhill cranes, primarily related to migration staging habitat use and selection along the Platte River. Finally, much of my remaining science products and efforts relate to avian ecology and management, including two coauthored works on the breeding ecology of piping plovers and current projects using long-term data to understand spatiotemporal variation in duck nest survival and how effectively management actions are meeting current conservation objectives.



CANDIDATE FOR PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM ISAC Fluvial Geomorphology (Vegetation Focus)

NAME: Jason S. Alexander, Ph.D.
TITLE: Supervisory Hydrologist – Surface Water Studies Chief
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 Wyoming-Montana Water Science Center
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 Cheyenne, WY 82007
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EDUCATION:

Colorado State University, 2000	B.S., Geology and Watershed Science (dual)
Utah State University, 2007	M.S., Watershed Science
University of Wyoming, 2020	Ph.D., Geology

UNIQUE QUALIFICATIONS FOR ISAC:

- I am an expert in fluvial processes in low-slope sand bed rivers of the great plains, including the Platte River. I have 15 academic journal or government publications on the subject as well as a host of presentations at professional meetings.
- Much of my recent work has involved development of probabilistic tools for prediction of locations and geometries of sandbars in Mississippi-Missouri River system. This work is directly tied to understanding creation, destruction, and flooding of nesting habitat for the interior least tern and piping plover but is widely applicable to other species and river systems.

KEY POINTS FROM BIOGRAPHY:

- Since 2004, the bulk of my work has involved researching and advising on human-effects on river systems in the mountain west and Great Plains of North America. This research has spanned research topics from the effects of invasive vegetation on channel form to prediction of greenwave ungulate migrations using streamflow data.
- A large portion of my life and professional career has been dedicated to exploring and understanding these so-called 'flyover' rivers so that they can be better managed in balance with the inevitable needs of the economies that depend on them. This involves application of physical theory to develop conceptual and quantitative scientific tools for use in everyday river management problems. I have a strong ethic of independence and objectivity in my work and pride myself on letting data and research findings drive stakeholder discussions and decision making.



CANDIDATE FOR PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM ISAC Fluvial Geomorphology (Vegetation Focus)

NAME: Sharon Bywater-Reyes, Ph.D.
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Earth and Atmospheric Sciences
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EDUCATION:

Southern Oregon University, 2007	B.S., Geology; B.A., Language/Culture (German)
University of Wyoming, 2009	M.S., Geology
University of Montana, 2015	Ph.D., Geosciences

UNIQUE QUALIFICATIONS FOR ISAC:

- My Ph.D. research focused explicitly on vegetation-river interactions. As an EPA Star Fellow, I quantified the conditions under which riparian vegetation can survive flood flows and the associated impact vegetation encroachment can have on sedimentation and flood hydraulics, with an emphasis on cottonwoods and tamarisk. By linking field experiments measuring seedling uprooting forces to numerical calculations of flow forces, I showed that substantial bed scour is required to uproot seedlings (Bywater-Reyes et al., 2015). Using remote sensing (LiDAR), GIS, and spatial statistical techniques, I characterized relationships among vegetation morphology and river topography at the patch and reach scales (Bywater-Reyes et al., 2017). I showed that channel topography is correlated with vegetation density across scales, demonstrating vegetation's impact on channel morphology. Finally, my simulations of vegetation's impact on channel-bend and meander processes using a high-resolution hydrodynamic model quantified how vegetation modifies flood hydraulics under varied vegetation and flood conditions (Bywater-Reyes et al., 2018).

KEY POINTS FROM BIOGRAPHY:

- I started my research career in 2007 where I began research on interactions among climate, tectonics, and fluvial systems (M.S. Geology University of Wyoming 2009; Bywater-Reyes et al., 2010). Since then, I have earned a Ph.D. in Fluvial Geomorphology (2015, University of Montana), conducted research as a postdoctoral scholar, and will soon be a tenured professor of Environmental Geoscience at the University of Northern Colorado where I teach hydrology and geomorphology, conduct research on river restoration and invasive species dynamics, and serve the Coalition for the Poudre River Watershed in an advisory capacity regarding river restoration projects. I collectively have 10 years of experience working within river science, and ~14 years conducting high-impact research (since graduating with a B.S. Geology in 2007 Summa Cum Laude).
- Since starting at University of Northern Colorado in 2017, I have continued my line of research investigating influences on river form and function with implications for river management. I collaborate with local consultants (Stillwater Sciences), nonprofits (e.g., Coalition for the Poudre



River Watershed), and municipalities (e.g., City of Greeley, City of Windsor, Larimer County, City of Fort Collins) to monitor several river restoration sites throughout the Front Range of Colorado. For one of these projects, I mentored a master’s student (Haylie Brown, 2020) who evaluated the geomorphic and ecological effectiveness of a river restoration project: “Developing Metrics and Protocols for Evaluating Restoration Success for the Little Thompson River, Colorado.” I have also expanded my research investigating impacts of native versus invasive species on river processes. I am working with collaborators to study the distribution, composition, and hydrogeomorphic impacts of Russian olive on the Powder River of Montana.



CANDIDATE FOR PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM ISAC
Fluvial Geomorphology (Vegetation Focus)

NAME: Michal Tal, Ph.D.
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EDUCATION:

Hebrew University of Jerusalem, 1999	B.A., Geography (magna cum laude)
University of Minnesota, 2008	Ph.D., Geology (minor, Civil Engineering)

Postdoctoral researcher:

2007-2009, Institut de Physique du Globe de Paris (IPGP), Université Paris
2009-2010, Laboratoire d'Hydraulique Saint Venant, Ecole des Ponts ParisTech (ENPC)

UNIQUE QUALIFICATIONS FOR ISAC:

- The challenges on the Platte River embody many of the major themes I have been interested in and worked on throughout my career including riparian vegetation encroachment in response to changes in water and sediment supply, environmental flows, and habitat restoration.
- My interest in experimental fluvial geomorphology (during my undergraduate I conducted physical experiments to determine whether ephemeral rivers developed surface armouring) led me to pursue my studies at the Saint Anthony Falls Laboratory in Minneapolis, a world renown institute for interdisciplinary experimental river science. My strong motivation to conduct research addressing questions at the heart of river management led me to choose to study the interactions of riparian vegetation and channel dynamics as the topic of my PhD. Specifically, I studied how the opportunistic colonization of braid plain during low flows by riparian vegetation could lead braided rivers to evolve to single-thread channels (Tal et al., 2004; Tal and Paola, 2007; Tal and Paola 2010). My work has had a broad impact on both the scientific and management communities.
- Although my experiments were not designed to be a prototype of any specific river system, the existing and ongoing studies on the Platte River were a major inspiration for my PhD and informed the specific questions I aimed to answer (analysis of flow discharge and channel width data from USGS gauging stations along the Platte were an important part of the first paper I published, Tal et al., 2004). Throughout my studies I interacted extensively with Tim Randle from the U.S. Bureau of Reclamation to ensure that my experiments were relevant to the challenges his team was dealing with on the Platte River. Given the clear connection between my experiments and the Platte, in 2006 I was invited by a pair of naturalists from Minnesota familiar with my work to travel with them to Rowe Sanctuary to witness the spring migration of the Sandhill Cranes. Experiencing first-hand the birds' dependence on Platte River habitat and learning about the importance of preserving and restoring it, strongly contributed to my sense of the relevancy and need for the research I was conducting. In 2012 I had the opportunity to return to the Platte as part of a collaboration with a



geochemist and ecologist to study the impacts of the spread of non-native grass *Phragmites australis* (common reed) on silica sequestration (Triplett et al., 2014; Triplett et al., 2020). During my PhD I was invited to work at the National Institute of Water and Atmospheric Research (NIWA) in Christchurch, New Zealand. There I analyzed aerial imagery to quantify vegetation encroachment in response to flow diversions for hydroelectricity on the Waitaki River (an alpine gravel-bed river in contrast to the Platte's sand-bed river; Hicks et al., 2008).

- I have continued to maintain a keen interest in riparian vegetation and channel morphodynamics in both gravel-bed and sand-bed rivers, and, owing to the expertise I established through my PhD work, I am frequently invited to collaborate, supervise, and evaluate work on this topic. The projects range from quantifying vegetation encroachment in response to changes in discharge and sediment loads and requirements to mitigate it to directly improving the predictive capabilities of numerical models (Gran et al., 2015; Winterberger, 2015; Jourdain, 2017; Hortobagy, 2018; Serlet, 2018; Bodwes, 2021; Jiaz, 2022).

KEY POINTS FROM BIOGRAPHY:

- Based in France but willing and able to travel to annual Science Plan Reporting Session, fall ISAC meetings, etc.
- I completed my undergraduate in Physical Geography from the Hebrew University of Jerusalem in 1999 and went on to obtain a PhD in Geology with a minor in Civil Engineering in 2007 from the University of Minnesota. Following my PhD, I moved to France to join my husband (a French national). I worked as a postdoc for 3 years at the Institute of Global Physics in Paris and was hired as an assistant professor at the University of Aix-Marseille / CEREGE Laboratory (Aix-en-Provence) in 2010 where I currently hold a joint appointment in Earth Science and Geography.
- On the Buëch River, an alpine gravel bed river that constitutes a major tributary of the Durance River, my research group has been studying how well existing empirical and numerical formulations predict sediment flux based on a unique set of data consisting of sediment volumes accumulated in a large gravel pit (capacity 180 000 m³) dredged by the French electric company (EDF) at the downstream end of the river (discharge is measured at a nearby dam). Also, using high-resolution photogrammetry (acquired by drone) to measure bed evolution, we have applied the morphological method to estimate sediment flux along a 7 km reach of braid plain and studied its relation to channel morphology and hydraulics (PhD Coutaz, 2021; ZABR-AE report, 2021). On the Rhone River, my group has focused on quantifying the impacts of channel narrowing due to embankments (constructed at the end of the 19th century) and flow diversions for hydroelectricity and gravel mining (throughout the 2nd half of the 20th century) on bed elevation, surface grain size, and sediment flux, using bed samples, historical bathymetry, and numerical modeling (PhD Parrot, 2015; Vazquez-Tarrio et al., 2019; OSR reports 2014, 2017, 2020). On both the Buëch and Rhone rivers, we are using 1D morphodynamic modeling to study the impacts of dams and gravel augmentation to mitigate the effects of sediment deficits below them and we are collaborating with eco-hydraulic engineers specialized in statistical habitat models to determine how post-dam and post-reinjection changes in hydraulics and surface grain size affect the quality of fish habitat (OSR report 2021, ZABR-AE report 2021).
- My research has always been carried out within the framework of partnerships between scientists and river managers (e.g., OSR, EDF, CNR, SMIGIBA, SMAVD, etc.) and collaborations amongst different disciplines (Earth Science, Geography, Engineering, Ecology, etc.). These experiences have only reinforced my strong belief in the need for cross-disciplinary and multi-institute platforms, such as the PRRIP, to ensure the success of large-scale restoration projects.



CANDIDATE FOR PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM ISAC
Fluvial Geomorphology (Vegetation Focus)

NAME: Steve Taylor, Ph.D.
TITLE: Professor of Geology
AFFILIATION: Earth and Environmental Science Department
Western Oregon University
ADDRESS: 345 Monmouth Ave. N.
Monmouth, OR 97361
PHONE: (503) 838-8398
EMAIL: taylors@wou.edu

EDUCATION:

Slippery Rock University, 1982	B.S., Geology (summa cum laude)
Washington State University, 1985	M.S., Geology
West Virginia University, 1999	Ph.D., Geology

UNIQUE QUALIFICATIONS FOR ISAC:

- I have over 23 years of teaching, research and service experience at WOU with an emphasis on Geomorphology, Environmental Geology and Geographic Information Systems. I completed my Ph.D. in Fluvial Geomorphology at West Virginia University. The focus of my research was on comparative geomorphic analysis of three forested watersheds in the Central Appalachians of Virginia and West Virginia, upper Potomac and Ohio river basins, respectively. The study emphasized geomorphic mapping, hillslope-channel interconnections, sediment storage, and sediment transport efficiency over historic / geologic time scales. My master's degree research at Washington State University similarly focused on fluvial sedimentology and basin analysis, with studies involving meandering and braided river facies in ancient environments, using modern analogs for comparison, including the Platte River amongst others.

KEY POINTS FROM BIOGRAPHY:

- Dr. Stephen Taylor, RG/LG, holds a Ph.D. in Geology from West Virginia University with expertise in fluvial geomorphology, watershed analysis, environmental geology, and geographic information systems (GIS). In addition to over 22 years of teaching and research experience at Western Oregon University (WOU), Dr. Taylor has served in several leadership roles including six years as chair of the WOU Division of Natural Sciences and Mathematics, two years as interim chair of the WOU Music Department, one year as interim chair of the WOU Chemistry Department, and six years as board member/past chair of the Oregon State Board of Geologist Examiners. Dr. Taylor's professional experience spans a diverse array of topics including watershed analysis, fluvial geomorphology, sedimentology, terrain morphometry, rapid bio-assessment of *salmonid*, environmental restoration, invasive plant distribution, aquifer characterization and mine-land reclamation. In addition to his technical background, Dr. Taylor is a highly experienced educator.



CANDIDATE FOR PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM ISAC River Restoration (Engineering Focus)

NAME: F. Douglas (“Doug”) Shields, Jr., Ph.D., P.E., D.WRE

TITLE: Principal and Consulting Hydraulic Engineer

AFFILIATION: Shields Engineering LLC

ADDRESS: 850 Insight Park

University, MS 38677

PHONE: (662) 380-3944

EMAIL: doug2shields@gmail.com

EDUCATION:

Harding University, 1975	B.S. Mathematics, minor Physics (summa cum laude)
Vanderbilt University, 1977	M.S., Environmental and Water Resources Engineering
Colorado State University, 1987	Ph.D., Hydraulics

UNIQUE QUALIFICATIONS FOR ISAC:

- I have been involved in river restoration research, consulting and practice for about 35 years. My work has spanned a wide range of topics: sedimentation, erosion, large wood, plant materials, interactions between plants and bank stability, effects of woody plants on flood control levees and other structures, fish habitat restoration and others. I have worked in some capacity in public and private ventures in most major ecoregions of the continental U.S. I have served as a reviewer for PRRIP projects twice: Monitoring Protocol for Channel Geomorphology and In-Channel Vegetation (2009), Whooping Crane Synthesis Chapters and Correlates of Whooping Crane Habitat Selection and Trends in Use in the Central Platte River, Nebraska (“West Report”) (2016).

KEY POINTS FROM BIOGRAPHY:

- Dr. Doug Shields has 44 years of experience in water resources and environmental engineering, including 12 years working for the U.S. Army Corps of Engineers (Corps) and 22 years as a Research Hydraulic Engineer at the National Sedimentation Laboratory (NSL) in Oxford, Mississippi. Dr. Shields’ research focuses on the response of fluvial systems to human influences and development of environmental design criteria for all types of channel stabilization and modification projects, including streambank erosion controls and management of riverine backwaters. He is a leading authority on stream and river restoration. Doug has authored or coauthored more than 300 technical publications and has completed consulting projects dealing with stream restoration, erosion protection of riparian cultural resources sites, streambank erosion, geomorphic assessment, and local flooding.



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Appendix A

PRRIP External Solicitation for ISAC Candidates



PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)

Independent Scientific Advisory Committee (ISAC)

External Solicitation for Potential Members

December 2021

POSITION SUMMARY

The PRRIP is seeking potential candidates for three (3) open seats on the ISAC in 2022. The ISAC provides independent scientific counsel and advice to the Governance Committee (GC), the decision-making body for the PRRIP. The ISAC is currently composed of six (6) members covering a wide range of areas of scientific expertise important to evaluating the implementation and analysis of Program science. The three open ISAC seats encompass the following areas of expertise:

- 1) Avian ecology (whooping crane focus).** Expertise in migratory waterbird ecology including current understanding of habitat and life history requirements, migratory strategies and patterns of resource use through migratory corridors, and ecological threats to these species and habitats. Current understanding of how climate change may affect habitat availability, patterns of use, and the status of migratory populations. Experience in the area of migratory bird population dynamics including status of populations, differential survival and reproduction, and resulting effects on species viability. Prefer experience with endangered species recovery and specifically with whooping crane ecology and population dynamics.
- 2) Fluvial geomorphology (vegetation focus).** Expertise in the physical dynamics and processes of sandbed braided rivers including special emphasis on the complex relationship between vegetation and channel morphology.
- 3) River restoration (engineering focus).** Expertise in river restoration techniques including control of invasive riparian vegetation, hydrology, eco-hydraulics, sediment dynamics/transport, and hydrologic-hydraulic modeling. Familiarity with these techniques in the context of challenges related to non-stationarity, channel capacity limitations, and infrastructure.

OVERVIEW OF THE PRRIP AND THE ISAC

The PRRIP initiated on January 1, 2007, as a basin-wide effort between the states of Colorado, Wyoming, and Nebraska and the Department of Interior (Bureau of Reclamation and U.S. Fish and Wildlife Service) to provide land, water, and scientific monitoring and research to assist in the conservation of and evaluate Program benefits for the target species (whooping crane, interior least tern [now de-listed], piping plover, pallid sturgeon). The Program is being implemented in an incremental manner, with the First Increment covering the 13-year period from 2007 through 2019 and the First Increment Extension covering a 13-year period from 2020 through 2032. In general, the purpose of the Program is to implement certain aspects of the Service's recovery plans for the target species that relate to the Program's identified "associated habitats" in the central Platte River by securing defined benefits for those species and their habitats. The Program will also provide ESA compliance for existing and certain new water-related activities in the Platte basin upstream of the Loup River confluence for potential effects on the target species; help prevent the need to list more Platte River species under the ESA;



mitigate the adverse effects of certain new water-related activities through approved depletions plans; and establish and maintain an organizational structure that will ensure appropriate state and federal government and stakeholder involvement in the Program.

The Program is led by the GC consisting of representatives of Colorado, Wyoming, Nebraska, the Bureau of Reclamation, the Service, South Platte River water users, North Platte River water users, Nebraska water users, and environmental groups. The Program established key standing Advisory Committees to assist the GC in implementing the Program. Those committees include the Technical Advisory Committee (TAC), the Land Advisory Committee (LAC), the Water Advisory Committee (WAC), the Finance Committee (FC), and the Independent Scientific Advisory Committee (ISAC). In a unique approach, the Program is staffed by an independent Executive Director (ED; Mr. Jason Farnsworth) and Executive Director's Office (EDO) personnel that are provided by Headwaters Corporation, a private, for-profit natural resources consulting company. Dr. Chadwin Smith in the EDO coordinates the work of the ISAC and other independent science for the Program.

The ISAC is a standing Advisory Committee for the PRRIP and will be comprised of six independent scientists knowledgeable in technical areas critical to implementation of the Extension Science Plan. Members of the ISAC should be experienced scientists with demonstrated achievement and high standing in their field. They will be chosen to fill specific areas of expertise needed by the Program (as enumerated above). There should be a balance between scientists with specific knowledge of the Platte River basin and those with more broad and diverse experience. Members will be expected to provide objective scientific advice in a timely and professional manner and work effectively in multi-disciplinary setting. ISAC membership will be open to individuals employed by all agencies, institutions, and organizations, with the exception that members may not be salaried employees of member entities of the GC or organizations with specific mandated representation on the LAC, WAC, and TAC.

New ISAC members will be evaluated by a Selection Panel appointed by the GC to develop criteria for evaluating potential ISAC candidates, review application materials, and recommend new members to the GC. The GC will make the final decision on ISAC member appointments. Dr. Smith of the EDO will facilitate this process.

For more information on the PRRIP, visit our website at <https://platteriverprogram.org/>.

MAJOR DUTIES/RESPONSIBILITIES

- Advising the GC, TAC, and EDO on implementation of the Extension Science Plan, including providing an independent opinion on the design and implementation of science activities and adaptive management and the scientific rigor of proposed management actions and associated monitoring and research.
- Reviewing scientific information collected by the Program and providing an independent opinion on these results in terms of the response (or lack thereof) of the river and target species to management interventions.
- Responding to specific questions of a scientific nature from the GC, TAC, and EDO.
- Advising the GC, TAC, and EDO on the need for additional peer review.
- Two multi-day, in-person meetings each year – annual Science Plan Reporting Session in February, usually in Omaha, Nebraska; fall ISAC Meeting in Kearney, Nebraska.



- Participation in the March GC Quarterly Meeting in Kearney (ISAC members participate virtually) and the September GC Quarterly Meeting in Kearney (ISAC members participate in-person).
- Additional virtual meetings, conference calls, and communication via email and phone.

REMUNERATION

The PRRIP provides ISAC members with a fixed-price stipend for work on behalf of the PRRIP, including document review, virtual meetings, in-person meetings, and travel time associated with attending in-person meetings. The approved general ISAC member stipend for FY2022 is \$32,400 (for 2022, this equates to 18 days of time [8-hour days] at a rate of \$225/hour). ISAC members begin with a three-year appointment but work is contracted annually via approved contract amendments. The ISAC scope of work and stipend rate is determined annually by the GC during the PRRIP budget and work plan development process. In addition, all ISAC member travel expenses (airfare, hotels, meals, etc.) for in-person meetings are fully reimbursed as direct expenses by the PRRIP based on submitted receipts.

QUALIFICATIONS

- **Education** – Ph.D. or other terminal degree in a field related to the area(s) of expertise identified above.
- **Experience** – Ten (10) or more years in a relevant field of expertise related to the scientific area(s) of focus identified above. This may include research and/or teaching experience, publication in refereed journals, participation on editorial boards or funding review panels, or on-the-ground work in river settings or restoration contexts. Prior experience providing independent science oversight or guidance for large-scale restoration or endangered species recovery programs like the PRRIP or as part of other independent science advisory panels is desirable.
- **Considerations** – Specific ISAC membership considerations include:
 - a) High achievement in a relevant scientific discipline.
 - b) A strong record of scientific accomplishment documented by contribution to the peer-reviewed literature or other evidence of creative scientific accomplishment.
 - c) High standards of scientific integrity, independence and objectivity.
 - d) Ability to forge creative solutions to complex problems.
 - e) Interest in and ability to work effectively in an interdisciplinary setting.

MATERIAL SUBMISSION

If you believe you meet the qualifications described above and are interested in being considered for one of the three (3) open ISAC member positions, please submit the following initial application materials:

- A *cover letter* that describes your interest in the position, summarizes your education and experience, and speaks to the ISAC membership considerations noted above. The cover letter should be addressed to:

Chadwin Smith, Ph.D.
Independent Science Coordinator
Platte River Recovery Implementation Program
4111 4th Ave., Suite 6
Kearney, NE 68845



- A *detailed CV* that details your education, experience, publication history, and other aspects of your background that relate to your fit with one of the areas of expertise described above.

*Please submit the cover letter and detailed CV electronically in PDF format to Dr. Smith at smithc@headwaterscorp.com. Materials should be submitted by **12:00 PM Central Time on Friday, January 14, 2022**. Your materials will then be evaluated by the ISAC Member Selection Panel with other potential candidates and Dr. Smith may contact you for additional information or clarifications.*

If you have any questions about the PRRIP, the ISAC member openings, the function of the ISAC, or this external solicitation process please contact Dr. Smith at smithc@headwaterscorp.com or (402) 432-7950.

NOTICE OF REQUIREMENTS

Before being appointed by the GC, ISAC members must agree to a set of requirements that includes, but is not limited to:

1. Signing a “No Conflict of Interest” statement. This affirms whether or not any potential conflicts of interest exist between the PRRIP and other past or on-going work in which the ISAC member is involved, including any projects currently being conducted for the PRRIP.
2. Providing a Dun & Bradstreet (D-U-N-S) number or other similar declaration. This affirms the ISAC member is not disbarred from doing work for the federal government.
3. Signing a “Certification Regarding Lobbying.” This affirms the ISAC member has not received or directed federal funds to lobby federal employees, agencies, or other entities to secure federal work or contracts.



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Appendix B

ISAC Candidate Cover Letters and CVs

Chad Smith

From: Jeb Barzen <jeb@privatelandsconservation.org>
Sent: Wednesday, February 9, 2022 1:36 PM
To: Chad Smith
Subject: RE: Platte River Program Independent Scientific Advisory Committee solicitation
Attachments: Barzen CV 2022.pdf

Chad:

I would be happy to be considered as a ISAC member for the Platte River Recovery Implementation Program. Thank you for the offer.

I have spent a 35-year career studying cranes and the restoration ecology of the ecosystems that serve as crane habitat. My research and conservations efforts have occurred in Southeast Asia, China, Russia and North America. Though I have studied Siberian, Sarus, White-naped, Hooded and Eurasian Cranes abroad, most of my research has focused upon Whooping and Sandhill Cranes. Themes of my research have included reintroduction, population ecology, habitat use, crop damage deterrence, integrating agriculture with conservation, restoration ecology and long-term study of marked individuals. Pertinent to your team, I participated in the National Academy of Sciences team that evaluated the Big Bend stretch of the Platte River as critical habitat for the Whooping Crane, Piping Plover, Least Tern and Pallid Sturgeon.

My Curriculum Vitae is attached. Pertinent to your summary of the avian ecology position with a focus upon Whooping Cranes, I have published 45 non-peer reviewed and 51 peer-reviewed papers, most of which are focused upon cranes, 11 of which specifically focused upon Whooping Cranes. Finally, I am currently working on a paper assessing the probability of proposed powerlines, that if constructed, could result in mortality of Whooping Cranes from collision with those lines.

More collectively, I would feel comfortable working with your team to elucidate and explore the costs and benefits associated with achieving the various balances between ecology and human use exist or that need consideration within the Platte River Basin.

Should you have any question, please let me know. Thank you for your consideration.

Sincerely yours,

Jeb Barzen
Private Lands Conservation LLC
S-12213 Round River Trail
Spring Green, Wisconsin 53588
USA
Land: 608-544-2107
Cell: 608-370-3122
jeb@privatelandsconservation.org

From: Chad Smith <smithc@headwaterscorp.com>
Sent: Wednesday, February 9, 2022 11:32 AM

CURRICULUM VITAE

BARZEN, JOHN (JEB) ANTHONY

Addresses: (Professional)

Private Lands Conservation LLC
S-12213 Round River Trail
Spring Green, Wisconsin 53588
USA
1-608-370-3122
jeb@privatelandsconservation.org

(Home)

S-12213 Round River Trail
Spring Green, Wisconsin 53588
USA
1-608-544-2107

Personal:

Born January 6, 1959 in Edina, Minnesota. Married, 2 children.

Education:

University of Minnesota, B.S. in Wildlife Biology, 1982.
University of North Dakota, M.S. in Biology, 1989, major in Wildlife Biology.

Research/Conservation Experience:

Wetland restoration in the Mekong Delta, Viet Nam
Ecology of Eastern Sarus Cranes in Southeast Asia
The ecology of floodwater lake basins and cranes in the Yangtze Valley, China
The effect of time on determining planting success in prairie restoration
Ecology of Sandhill Cranes in Wisconsin (e.g. ecology of non-breeding birds, behavioral ecology of breeding cranes, and abatement of crane damage to agricultural fields)
Ecology of a reintroduced population of Whooping Cranes
Conservation on private lands at ecologically meaningful scales:
Restoring prairies, savannas, and wetlands in the Lower Wisconsin Basin; developing an eco-label for potato production that balances food production with other resource production (e.g. biological diversity, soil health, water quality, carbon sequestration, etc.) coming from those lands; and connecting poverty alleviation with conservation worldwide; and building capacity to expand conservation on private lands.
Implementation of Prescribed Fire for Conservation of Fire-adapted Communities (conducted 711 prescribed burns to date)

Professional Experience:

Lecturer, Gaylord Nelson Institute of Environmental Studies, UW-Madison (2022)

Responsibilities: Teaching ES 375 – Field Ecology Workshop

Lecturer, Gaylord Nelson Institute of Environmental Studies, UW-Madison (2022)

Responsibilities: Teaching LA581 - Prescribed Fire --Ecology and Implementation

Adjunct Assistant Professor, Planning and Landscape Architecture Department, UW-Madison (2019 – 2021)

Responsibilities: Teaching LA 581 – Prescribed Fire: Ecology and Implementation

Founder, Private Lands Conservation LLC (2016 – present)

Responsibilities: Founder. Developing a non-profit organization dedicated to advancing conservation on private lands. Includes teaching at the University of Wisconsin-Madison, implementing ecosystem restoration for the Healthy Grown program in Wisconsin, solving bird-related crop damage issues and developing tools to expand private lands management.

Senior Outreach Specialist, University of Wisconsin-Madison (2016 – 2017)

Responsibilities: Working with growers to implement sustainable conservation activities on their farms, develop new components of sustainability, expand the Healthy Grown model to other agricultural areas.

Research Associate, International Crane Foundation (2015 – 2016)

Responsibilities: A non-academic sabbatical where I authored 13 papers that were submitted for publication.

Director, Field Ecology Department, International Crane Foundation (1987 – 2015) along with Honorary Appointments with University of Wisconsin-Madison, University of Wisconsin-Stevens Point

Responsibilities included: supervision of a department containing 8 permanent employees, and 5 graduate students at any one time; Strategic planning, public speaking; budget management and research as described above.

Student research completed and advised:

- Mike Wheeler. 2018. M.S. Do population parameters limit crane reproduction? University of Wisconsin-Madison.
- James Burnham III. 2017. Ph.D. Ecology of tuber-feeding guilds at Poyang Lake. University of Wisconsin-Madison.
- Paul Senner. 2017. M.S. How hydrological factors influence plant and bird communities in a floodplain recessional wetland of the Mekong Delta. University of Wisconsin-Madison.
- Megan Fitzpatrick. 2016. Ph.D. Mechanistic models and tests of Whooping Crane energetics and behavior locally and at landscape scales: implications for food requirements, migration, conservation strategies and other bird species. University of Wisconsin-Madison.
- Ben Sullender. 2015. M.S. Seasonal inundation and water depth drive Eurasian Spoonbill (*Platalea leucorodia*) habitat selection in Poyang Lake, China. University of Wisconsin-Madison.
- Matt Hayes. 2015. Ph.D. Dispersal and population genetic structure in two flyways of sandhill cranes (*Grus canadensis*). University of Wisconsin-Madison.
- Alison Duff. 2014. Ph.D. Creating a system to optimize production of all resources arising from agricultural lands in the marketplace. University of Wisconsin-Madison.
- Ted Anchor. 2008. M.S. Developing ecosystem standards for Healthy Grown potatoes in Wisconsin. University of Wisconsin-Madison.
- James Burnham. 2007. M.S. Environmental drivers of Siberian Crane (*Grus leucogeranus*) habitat selection and wetland management and conservation in China. University of Wisconsin-Madison.
- Nguyen Hoai Bao. 2006. M.S. Wetlands survey and assessment of breeding habitat for eastern sarus cranes (*Grus antigone sharpii*) in Yok Don National Park, Vietnam. National University – Ho Chi Minh City (in Vietnamese).
- Kristin Hall. 2005. M.S. Ecological needs and economic benefits of Bald Eagles wintering in south central Wisconsin. University of Wisconsin-Madison.
- Mathew Hayes. 2005. M.S. Divorce and extra pair paternity as alternative mating strategies in monogamous sandhill cranes. University of South Dakota-Vermillion.
- Su Liying. 2003. Ph.D. Habitat selection by sandhill cranes, *Grus canadensis tabida*, at multiple geographic scales in Wisconsin. University of Wisconsin-Madison.
- Tamara Miller. 2002. M.S. Habitat selection by breeding sandhill cranes in central Wisconsin. University of Wisconsin-Stevens Point.
- Tin New Latt. 2001. M.S. The Ecology of Indian Sarus Cranes in India. Wildlife Institute of India.
- Tran Triet. 1999. M.S. Seasonally inundated grasslands of the Mekong Delta, Vietnam. University of Wisconsin-Madison.
- Tran Triet. 1999. Ph.D. Factors influencing the distribution and abundance of freshwater vegetation in the Mekong Delta, Viet Nam. University of Wisconsin-Madison.
- Steve Swenson. 1999. M.S. Light as a factor influencing the distribution and abundance of savanna plants in temperate regions. Ohio State University.
- Haidy Ear-Dupuy. 1998. M.S. Factors in stork consumption: an economic analysis of stork collection in Tonle Sap Lake, Battambang Province, Cambodia. University of Wisconsin-Madison.
- Li Fengshan. 1997. Ph.D. Developing a land management system for Cao Hai and its watershed to safeguard resources needed by Black-necked Cranes and people. University of Wisconsin-Madison.
- Bjorn Larsen. 1996. M.S. The avifauna of a restored wetland: Tram Chim National Reserve, Dong Thap, Viet Nam. University of Minnesota.
- Nguyen Huu Thien. 1996. M.S. Winning support for conservation from local communities. University of Wisconsin-Madison.
- Zhang Bingcai. 1995. Ph.D. Towards integrated, efficient GIS query processing. University of Wisconsin-Madison.

Jim Welsh. 1993. M.S. Patterns of change in the plant community composition of a restored prairie in Wisconsin. University of Wisconsin-Madison.
Richard Beilfuss. 1991. M.S. Hydrological restoration and management of Tram Chim Wetland Reserve, Mekong Delta, Vietnam. University of Wisconsin-Madison.

Advisee research in progress:

Nguyen Hoai Bao. Ph.D. Ecology of wetlands in Southeast Asia. University of Science, Ho Chi Minh City.

University Courses Developed and Taught:

ES 375 Field Ecology Workshop (2019, cancelled in 2020 due to COVID-19, 2021-2022)
LA 375 Prescribed Fire and Economic Drivers for Improving Conservation at Ecological Scale (2019)
LA 375 Prescribed Fire: Ecology and Implementation (2020-2021)
LA 581 Prescribed Fire: Ecology and Implementation (2022)
ES 976 Graduate Seminar on "Practice of Conservation Biology & Sustainable Development" with Tim Moermond (2003, 2006, 2009)
ES 900 Graduate Seminar on "A Sustainable Mekong and beyond: Crane conservation reveals worldwide challenges with sustainable development" with Tran Triet (2010)
Varied Universities in Southeast Asia: Wetland Ecology and Management in the Lower Mekong Basin (2003-2014). Team taught with 4 primary colleagues: Tran Triet, Sansanee Choowaew, Duong Van Ni, Richard Keim

Awards-

Wisconsin Society for Ornithology: Bronze Passenger Pigeon Award (2019)
Clausen Distinguished Service Award, Ferry Bluff Eagle Council for 25 years of volunteer service (2013)
John T. Curtis Award for Career Excellence in Ecological Restoration; Friends of the Arboretum, Inc. and Aldo Leopold Foundation (2008)
Meredith F. Burrill Award (in geography) for the project and book titled Endangered and Threatened Species of the Platte River. The National Academies Press: Washington, D.C. (2006)
Honor Award for Group Achievement in Maintaining and Enhancing the Nation's Natural Resources and Environment by creating a Partnership for Environmental Potato Production, U.S. Department of Agriculture (2003)
The Aldo Leopold Chapter, Society of Conservation Biology, White Lady Slipper Award with Barb Barzen (1999)
The Empire-Sauk Chapter of the Prairie Enthusiasts, Volunteer of the Year with Barb Barzen (1998)
Sauk County Government, Commendation for participation on 20/20 Citizen Advisory Committee for land-use planning (1998)
Webster Fellowship, North American Waterfowl Foundation (1983)
Robert J. Lick Award, Minnesota Waterfowl Association (1982)
Izaak Walton League Conservation Job Competition Winner (1977)

Research Fellow, Delta Waterfowl and Wetlands Research Station, Canada (1984-1987)

Graduate Teaching Assistant at the University of North Dakota in Introductory Biology Labs for majors (1983-1985)

Master Bander Permit Holder (#22339) with USGS Bird Banding Laboratory for bald eagles, sandhill cranes and whooping cranes. Coordinator of auxiliary banding for sandhill cranes east of the Mississippi River (1988-2015).

Committee Membership

Chair of Research and Science Team for the Whooping Crane Eastern Partnership (2010-2013).
Collaboration of Wisconsin Potato and Vegetable Growers Association/World Wildlife Fund/University of Wisconsin: executive committee member (1996-current)
Farming and Conservation Together (FACT):
A member of a group that is developing a private lands initiative for conservation and farming in a large area of south-central Wisconsin (1999-2005)

Ferry Bluff Eagle Council:

Volunteer and member (1988-current)

President (2020-current)

Forestry Research Advisory Council: US Department of Agriculture. (2004-2008).

Listening Point Foundation Advisory Board (2007-2021)

National Academy of Sciences

Member of the Committee on Endangered and Threatened Species in the Platte River Basin (2003-2004)

Member of the Committee on Restoration of the Greater Everglades Ecosystem's Panel to Review the Critical Ecosystems Science Initiative (2002-2003)

Wisconsin Prescribed Fire Council

Liability Committee Chair (2003-2009)

Training Committee Chair and Board Director (2019-2021)

Board Chair (2021-Present)

Conservation Fund-raising-

Coordinated through Ferry Bluff Eagle Council (1998): Purchase of conservation easements for 31 acres of various parcels adjacent to Wollershiem Winery \$32,000

Coordinated through Ferry Bluff Eagle Council (2019): Purchase of 31 acres for Ferry Bluff State Natural Area \$160,000

Coordinated through Driftless Area Land Conservancy (2022): Purchase of 154 acres to add to Lower Wisconsin Riverway \$370,000

Grants obtained-

Wetland Conservation in Southeast Asia

Disney Worldwide Conservation Fund. \$25,000; 2015

U.S. State Department. \$200,000; 2010-2012

U.S. State Department. \$50,000; 2012-2013

U.S. Geological Survey. \$270,000; 2009-2014

John D. and Catherine T. MacArthur Foundation. \$250,000; 2009-2011

John D. and Catherine T. MacArthur Foundation. \$250,000; 2006-2008

John D. and Catherine T. MacArthur Foundation. \$350,000; 2003-2005

Convention of Migratory Species, \$19,000; 2001

Private Individuals, \$365,000; 1998-2003

Combining Ecology and Poverty Alleviation in China

John D. and Catherine T. MacArthur Foundation. \$25,000; 1992.

Sustainable Development of the Mekong River Basin

Christopher Reynolds Foundation, Inc. \$10,000; 1995.

Henry P. Kendall Foundation. \$5,000; 1995.

John D. and Catherine T. MacArthur Foundation. \$10,000; 1995.

Private Individuals. \$65,000; 1995.

New York Zoological Society. \$5,000; 1995.

Rockefeller Brothers Fund. \$10,000; 1995.

United Nations Development Program. \$10,000; 1996.

USAID. \$5,000; 1995.

Wetland Restoration in the Plain of Reeds, Viet Nam.

Brehm Fund for International Bird Conservation. \$50,000; 1990.

Christopher Reynolds Foundation, Inc. \$25,000; 1993.

John D. and Catherine T. MacArthur Foundation. \$225,000; 1991-1993.

_____. \$70,000; 1994.

National Wildlife Federation. \$25,960; 1990.

Understanding, Classifying and Mapping Human Use and Natural Resources in Pilot Wetlands of

Cambodia and Vietnam to Promote Sustainable Development: A Collaboration to Study Small Wetlands

Sumner Phase 3: \$87,600; 2014-2016

Ecology of Sandhill Cranes in Wisconsin

Wisconsin Department of Agriculture and Consumer Protection. \$15,000; 1998.
____, \$140,000; 2007-2009
Wisconsin Department of Natural Resources. \$29,000; 1997-1998.
____, \$115,000; 1999-2001.
____, \$20,000; 2002
Wisconsin and Potato Vegetable Growers Association. \$15,000; 1998.
World Wildlife Fund. \$5,000; 1997.
Winter Ecology of Bald Eagles
Various small grants through Ferry Bluff Eagle Council and UW-Madison. \$70,000; 2001-2005.
Spring Migration Ecology of Canvasbacks
Delta Waterfowl and Wetlands Research Station. \$21,500; 1984-1987.
Northern Prairie Wildlife Research Center. \$8,300; 1984-1985.

Co-chaired or organized the following symposia or meetings-

Mekong River System Science Data Workshop: Science for a Sustainable Mekong River System. Ho Chi Minh City, Vietnam. 2014.
DRAGON Asian Summit: Connecting great Deltas, Great Rivers and Great Lakes. Siem Reap, Cambodia. 2009.
The International Conference on Poyang Lake Wetland and Biodiversity. Nanchang, China. 2007.
Advanced Workshop on Watershed Modeling and Water Resources Management. Nanchang, China. 2006.
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International Sarus Cranes and Wetlands Workshop. Tam Nong, Dong Thap, Vietnam. 1990.
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February, 2022

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31 January 2022

Dear Dr. Smith,

I am writing to express my great interest in serving on the Independent Scientific Advisory Committee (ISAC) of the Platte River Recovery Implementation Program (PRRIP). Specifically, I am well qualified to serve as the avian ecologist on ISAC. With over 20 years of experience studying migratory waterbirds across Alaska, Canada, the contiguous US, and Europe, I have gained a deep appreciation for the diversity of life histories that waterbirds possess, the associated habitats required across seasons for sustaining migratory populations, and the many conservation challenges they face.

Research conducted by my former Ph.D. student Kristen Ellis led to eventual collaborations involving PRRIP target species. Kristen's dissertation research focused on the demography and breeding behavior of at-risk snowy plovers, which then launched her into a fulltime position with the USGS Northern Prairie Wildlife Research Center that produced collaborations on seasonal and cross-seasonal demographic studies of piping plovers. Though my work on piping plover research was in an advisory role, it provided me with valuable insights into how a population's fate can depend on the delicate balance of managing water across state borders.

Just over four years ago I moved from the Bear River Watershed and Great Salt Lake Basin to assume the role of chairing an endowed waterfowl program within the South Platte Basin. By working alongside local collaborators (e.g., Ducks Unlimited, Colorado Parks & Wildlife) to help educate students in my classes about the complexities of managing wetlands in this system for migratory waterbirds, I have gained an appreciation for the myriad of information needed to work collaboratively on inter-state demands for multiple uses of water in a region where H₂O is replacing Ag and Au as the most valuable resources. Perhaps most applicable is the ability to work with public and private landowners to create "recharge wetlands" or "augmentation ponds" in a manner that produces high quality habitat for waterbirds at key times along migration (e.g., moist-soil wetlands or wet meadows) while recharging groundwater flow into the N. Platte and S. Platte Rivers for downstream users during particular times of need. Research is needed within the S. Platte Basin to rigorously evaluate the realized benefits of abandoning historical construction of deep water augmentation ponds in favor of shallow

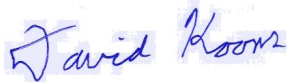
water ponds to foster a greater diversity of plants and food resources for migratory waterbirds while also recharging downstream flows. For example, research similar to that of my current Ph.D. student Casey Setash in the N. Platte Basin that is evaluating the benefits (or lack thereof) of flood- irrigated hayfield meadows for waterfowl reproductive success. These types of questions, and many others, will need to be answered in order to conserve and recover migratory waterbirds that use the downstream reaches of the Platte River system, such as piping plovers and whooping cranes.

I have not worked on whooping cranes specifically, but am a globally recognized leader in studying population dynamics from both basic and applied vantages. In fact, a relatively small group of biologists and managers work on whooping cranes directly, and by being external to this group, I feel well positioned to provide unbiased insights into the information needs for managing and recovering this endangered species. A key challenge with migratory species such as whooping cranes is the need to decouple the relative influence of seasonal impacts on their demography, including carry-over effects of wintering and migratory ecology on subsequent reproductive success.

I have recently become Co-PI on a long-term study of black brant that has produced some of the highest quality data on seasonal carry-over effects and how they shape cross-seasonal population dynamics. These areas of research have recently become my focus for the next 5-10 years. If selected to serve on ISAC, I will be able to draw on my aforementioned experiences to evaluate scientific shortcomings, progress, and future needs for adaptively recovering whooping cranes and other species that depend on the Platte River ecosystem while also making sure that adaptive management is leading to the information that it is believed to produce (see recent Koons et al. 2022 publication).

Throughout my career I have grown into a number of advisory roles. I have served on the interdisciplinary Faculty Senate (Faculty Council at CSU) at two universities, which help evolve university policies for modern times, and provide the faculty voice to higher administration. I have informally helped the USFWS interpret monitoring data and research to aid in their decision of whether or not to delist spectacled eiders, and I currently serve on the Delta Waterfowl Science Advisory Board. I feel that these roles, as well as many others (see service roles in my CV), have prepared me well to serve on ISAC. It is also worth noting that compared to typical faculty members at a university, a greater percentage of my role statement is devoted to service and outreach, which affords me the time to serve on important endeavors such as ISAC.

Sincerely,



David Koons

Extended CV

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Professor

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Professional Experience

- 2020 – present Professor & James C. Kennedy Endowed Chair in Wetland and Waterfowl Conservation, Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, Colorado, U.S.A.
- 2017 – 2020 Associate Professor & James C. Kennedy Endowed Chair in Wetland and Waterfowl Conservation, Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, Colorado, U.S.A.
- 2013 – 2017 Associate Professor, Department of Wildland Resources and the Ecology Center, Utah State University, Logan, Utah, U.S.A.
- 2013 – 2014 Sabbatical scholar at the Centre d'Ecologie Fonctionnelle et Evolutive, CNRS, Montpellier, France; with a 1-week stint at the Schweizerische Vogelwarte, Sempach, Switzerland
- 2007 – 2013 Assistant Professor, Department of Wildland Resources and the Ecology Center, Utah State University, Logan, Utah, U.S.A.
- 2005 – 2007 Post-doctoral Fellow, Max Planck Institute for Demographic Research, Rostock, Germany.
- 2005 Post-doctoral Research Associate, School of Forestry and Wildlife Sciences, Auburn University, Auburn, Alabama, U.S.A.

Affiliate & Visiting Positions

- 13 – 17 May 2019 Astor Visiting Lectureship, Department of Zoology, Oxford University, Oxford, U.K.
- 2018 – 2019 Affiliate Associate Professor, School of Forestry and Wildlife Sciences, Auburn University, Auburn, Alabama, U.S.A.
- 2017 – present Faculty Member, Graduate Degree Program in Ecology, Colorado State University.

Education

- | | | |
|------|--|--------------------------|
| 2005 | Ph.D. in Wildlife Science, minor in Statistics | Auburn University |
| 2001 | M.S. in Fish and Wildlife Management | Montana State University |

1998 B.S. in Biology, minor in Statistics Montana State University

Professional Training

2006 Statistical Survival Analysis; International Max Planck Research School for Demography

2005 – 2006 Biodemography: matrix population models, quantitative genetics, mark-recapture/recovery survival analysis; International Max Planck Research School for Demography

Publications

** = advised *undergraduate* or graduate student or post-doctoral scientist in my lab

* = graduate student or post-doc collaborator

Peer-Reviewed

85 peer-reviewed publications: 22 as 1st author, 38 in advisory role, 41 with an IF > 3, GS H-Index = 33, M-Quotient = 1.74

85. **Koons, D.N.**, T.V. Riecke*, G.S. Boomer, B.S. Sedinger, J.S. Sedinger, P.J. Williams, and T.W. Arnold. 2022. A niche for null models in adaptive resource management. *Ecology and Evolution* 12:e8541.
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31. Ross, B.E.***, M. Hooten, and **D.N. Koons**. 2012. An accessible method for implementing hierarchical models with spatio-temporal abundance data. *PLoS ONE* 7(11): e49395. doi:10.1371/journal.pone.0049395.
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29. Péron, G.***, C.A. Nicolai, and **D.N. Koons**. 2012. Demographic response to perturbations: the role of compensatory density-dependence in a North American duck under variable harvest regulations and changing habitat. *Journal of Animal Ecology* 81:960-969.
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Advisor: James B. Grand, USGS, Alabama Cooperative Fish & Wildlife Research Unit
- Koons, D.N.** 2001. Lesser scaup breeding ecology in the Canadian Parklands. M.S. Thesis, Montana State University, Bozeman, Montana.
Advisor: Jay J. Rotella

Technical

- Swift, R.J., M.J. Anteau, K.S. Ellis, M.M. Ring, M.H. Sherfy, D.L. Toy, and **D.N. Koons**. 2021. Spatial variation in population dynamics of northern Great Plains piping plovers. U.S. Geological Survey Open-File Report.

- Kaminski, R.M., **D.N. Koons**, T.E. Moorman, J.M. Eadie, W.C. Conway, J.B. Davis, K.L. Guyn, D. Howerter, S.A. Petrie, B.M. Ballard, and J.N. Straub. 2017. Endowed university waterfowl & wetland programs: Educating future generations of waterfowl and wetland professionals. Business Plan from the Fort Collins Caucus of Endowed Chairs and international NGOs..
- Rockwell, R. F., K., Dufour, E. Reed, and **D.N. Koons**. 2012. Modeling the mid-continent population of lesser snow geese. Pages 178-201 in Leafloor, J. O., T. J. Moser, and B. D. J. Batt (editors). Evaluation of special management measures for midcontinent lesser snow geese and Ross's geese. Arctic Goose Joint Venture Special Publication. U.S. Fish and Wildlife Service, Washington, D.C. and Canadian Wildlife Service, Ottawa, Ontario.
- Grand, J.B., **D.N. Koons**, J.M. Arnold, and D.V. Derksen. 2006. Modeling the recovery of avian populations. USGS Report to the Alaska Science Center.
- Carlson, J., A. Craighead, P. Harmata, **D. Koons**, L. Oechsli, D. Ouren, E. Stackhouse, and B. Wilmer. 1999. Gallatin County fish and wildlife habitat. Montana State University, Bozeman, Montana.
- Koons, D.N.**, R. Brooks, and D. Dolsen. 1998. Licensed angler assessment of the fisheries program: A report on the outcomes assessment project. in Montanans' assessment of Montana Fish, Wildlife, and Parks programs. Montana Fish, Wildlife & Parks, Helena, Montana.

Grants & Contracts	Total of \$2,334,001
2020 – 2023	Delta Waterfowl. Linking diving duck vital rates to habitat in Southwestern Manitoba. Koons, D.N. , and PhD student Michael Johnson. \$156,000
2020 – 2021	Delta Waterfowl. Demographic drivers of canvasback population dynamics. Koons, D.N. , and T.W. Arnold. \$72,000
2019 – 2023	Colorado Water Conservation Board WSRF, North Park irrigated meadows conservation program - Phase II. PI Ducks Unlimited, CoPI Colorado Parks and Wildlife, CoPI D.N. Koons , and Key Personnel C. Setash. \$450,600
2019 – 2021	USFWS Webless Migratory Game Bird Program. An integrated population model for guiding sustainable harvest of mourning doves: Phase I. Koons, D.N. , and D.L. Otis. \$26,527
2019 – 2023	USFWS Arctic Goose Joint Venture, Carry-over effects of migration strategies on black brant population dynamics & a Lincoln approach to monitoring abundance. Koons, D.N. , M.S. Lindberg, and J.S. Sedinger. \$74,465
2019 – 2023	Ducks Unlimited Canada. Productivity of breeding waterfowl on working lands in a flood irrigated system. Bruce D.J. Batt Fellowship in Waterfowl Conservation to Ph.D. student Casey Setash (PI & Advisor: D.N. Koons). \$10,500.
2019	Gates Frontiers Fund. Recent history of channel morphology in East Sand Creek, Colorado & Waterfowl on working lands in a flood irrigated system. E. Wohl and D.N. Koons . \$133,750.

2018	DOD, sub-contract from BYU. Effects of predator strategies on the reproductive ecology of snowy plovers. D.N. Koons and R. Larsen. \$12,995.
2018	Delta Waterfowl. Spatio-temporal trends in breeding duck populations. D.N. Koons. \$77,269.
2017-2019	Ducks Unlimited Canada. Temporal covariation of demographic rates in lesser scaup (<i>Aythya affinis</i>) and management implications. Bruce D.J. Batt Fellowship in Waterfowl Conservation to M.S. student Kelsey Navarre (PI & Advisor: D.N. Koons). \$10,000.
2015-2017	Utah Agricultural Experiment Station. The integration of monitoring & modeling the impacts of global change on wildlife populations in agricultural landscapes. D.N. Koons. \$48,250.
2015-2016	North Pacific Research Board. New integrated modeling tools to improve monitoring and demographic analyses of seabird populations. J. Schmutz and D.N. Koons. \$33,986 in total with \$12,389 to USU
2015-2017	Utah DWR, Efficacy of translocation as a management tool for urban mule deer. D.N. Koons, and M. Brunson. \$21,453
2013	Norcross Wildlife Foundation. Climate change, phenology shifts, and novel predator-prey interactions between polar bears and snow geese. R.F. Rockwell and D.N. Koons. \$3,500.
2013	CWS. Rapid assessment of invasion and degradation of interior habitats by lesser snow geese. D.N. Koons, D.T. Iles, K.F. Abraham, and R.F. Rockwell. \$10,400
2013	USU Equipment Grant. Climate change, phenology shifts, and novel predator-prey interactions between polar bears and snow geese. D.N. Koons. \$9,800
2013	International Association for Bear Research & Management. Climate change, phenology shifts, and novel predator-prey interactions between polar bears and snow geese. D.N. Koons and R.F. Rockwell. \$9,400.
2013	National Geographic Society. Climate change, phenology shifts, and novel predator-prey interactions between polar bears and snow geese. D.N. Koons and R.F. Rockwell. \$20,000.
2012	NSF REU supplement to DEB 1019613. D.N. Koons and R.F. Rockwell. \$7,125
2012 – 2015	Mississippi Flyway Council, The Hudson Bay Project. R.F. Rockwell, K. Abraham, R. Brook, and D.N. Koons. \$125,000
2011 – 2012	NSF (DEB 1019613), How do environmental conditions during development affect senescence & consequent population dynamics? D.N. Koons, O. Gimenez, and R.F. Rockwell. \$210,401
2011 – 2014	Utah DWR, USFWS, BLM, Improved monitoring for management of the Henry Mountains bison herd. D.N. Koons, and J. du Toit. \$330,286

2011 – 2015	Central Flyway Council, The Hudson Bay Project. R.F. Rockwell, K. Abraham, D.N. Koons , and R. Brook. \$125,000
2011	USU Research Catalyst Grant, Arctic climate change & trophic cascades. D.N. Koons . \$19,770
2009 – 2011	State of Utah, How to estimate bison abundance in the Henry Mountains using probabilistic methods. D.N. Koons . \$67,900
2010	Gardner Junior Faculty Travel Fellowship, Physical momentum in biological populations. D.N. Koons . \$500
2009 – 2010	Berryman Institute, Policy change, human harvest and control of lesser snow geese. L.M. Aubry and D.N. Koons . \$80,000
2008 – 2009	USU New Faculty Research Grant, D.N. Koons . \$10,124
2008 – 2011	Delta Waterfowl Foundation, Continental population dynamics of lesser scaup. D.N. Koons and B. Ross. \$85,000
1999 – 2000	IWWR of Ducks Unlimited Canada, Lesser scaup breeding ecology in the Canadian Parklands. D.N. Koons and J. Rotella. \$30,000
1999 – 2000	Delta Waterfowl Foundation, Lesser scaup breeding ecology in the Canadian Parklands. D.N. Koons and J. Rotella. \$60,000
2000	Minnesota Waterfowl Association, Comparative nesting success of sympatric lesser scaup and ring-necked duck. D.N. Koons . \$2,000

Teaching

Colorado State University

- FW 430: Waterfowl Ecology & Management (undergraduate), Spring Semesters 2018-
- FW 662: Wildlife Population Dynamics (graduate), co-teach with Dana Winkelman, Spring Semesters every other year 2019-
- Guest lecture in FW 179: FWCB New-to-the-major Seminar, 2017-2018

Utah State University

- WILD 6403: Dynamics of Structured Populations (graduate), Fall Semesters 2012-2016, 12-18 students
- WILD 6402: Demographic Vital Rates (graduate), Fall Semesters 2012-2016, 12-18 students
- WILD 6401: Population State Variables (graduate), Fall Semesters 2012-2016, 12-18 students
- WILD 6400: Animal Population Ecology (graduate), Fall Semesters 2008-2011, 20 students
- WILD 3810: Plant and Animal Populations (undergraduate), Spring Semesters 2008-2017, 55 students
- WILD 6960: Graduate Ecology (graduate; pop eco section), Fall Semesters 2007-2010, 25 students

- WILD 7900: ST-Population & Evolutionary Ecology, Fall 2010, 1 student
- WILD 7900: ST-Bayesian Statistics (graduate), Spring 2008, 1 student
- WILD 7900: ST-Juvenile Survival Assessment (graduate), Spring 2008, 1 student
- Advanced Topics in Animal Demography, Spring 2009, 10 students, ad hoc discussion meetings (not for credit)

International Max Planck Research School for Demography

- Lecturer: Evolution in Stochastic Environments (graduate), Fall 2006, 10 students

School of Forestry and Wildlife Sciences, Auburn University

- Lecturer: Analysis of Wildlife Populations (graduate), Fall 2003, 15 students
- Lab Instructor: Analysis of Wildlife Populations (graduate), Fall 2003, 15 students

Department of Ecology, Montana State University

- Lab Instructor: Human Anatomy and Physiology (undergraduate), Spring 2001, 50 students
- Lab Instructor, Animal Physiology (undergraduate), Fall 1999, 60 students
- Part-time Lecturer: Animal Physiology (undergraduate), Fall 1999, 120 students
- Lab Instructor, Animal Physiology (undergraduate), Fall 1998, 55 students

Advising

Lab members

- Chris Vennum, Ph.D., 2017-present
- Casey Setash, Ph.D., 2019-present
- Mike Johnson, Ph.D., 2020-present
- Caroline Blommel, M.S., 2021-present
- Dr. Dan Gibson, Post-doc, 2020-2021

Past lab members

- Ryan Snell, **B.S. Honors Thesis**, graduated 2021
 - Impacts of winter severity on mule deer in Middle Park, Colorado
- Tori Applehans, **B.S. Honors Thesis**, graduated 2021
 - Community composition of aquatic invertebrates for duckling diets between wetland types in North Park, Colorado
- Kelsey Navarre, M.S., 2017-2020, graduated
 - Temporal demography of lesser scaup: A species in decline
- Evan Williams, **B.S. Honors Thesis**, graduated 2020
 - Rice and Ducks: A Review of the Relationship Between Waterfowl and Rice Agriculture
- Dr. Kristen Ellis, Ph.D., 2017-2019, graduated
 - Effects of predator strategy on the nesting ecology of snowy plovers
 - Now a Research Ecologist at the USGS Northern Prairie Wildlife Research Center
- Dr. Franny Buderman, Post-doc, 2017-2019

- Spatio-temporal trends in breeding duck populations
 - Now an Assistant Professor at PSU
- Channing Howard, M.S., 2015-2018, graduated
 - Efficacy of translocation as a management tool for urban mule deer in Utah
 - Currently a human-wildlife liaison with UDWR
- Dr. Jeff Warren, Ph.D., 2010 – 2017, graduated
 - Breeding season ecology and demography of lesser scaup (*Aythya affinis*) at Red Rock Lakes National Wildlife Refuge
 - Now a wildlife biologist for the USFWS inventory & monitoring program
- Dr. David Iles, Ph.D., 2012 – 2016, graduated
 - Effects of variable and changing environments on demography: Inference from a lesser snow goose colony
 - Now a biologist for CWS, Environment & Climate Change Canada
- Dr. Beth Ross, Ph.D. (Mevin Hooten co-advisor), 2008 – 2013, graduated
 - Assessing changes in waterfowl population and community dynamics
 - Now an assistant professor and assistant leader of the USGS South Carolina Cooperative Fish & Wildlife Research Unit at Clemson University
- Stephen Peterson, M.S., 2009 – 2012, graduated
 - Legacy effects of habitat degradation by lesser snow geese on ground-nesting Savannah sparrows along the Hudson Bay Lowlands
 - Now a wildlife biologist with H.T. Harvey and Associates
- Dr. David Iles, M.S., 2009 – 2012, graduated
 - Drivers of nest success and stochastic population dynamics of the common eider (*Somateria mollissima*)
- Dr. Lise Aubry, post-doc, 2009 – 2012
 - Demographic analyses for guiding lesser snow goose population control efforts
 - Effects of early-life environmental conditions on late-life senescence: cohort variation across space and time
 - Now an Assistant Professor at CSU
- Dr. Guillaume Péron, post-doc, 2010 – 2012
 - Integrated Population Models for investigating species interactions and drivers of population and community dynamics
 - Now a research biologist with CNRS in Lyon, France
- Dr. Jason Carlisle, **B.S. Honors Thesis**, graduated 2011
 - Application of habitat and occupancy modeling to a wood duck nest box program
 - Now a research biometrician at WEST Inc.

Graduate committees

Randy Larsen (Ph.D. graduated 2008), John Weiss (Ph.D. transferred 2008), Sara Seidel (M.S. graduated 2009), Michael Guttery (Ph.D. graduated 2010), Christina Olson (M.S. graduated 2010), Nora Burbank (M.S. graduated 2010), Jeremy Mears (M.S. dropped out 2011), Jonathon Koch (M.S. graduated 2011), Ryan Choi (M.S. graduated 2011), Bridget Olson (M.S. graduated 2011), Ryan O'Donnell (Ph.D. graduated 2012), Marti Garlick (Ph.D. Math, graduated 2012), Natasha Gruber (M.S. graduated 2012), Jonathon Dinkins (Ph.D. graduated 2012), LeiLani

Lucas (M.S. dropped), Sarah Supp (Ph.D. graduated 2013), Aldo Compagnoni (Ph.D. graduated 2013), Sean Bailey (M.S. Math graduated 2013), Pat Terletzky (Ph.D. graduated 2013), Tony Roberts (Ph.D. graduated 2013), Steve Dempsey (M.S. graduated 2013), Daniel Olson (Ph.D. graduated 2013), Ken Locey (Ph.D. graduated 2013), Marlène Gamelon (Ph.D. external examiner 2013), Leah Lewis (M.S. graduated 2014), Dustin Ranglack (Ph.D. graduated 2014), Madeleine Doiron (Ph.D. external examiner 2014), Elita Baldrige (Ph.D. graduated 2015), Marine Desprez (Ph.D. external examiner 2015), Bryan Kluever (Ph.D. graduated 2015), Erica Christensen (Ph.D. transferred 2015), Ryan Kindermann (M.S. graduated 2015), Jaime Florez (Ph.D. incomplete), Maureen Frank (Ph.D. graduated 2016), Robyn Smith (M.S. graduated 2016), Peter Mahoney (Ph.D. graduated 2016), Sean Bailey (Ph.D. Math graduated 2016), Andrew Sims (M.S. graduated 2016), Andrew Kleinhesselink (Ph.D. graduated 2017), Jarod Raithel (Ph.D. graduated 2017), Cody Deane (M.S. at MSU, graduated 2017), Brandon Flack (M.S., graduated 2017), Geoff Smith (Ph.D., graduated 2017), Jennifer Sheppard (Ph.D. external examiner 2017), Seth Dettenmaier (Ph.D., graduated 2018), Ben Sedinger (Ph.D. at UNR, graduated 2018), Jared Lamb (B.S. Honors Thesis, 2017; graduated 2018), Jennifer Beaudoin (M.S., graduated 2018), Kasey Pregler (Ph.D., graduated 2019), Kylee Dunham (Ph.D. at Auburn, graduated 2019), Laura Touzot (Ph.D. external examiner 2020), Xinyi 'Lucy' Lu (Ph.D. Stat, graduated 2021), Lacy Smith (Ph.D. at Utah State, graduated 2021), Spencer Hudson (Ph.D. at Utah State), Nick Van Lanen (Ph.D. ESS), Brooke Berger (Ph.D. Biology), Elizabeth Ford (M.S. at UAF), Matthew DeSaix (Ph.D. Biology), Katharine Horton (Ph.D. Anthropology and Geography), Sarah Ramirez (M.S.), Maria Belotti (Ph.D.), Cozette Romero (M.S.).

Invited Seminars & Plenary Talks

- 2020 Wildlife demography in a non-stationary world
University of Florida
- 2019 Ecological dynamics in a non-stationary world
University of Oxford
- 2019 Integrated approaches to solving demographic puzzles
University of Oxford
- 2019 Ecological dynamics in a non-stationary world
University of Nevada Reno
- 2018 Solving demographic puzzles to provide services to society
Belle W. Baruch Institute of Coastal Ecology and Forest Science
- 2018 Integrated approaches to solving demographic puzzles
Clemson University
- 2017 A transient journey from the plains to today: The role of Bayesian methods.
Auburn University
- 2016 Demographic advancements for waterfowl research & management.
Colorado State University
- 2015 Next-Gen studies of waterfowl population dynamics
Plenary talk at the 4th Pan-European Duck Symposium
Hanko, Finland

- 2015 A sabbatical of science fun: extending demographic research & management with Bayesian methods.
Utah State University
- 2014 How can ecologists become better forecasters in changing environments?
Université Laval, Quebec City, Canada
- 2014 Some demographic approaches to conservation dilemmas while on sabbatical at the CEFE. D.N. Koons & L.M. Aubry. Centre National de la Recherche Scientifique, Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier, France
- 2014 A diversity of conservation dilemmas with demographic solutions. Centre National de la Recherche Scientifique, Biométrie et Biologie Evolutive, Lyon, France
- 2014 Challenges to predicting avian population responses to environmental change.
Swiss Ornithological Institute, Sempach, Switzerland
- 2013 Drivers of waterfowl population dynamics: from teal to trumpeters
Plenary talk at the Ecology and Conservation of North American Waterfowl conference
- 2011 3 big challenges for predicting population responses to changing environments.
Rice University
- 2011 The applied implications of population dynamics in changing environments.
Oregon State University
- 2010 Who's there? The implications of population structure for wildlife management.
Brigham Young University seminar series
- 2009 Is life-history buffering or lability adaptive in stochastic environments?
Utah State University Biology Department seminar series
- 2009 Harvest, environmental stochasticity, and why managers need to be evolutionary biologists.
University of Nevada at Reno seminar series
- 2009 Harvest, environmental stochasticity, and why managers need to be evolutionary biologists.
Montana State University seminar series
- 2008 Matrix modeling in conservation: simple and complex uses.
Populations under Pressure Workshop (Plenary lecture)
Imperial College London, Division of Biology at Silwood Park, UK
- 2008 Climate change and the implications of environmental uncertainty on life history evolution: why it's important for management.
Utah State University
- 2007 Structure and its impact on population dynamics
Centre National de la Recherche Scientifique, Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier, France
- 2007 The importance of structure in population models for conservation & management
Utah State University

Conference Presentations & Abstracts

- Koons, D.N.** 2019. Applying life-history theory to the conservation & management of gamebirds. AFS & TWS Joint Annual Conference
- Navarre, K.L.***, J.M. Warren, and **D.N. Koons**. 2019. Temporal covariation of demographic rates for lesser scaup and management implications. AFS & TWS Joint Annual Conference
- Navarre, K.L.***, J.M. Warren, and **D.N. Koons**. 2019. Implications of covariation of demographic rates for lesser scaup. 8th North American Duck Symposium
- Buderman, F.E.***, J.H. Devries, and **D.N. Koons**. 2019. Temporally dynamic effects of agricultural practices on northern pintail demography and habitat selection in the Prairie Pothole Region. AFS & TWS Joint Annual Conference.
- Buderman, F.E.***, J.H. Devries, and **D.N. Koons**. 2019. Life history traits predict species-specific effects of climate change and landcover change on waterfowl in the PPR. 8th North American Duck Symposium
- Koons, D.N.**, L.M. Aubry, and R.F. Rockwell. 2018. Updates on cause-specific mortality for a southern breeding population of midcontinent lesser snow geese. 14th North American Arctic Goose Conference
- Koons, D.N.**, and M. Weegman. 2018. Current understanding of light goose demography in North America. 14th North American Arctic Goose Conference
- Koons, D.N.**, T.W. Arnold, and M. Schaub. 2017. Understanding the demographic drivers of realized population growth rates. EAB conference with the British Ecological Society
- Smith, L. *, **D.N. Koons**, D. Smith, D. Stahler, P.J. White, and D. MacNulty. 2017. The demographic consequences of age-specific predation. Ecological Society of America Annual Meeting
- Koons, D.N.**, M. Schaub, T.W. Arnold, M.D. Weegman, B.E. Ross, J.M. Warren, C.A. Nicolai, and R.G. Clark. 2016. Drivers of lesser scaup population dynamics at a continental scale. 7th North American Duck Symposium
- Koons, D.N.**, D.T. Iles**, and M. Schaub. 2015. New insights into the demographic drivers of population dynamics in changing environments. Ecological Society of America Annual Meeting
- Iles, D.T.***, R. Salguero-Gómez, P.B. Adler, and **D.N. Koons**. 2015. Linking transient dynamics and life history to biological invasion success. Ecological Society of America Annual Meeting
- Supp, S.R., **D.N. Koons**, and M.K. Ernest. 2013. Life-history trade-offs among core and transient species regulate local diversity and community structure. Ecological Society of America Annual Meeting
- Aubry L.M., **D.N. Koons**, O. Gimenez, and R.F. Rockwell. 2013. Consequences of early-life environment on senescence in the wild. 1st Evolutionary Demography Society meeting, Odense, Denmark

- Koons, D.N.**, L.M. Aubry, O. Gimenez, and R.F. Rockwell. 2013. Ageing in the wild: senescence in cause-specific mortality when detection is imperfect. 1st Evolutionary Demography Society meeting, Odense, Denmark
- Warren, J.M.** , K.A. Cutting, and **D.N. Koons**. 2013. Body condition dynamics and the cost-of-delay hypothesis in a temperate-breeding duck. Ecology and Conservation of North American Waterfowl conference
- Iles, D.T.** , R.F. Rockwell, and **D.N. Koons**. 2013. Effects of apparent competition with lesser snow geese on the stochastic population dynamics of common eiders. Ecology and Conservation of North American Waterfowl conference
- Ross, B.E.** , M.B. Hooten, J.-M. DeVink, and **D.N. Koons**. 2013. How biotic and abiotic factors affect spatio-temporal population dynamics of scaup. Ecology and Conservation of North American Waterfowl conference
- Aubry, L.M.** , R.F. Rockwell, E.G. Cooch, R.W. Brook, C.P. Mulder, and **D.N. Koons**. 2013. Climate, phenology, and habitat degradation: drivers of early life demography in lesser snow geese. Ecology and Conservation of North American Waterfowl conference
- Koons, D.N.**, P. Terletzky*, P.B. Adler, M.L. Wolfe, D. Ranglack, F.P. Howe, K. Hersey, W. Paskett, J.T. du Toit. 2012. Climate and density-dependent drivers of reproductive success in plains bison. Utah TWS annual meeting
- Iles, D.T.** , **D.N. Koons**, and R.F. Rockwell. 2011. Effects of boom-bust nesting success on common eider population dynamics: Inferences from a long-term study in La Pérouse Bay, Manitoba, Canada. 4th International Sea Duck Conference.
- Mattsson, B.J., M.C. Runge, J.H. Devries, G.S. Boomer, J.M. Eadie, D.A. Haukos, J.P. Fleskes, **D.N. Koons**, W.E. Thogmartin, and R.G. Clark. 2011. Integrating harvest & habitat management for North American waterfowl: a prototype for northern pintail. TWS 18th Annual Conference.
- Koons, D.N.**, R.F. Rockwell, and L.M. Aubry**. 2011. The implications of metapopulation dynamics for the management of mid-continent lesser snow geese. 12th North American Arctic Goose Conference.
- Aubry, L.M.** , E.G. Cooch, R.F. Rockwell, and **D.N. Koons**. 2011. Compensatory versus additive mortality in lesser snow geese: implications for population control. 12th North American Arctic Goose Conference.
- Rockwell, R.F., L.J. Gormezano*, and **D.N. Koons**. 2011. Trophic matches and mismatches: can polar bears reduce the abundance of nesting snow geese in Western Hudson Bay? 12th North American Arctic Goose Conference.
- Peterson, S.L.** , R.F. Rockwell, and **D.N. Koons**. 2011. Past and present impacts of habitat degradation by lesser snow geese on avian communities along the Hudson Bay lowlands. 12th North American Arctic Goose Conference.
- Aubry, L.M.** , **D.N. Koons**, J.-Y Monnat, and E. Cam. 2010. Age-specific trade-offs and unobserved heterogeneity in a long-lived seabird: implications for senescence. First World Seabird Conference.

- Ross, B.E.***, M.B. Hooten, and **D.N. Koons**. 2010. Analysis of spatio-temporal dynamics in abundance of lesser scaup. TWS 17th Annual Conference.
- Iles, D.T.***, and **D.N. Koons**. 2010. Influence of global climate change on common eider (*Somateria mollissima*) population dynamics. TWS 17th Annual Conference.
- Dahlgren, D.K.*, T. Messmer, **D.N. Koons**, E. Thacker, M. Guttery, R. Baxter, D. Mitchell, and D. Olsen. 2009. Sage-grouse in Utah: An Increased Research Effort for the Last Decade. Utah Ornithological Society
- Koons, D.N.**, and B.E. Ross***. 2009. Changes in habitat occupancy and pairing probabilities of the declining continental population of scaup. 5th North American Duck Symposium.
- Ross, B.E.***, M.B. Hooten, and **D.N. Koons**. 2009. Analysis of spatio-temporal dynamics in abundance of lesser scaup. 5th North American Duck Symposium.
- Clark, R.G., G.S. Boomer, M.C. Runge, M.G. Anderson, J.H. Devries, J.M. Eadie, M. Koneff, J. Fleskes, D. Haukos, **D.N. Koons**, T. Sanders, R. Trost, and W. Thogmartin. 2009. Integrating habitat and harvest management for northern pintails: concepts, challenges and progress. 5th North American Duck Symposium.
- Ross, B.E.***, M.B. Hooten, C.K. Winkle, and **D.N. Koons**. 2009. Analysis of spatio-temporal dynamics in abundance of scaup. U.S. IALE Symposium.
- Ross, B.E.***, and **D.N. Koons**. 2009. Changes in occupancy and breeding probabilities of Lesser Scaup. 2nd Pan-European Duck Symposium.
- Guttery, M.R.*, T.A. Messmer, and **D.N. Koons**. 2009. Early survival of greater sage-grouse chicks in a high-elevation southern range population. TWS 16th Annual Conference.
- Guttery, M.R.*, T.A. Messmer, and **D.N. Koons**. 2009. Early survival of greater sage-grouse chicks on Parker Mountain, Utah. Utah TWS annual meeting.
- Dalgleish, H.J.*, C.A. Moffet, **D.N. Koons**, M.B. Hooten, and P.B. Adler. 2009. Future shifts from snow to rain may decrease survival and population growth of two dominant grasses in sagebrush steppe. ESA 94th Annual Meeting
- Koons, D.N.**, and R.F. Rockwell. 2009. Common Eider population ecology in Wapusk National Park. Parks Canada meeting.
- Dalgleish*, H.J., P.B. Adler, and D.N. Koons. 2008. Life history traits and population dynamics: How will prairie plants respond to climate change? ESA 93rd Annual Meeting.
- Dahlgren, D.K.*, T.A. Messmer, and **D.N. Koons**. 2008. Greater sage-grouse juvenile survival in Utah. Western Association of Fish and Wildlife Agencies Columbian Sharptailed and Greater Sage-grouse Technical Committee Meeting, Mammoth Lakes, CA.
- Koons, D.N.**, and C.J.E. Metcalf. 2006. A broad look at delayed reproduction in variable environments. 3rd Workshop for Evolutionary Demography.
- Koons, D.N.**, J.J. Rotella, D.W. Willey, M. Taper, R.G. Clark, S. Slattery, R.W. Brook, R.M. Corcoran, and J.R. Lovvorn. 2006. Lesser scaup population dynamics: what can be learned from available data? 4th North American Duck Symposium.

- Koons, D.N.**, A. Baudisch, S. Pavard, C.J.E. Metcalf, and A. Scheuerlein. 2006. Frailty models go Darwinian: The evolutionary advantage of heterogeneous offspring. 2nd Workshop For Evolutionary Demography.
- Koons, D.N.**, S. Pavard, A. Baudisch, and C.J.E. Metcalf. 2006. Live or let die? Fitness consequences of temporal variability in survival and death parameters. MPIDR Seminar Series.
- Lindberg, M.S., **D.N. Koons**, J.J. Rotella, D.W. Willey, M. Taper, R. Brook, R.G. Clark, R.M. Corcoran, and J.R. Lovvorn. 2006. Lesser scaup population dynamics: what can be learned from available data? 2nd North American Scaup Workshop
- Koons, D.N.**, R.F. Rockwell, and J.B. Grand. 2005. Population momentum: implications for wildlife management. 2nd Southeastern Ecology and Evolution Conference.
- Koons, D.N.**, and J.B. Grand. 2004. Life history and population momentum: a general principle for population biology. 14th Annual Auburn University Research Forum.
- Koons, D.N.**, and J.J. Rotella. 2003. Comparative nesting success of sympatric lesser scaup and ring-necked duck. 3rd North American Duck Symposium.
- Arnold, J.M., J.B. Grand, **D.N. Koons**, and N.V. Yogi. 2003. The role of population modeling in natural resource damage assessment. 27th Annual Meeting of The Waterbird Society.
- Koons, D.N.**, B. Zinner, J.B. Grand, and R.F. Rockwell. 2002. Transient demographic analysis of 6 vertebrates: initial conditions and life history explain near-term dynamics: Fourth Conference on Statistics In Ecology And Environmental Monitoring: "Population Dynamics: The Interface Between Models and Data".
- Koons, D.N.**, S.E. Stephens, D.W. Willey, and J.J. Rotella. 2002. Effects of habitat fragmentation on avian nesting success: a review of the evidence at multiple spatial scales; The Wildlife Society 9th Annual Conference.
- Koons, D.N.**, and J.J. Rotella. 2001. Lesser scaup breeding ecology in the Canadian Parklands; Institute of Wetland and Waterfowl Research Symposium.
- Koons, D.N.**, and J.J. Rotella. 2000. Lesser scaup breeding ecology in the Canadian Parklands: a comparison to the past; 2nd North American Duck Symposium.

Workshops Co-Presented

- 2019 A gentle introduction to capture-mark-recapture methods
Department of Zoology, University of Oxford
- 2017 An accessible introduction to Integrated Population Models for ecological and evolutionary research. EAB conference with the British Ecological Society, Gent, Belgium
- 2016 Bayesian integrated population modeling using BUGS and JAGS. Utah State University, Logan, Utah
- 2014 Matrix models for conservation and management of populations. CNRS CEFE, Montpellier, France

- 2014 Analysis of capture-recapture data: Modelling individual histories with state uncertainty. CNRS CEFE, Montpellier, France
- 2010 Taller de Modelos de Captura y Recaptura (first Capture-Mark-Recapture workshop ever held in Latin America). CIMAT, Guanajuato, Mexico
- 2006 Population modeling workshop. 4th North American Duck Symposium.
- 2005 Understanding the impacts of catastrophes on marine bird populations: using Aves Modeler for population level analyses. USGS Alaska Science Center
- 2003 Understanding the impacts of catastrophes on marine bird populations: an introduction to Aves Modeler. USGS Alaska Science Center
- 2001 Beaufort sea bird population and recovery modeling workshop. USGS and Alaska Sea Life Center

Workshops Attended

- 2013 Integral Projection Models with IPMpack in R. Odense, Denmark
- 2012 Circumpolar assessment of ecological mismatch between avian herbivores and plant phenology, USGS Powell Center working group
- 2009 Bio-demography workshop. Stanford
- 2006 2nd Workshop for Evolutionary Demography. Max Planck Institute for Demographic Research, Rostock, Germany
- 2006 3rd Workshop for Evolutionary Demography. Duke University.

Service

Colorado State University

- WCNR representative to the Committee on University Programs, 2021-2024
- FWCB Mentoring & Reappointment Committee, 2021-2022
- Delta Waterfowl & CSU First Hunt, 2018-2019
 - I co-organized an opportunity for university wildlife students who have never hunted to take part in a waterfowl hunt and become part of the North American Model of Wildlife Management through a direct, visceral experience: <https://deltawaterfowl.org/deltas-university-hunting-program>
- Faculty Mentor for TT Assistant Professor Kyle Horton, 2021-current
- Search committee for Assistant Professor of Wildlife Conservation on Working Lands in FWCB, 2019-2020 [position frozen by COVID pandemic]
- WCNR representative to the Executive Committee of Faculty Council, Fall 2020
- WCNR representative to the Executive Committee of Faculty Council, Fall 2019
- FWCB representative on the CSU Faculty Council, 2018-2021
- FWCB representative on the Warner College Faculty Advisory Committee, 2018-2021
- Judge for Graduate Student Showcase, 2018
- Attended Graduate Student Commencement, Spring 2018

- Search committee for FWCB Department Head, 2017-2018
- Faculty advisor for CSU Ducks Unlimited student chapter, 2017-
 - Club raised 36K at Spring 2018 Banquet Fundraiser

Utah State University

- Served on QCNR curricular committee (2016-2017)
- Served on QCNR undergraduate scholarship committee (2017)
- Assisted with Tracy Aviary development initiatives (2016)
- Chair T&P committee for David Dahlgren (2016-2017)
- Assisted DH with assessment plan for NWCCU accreditation (2016)
- Ecology Center advisory representative from WILD (2016-2017)
- Served as panelist on RGS Training for Research Faculty workshop discussing components of a successful sabbatical (2016)
- WILD departmental Honors student advisor (2015-2017)
- Serve on USU committee reviewing Honors Program and Undergraduate Research Fellow applications from incoming freshman (2014-2017)
- Serve as Ombudsperson (2014-2017)
- QCNR representative on the USU Faculty Senate (2014-2015)
- Chair of WILD departmental curriculum committee (2015-2017)
- Chair of WILD departmental core curriculum committee (2014-2015)
- Served on P committee for Dr. Julie Young (2015)
- Serve on T&P committee for Dr. Jacopo Baggio (2015-2017)
- Serve on T&P committee for Dr. Jim Lutz (2014-2017)
- Serve on T&P committee for Dr. Andrew Kulmatiski (2014-2017)
- Serve on T&P committee for Dr. Jereme Gaeta (2014-2017)
- Search committee for aquatic ecology in Watershed Science department (2014)
- Search committee for riparian ecology in Watershed Science department (2014)
- Search committee for USGS Assistant Unit Leader & asst. professor (2012-2013)
- Chair of CNR awards committee (2012)
- Search committee for mathematical biology in department of Mathematics & Statistics, associated with Ecology Center (2012)
- Search committee for wildlife biologist (2010-2011)
- Assessment committee for USDA NWRC Millville station leader & asst. professor in the WILD department (2010)
- WILD Quinney Ph.D. selection committee (2010)
- CNR representative at 3rd-yr review workshop (Served on 2010 panel)
- USU Sustainability Council Research Committee (2008-2014)
- Faculty co-advisor for undergraduate Wildlife Society club research (2008-2010)
- Faculty co-advisor and quizbowl judge for the Wildlife Society undergraduate Western Conclave (2009)
- Wildland Resources core curriculum committee (2007-2014)
- Search committee for evolutionary biologist in Biology (search terminated 2008)

Professional

- Delta Waterfowl Science Advisory Board, 2021-present
- NERC (U.K.) reviewer for evolutionary ecology proposal, 2021
- NSF reviewer for Arctic Sciences proposal, 2021
- Associate Editor, Journal of Animal Ecology, 2017 – 2020
- Associate Editor, The Auk: Ornithological Advances, 2013 – 2020
- Session Chair, Harnessing Ecological Inference with Data Integration, Ecological Society of America Virtual Meeting, 2020
- Participant in Expert Elicitation for USFWS ESA Spectacled Eider Species Status Assessment, 2020
- Reviewer for UNR Ag Exp Station proposal, 2020
- Reviewer for Ducks Unlimited International Conservation Plan, 2019
- Scientific Program Committee, 8th North American Duck Symposium, 2019
- Special Symposium Organizer, Wetland Management for Waterfowl & Its Myriad of Ecosystem Services, Society of Wetland Scientists' 2018 Annual Meeting
- Scientific Program Committee, 14th North American Arctic Goose Conference, 2018
- Session Chair, Migration and Spatial Ecology, 14th North American Arctic Goose Conference, 2018
- Student Awards Committee, 14th North American Arctic Goose Conference, 2018
- Organized Caucus of Endowed Waterfowl Chairs, 2017
- Participant in the Future of Waterfowl Management Workshop II, USFWS NCTC, 2017
- NSF reviewer for DEB proposals, 2017
- NSF reviewer for LTER proposals, 2016
- Co-Organizer of special session on Integrated Population Models, 7th North American Duck Symposium, 2016
- Handling Editor, Oecologia, 2016 – 2017
- NSF reviewer for LTREB proposals, 2015
- Reviewer of BLM grant proposals, 2015
- Reviewer of National Geographic research grant proposals, 2014
- NSF reviewer for Polar Programs proposals, 2014
- NSF reviewer for LTREB proposals, 2014
- Associate Editor, special issue of Wildfowl on the Ecology and Conservation of Nearctic and Palearctic Waterfowl, 2013-2014
- Science Committee, Ecology and Conservation of North American Waterfowl conference, Memphis, 2013
- NERC (U.K.) reviewer for agricultural ecology proposal, 2013
- NERC (U.K.) reviewer for evolutionary ecology proposal, 2011
- NSF reviewer for Population & Community Ecology proposal, 2011
- Graduate Women in Science reviewer for fellowship program, 2011
- NSF Graduate Research Fellowship Program, Ecology panel, 2010
- Behavioral Ecology Session Chair at the 5th North American Duck Symposium, 2009
- Reviewer of USGS Polar Bear Reports for ESA T&E listing status, 2007

- Manuscript reviews for: American Naturalist (6 times), Animal Behaviour, Animal Conservation (3 times), Auk/Ornithology (many times + Associate Editing), Behavioral Ecology, Biological Conservation (6 times), Biological Reviews, Canadian Field Naturalist, Condor/Ornithological Applications (4 times), Demographic Research, Ecological Applications (8 times), Ecological Modelling (4 times), Ecological Monographs (4 times), Ecology (4 times), Ecology Letters (15 times, 1 in 2022), Ecosphere, Evolutionary Ecology, Global Change Biology (2 times), Herpetological Journal, Journal of Animal Ecology (many times + Associate Editing), Journal of Applied Ecology (6 times), Journal of Ecology (4 times), Journal of Herpetology, Journal of Mammalogy (2 times), Journal of Wildlife Management (6 times), Methods in Ecology and Evolution (6 times), Nature, Nature Climate Change, North American Fauna (2 times), Oecologia (many times + Associate Editing), Oikos (5 times), PeerJ (2 times), PLoS Computational Biology, PLoS ONE (2 times), Population Ecology (5 times), Proceedings of the National Academy of Sciences, USA (2 times), Proceedings of the Royal Society of London, B (2 times, 1 in 2022), Theoretical Population Biology (2 times), USGS FSP (5 times), Wildlife Monographs, Wetlands
-

Awards and Recognitions

- 2017 Elective Member, American Ornithological Society
- 2013 Robins Award, USU Researcher of the Year
- 2013 Researcher of the Year, USU S.J. and Jessie E. Quinney College of Natural Resources
- 2013 Teacher of the Year, USU S.J. and Jessie E. Quinney College of Natural Resources
- 2011 Undergraduate Research Mentor of the year, USU College of Natural Resources
- 2010 Top Referee for Proceedings of the Royal Society B: Biological Sciences
- 2009 Voted best instructor throughout the degree program amongst graduating seniors in the Wildland Resources department

Professional Associations

- Ecological Society of America
- British Ecological Society
- American Ornithological Society
 - AOS Elective Member (class of 2017)
- Evolutionary Demography Society
- Colorado Chapter of The Wildlife Society



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Northern Prairie Wildlife Research Center
8711 37th Street Southeast
Jamestown, ND 58401-7317

9 February 2022

Chadwin Smith, Ph.D.
Independent Science Coordinator
Platte River Recovery Implementation Program
4111 4th Ave. Suite 6
Kearney, NE 68845

Dr. Smith and Selection Panel Members,

I am writing to express my interest in serving on the Independent Science Advisory Committee for the Platte River Recovery Implementation Program, specifically to provide subject-area expertise in avian ecology. I am interested in serving on this committee due to my extensive professional and personal interest in the region, system, and target species. My current position as a Research Wildlife Biologist with the U.S. Geological Survey (USGS) supports opportunities to provide scientific council to decision makers, along with my Agency's primary responsibilities of conducting interdisciplinary, independent, and objective science. As a USGS scientist, I am expected to maintain high levels of scientific and professional integrity, which I believe are principal qualities of all researchers. I continually strive for objectivity, because even perceived conflicts of interest can erode public support for science and science-based decisions.

In my current position, I regularly review and provide expert opinions on scientific plans and technical products. In support of partners, constituents, and other Department of the Interior agencies, I provide expert advice regarding the status, conservation planning, research needs, and management of migratory birds, primarily waterfowl, sandhill cranes, and whooping cranes. Since 2017, I have served on the International Whooping Crane Recovery Team as a scientific advisor to team co-leads at the U.S. Fish and Wildlife Service (USFWS) and Canadian Wildlife Service (CWS). In this role, I have participated in development and parameterization of a population viability analysis for whooping cranes and provided review of a recently drafted USFWS species status assessment. My position at a Federal science agency that does not have regulatory authority has instilled in me a robust appreciation of boundaries between advisors and decision makers. In advisory roles it is critical that I and my USGS colleagues stay firmly in the role of advisor, while allowing others to make decisions based on multiple considerations including, but not exclusively, our expert advice.

My education and professional experience align well with the stated needs of the Program with respect to avian ecology. My education and graduate research focused on the study of migratory birds during both of my graduate degrees. Since starting with USGS in 2007, I have worked with migratory birds and have extensive experience related to sandhill cranes and waterfowl that use the Platte River Valley and surrounding landscapes. I began whooping crane research in 2010 and have been active in the study and recovery of the species. From 2010–2019, this whooping crane research included the Program in a partnership with the USGS, USFWS, Crane Trust, and

CWS. As part of our research partnership, I have authored or coauthored 12 peer-reviewed publications and 19 technical presentations that have addressed habitats, migration strategies, migration corridors, demographic vital rates, and threats to whooping cranes. I strive to work broadly throughout the migration corridor and in other aspects of their annual life cycle—breeding and wintering ecology. A portion of my current research efforts address potential climate change threats to whooping cranes and other migratory birds in the midcontinent of North America. I am leading a team quantifying changes in wetland use by migrating whooping cranes with respect to geography and drought severity. Follow-up work will include a network analysis of more consistently available surface water resources (for example, reservoirs and river systems) and how these sites may serve to maintain a viable migratory network of stopover sites for migrating whooping cranes and other birds if drought conditions severely limit more ephemeral surface water resources. I also have led or coauthored eight research products on sandhill cranes, primarily related to migration staging habitat use and selection along the Platte River. Finally, much of my remaining science products and efforts relate to avian ecology and management, including two coauthored works on the breeding ecology of piping plovers and current projects using long-term data to understand spatiotemporal variation in duck nest survival and how effectively management actions are meeting current conservation objectives.

As stated, I have a previous relationship with the Program as a research partner on tracking efforts and directed funding to characterize roosting locations across the migration corridor. Even with these past collaborations, my research focus has not directly concerned how the Program's activities affect whooping cranes and their habitats, because these efforts and products were led by Program scientists. Therefore, I believe my familiarity with past Program activities, the Platte River, and migratory species that use the river will be an asset to the Program. Because my research has not been directly related to management on the Platte River for whooping cranes, I foresee no impediments to my objectivity due to my past work with the Program.

Overall, I believe my current position aligns well with the intent of the ISAC and that I am well qualified to provide expert review and opinion regarding avian responses to ecosystem restoration efforts. I also view serving on the ISAC as an opportunity for professional growth by participating on this interdisciplinary committee and interacting with other Program standing committees of talented scientists and experts. Finally, I have a personal interest in the central Platte River Valley ecosystem; hunting the river with my family during childhood, and as a young adult shaped me personally and professionally. In fact, waterfowl hunting on the Platte River is a major reason why I chose to pursue a career as a biologist studying wildlife and the habitats needed to support them. I would find personal satisfaction with the idea of using my expertise in some small way to inform restoration efforts in the region.

Thank you for considering me as a potential member of the ISAC. Please contact me if you have questions regarding my qualifications or interest in serving on this committee.

Sincerely,



Aaron Pearse, Ph.D.
Research Wildlife Biologist

Aaron T. Pearse, Ph.D.
U.S. Geological Survey
Northern Prairie Wildlife Research Center
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Jamestown, ND 58401
(701) 253-5509
apearse@usgs.gov

EMPLOYMENT

2007–present Research Wildlife Biologist – U.S. Geological Survey, Northern Prairie Wildlife Research Center, Jamestown, ND

My current assignment is to design and conduct multidisciplinary studies of migratory birds and the habitats they depend on at regional, national, and international extents. I work on scientific research for federal and state natural resource agencies, providing findings and technical support on issues related to conservation and management of migratory birds (primarily waterfowl and other waterbirds), wetland ecology, and land management. My studies aim to assist conservation planners and managers improve, prioritize, and target their actions. My work provides new knowledge, approaches, and methodology necessary to address complex issues concerning migratory bird populations and habitat management. I am responsible for directing all phases of research, including study design and planning, project and budget management, data collection and analysis, results interpretation and reporting, and partner engagement and communication. I also serve partners by providing scientific review and expert opinion, primarily regarding topic related to avian ecology and management.

Current projects (2022):

Ecology and management of Aransas-Wood Buffalo whooping cranes

Temporospatial variation in duck nest survival

Ecology and management of midcontinent sandhill cranes

Development of survey methods for spring-migrating waterfowl in the Rainwater Basin of Nebraska

Evaluating human dimensions, economics, and waterbird use of farmed wetlands within agriculture fields (graduate student at North Dakota State University)

Relating predator community composition and duck nest survival in eastern South Dakota (co-advise graduate student at South Dakota State University)

Post-fledging movement and habitat selection by mallards in the fall and their effect on spring recruitment (co-advise graduate student at South Dakota State University)

EDUCATION

Mississippi State University, Ph.D., Forest Resources, 2007
Concentration: Wildlife & Fisheries

University of Idaho, M.S., Wildlife Resources, 2002

Kansas State University, B.S. with honors, Fisheries and Wildlife Biology, 1998

PROFESSIONAL ACTIVITIES AND SERVICE

Member of the International Whooping Crane Recovery Team (2017-present). I was invited to serve as a recover team member by the USFWS leader to support continued recovery of the species by providing

scientific guidance, review, and interpretation. A main effort I assisted with during the past few years was the development of a population viability analysis and review of the Species Status Assessment.

Associate Editor for Wildlife Society Bulletin (2014-2020)

Associate Editor for Ornithological Applications (formerly The Condor; 2020-present)

USGS representative to the Central Flyway (2010-present)

Participant in Rainwater Basin Joint Venture, Conservation Planning Working Group, 2008–present

Member-at-Large of the Executive Board of the Central Mountains and Plains Section of The Wildlife Society (2009–2011).

M.J. Murdock Charitable Trust – research proposal review, member, 2016

National Geographic grant review, member, 2017

Estonian Research Council, research proposal review, 2020

Ad hoc referee for *Agriculture, Ecosystems & Environment*; *American Midland Naturalist*; *Animal Biodiversity and Conservation*; *Auk*; *Avian Conservation and Ecology*; *Biological Conservation*; *Canadian Journal of Zoology*; *Condor*; *Freshwater Biology*; *Diversity and Distribution*; *Great Plains Research*; *Ibis*; *Journal of Field Ornithology*; *Freshwater Biology*; *Journal of Fish and Wildlife Management*; *Journal of Wildlife Management*; *Landscape Ecology*; *Natural Areas Journal*; *PLoS One*; *Polar Research*; *Prairie Naturalist*; *Natural Areas*; *Proceedings of the North American Crane Working Group*; *Southwestern Naturalist*; *Waterbirds*; *Western North American Naturalist*; *Wetlands*; *Wildfowl*; *Wildlife Biology*; *Wildlife Research*; *Wildlife Society Bulletin*; *Wilson Journal of Ornithology*

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ORCID 0000-0002-6137-1556, [Google Scholar Profile](#)

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2. Cavitt, J.F., **A.T. Pearse**, and T.A. Miller. 1999. Brown thrasher nest reuse: A time saving resource, protection from search-strategy predators, or cues for nest-site selection? *Condor* 101:859–862. <https://doi.org/10.2307/1370076>
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4. **Pearse, A.T.**, J.F. Cavitt, and J.F. Cully, Jr. 2004. Effects of food supplementation on female nest attentiveness and incubation mate feeding in two sympatric wren species. *Wilson Bulletin* 116:23–30. [https://doi.org/10.1676/0043-5643\(2004\)116\[0023:EOFSOF\]2.0.CO;2](https://doi.org/10.1676/0043-5643(2004)116[0023:EOFSOF]2.0.CO;2)
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6. **Pearse, A.T.**, B.S. Dorr, S.J. Dinsmore, and R.M. Kaminski. 2007. Comparison of sampling strategies to estimate abundance of double-crested cormorants in western Mississippi. *Human–Wildlife Conflicts* 1:27–34. <https://www.jstor.org/stable/24875049>

7. **Pearse, A.T.**, and V.G. Lester. 2007. Correlation between nest and duckling survival of mallards in south-central Saskatchewan. *Journal of Wildlife Management* 71:1612–1616.
<https://doi.org/10.2193/2005-760>
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11. Kross, J., R.M. Kaminski, K.J. Reinecke, and **A.T. Pearse**. 2008. Conserving waste rice for wintering waterfowl in the Mississippi Alluvial Valley. *Journal of Wildlife Management* 72:1383–1387.
<https://doi.org/10.2193/2007-226>
12. **Pearse, A.T.**, S.J. Dinsmore, R.M. Kaminski, and K.J. Reinecke. 2008. Evaluation of an aerial survey to estimate abundance of wintering ducks in western Mississippi. *Journal of Wildlife Management* 72:1413–1419. <https://doi.org/10.2193/2007-471> ***Mississippi Chapter of The Wildlife Society Outstanding Peer-reviewed Publication Award, 2008*
13. **Pearse, A.T.**, K.J. Reinecke, S.J. Dinsmore, and R.M. Kaminski. 2009. Using simulation to improve wildlife surveys: wintering mallards in Mississippi, USA. *Wildlife Research* 36:279–288.
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15. Stafford, J.D., **A.T. Pearse**, C.S. Hine, A.P. Yetter, and M.M. Horath. 2010. Factors associated with hunter success for ducks on state-owned lands in Illinois, USA. *Wildlife Biology* 16:113–122.
<https://doi.org/10.2981/09-071>
16. **Pearse, A.T.**, G.L. Krapu, R.R. Cox, Jr., and B.E. Davis. 2011. Spring-migration ecology of northern pintails in south-central Nebraska. *Waterbirds* 34:10–18. <https://doi.org/10.1675/063.034.0102>
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35. **Pearse, A.T.**, M. Rabbe, L.M. Juliusson, M.T. Bidwell, L. Craig-Moore, D.A. Brandt, and W. Harrell. 2018. Delineating and identifying long-term changes in whooping crane (*Grus americana*) migration corridor. PLoS ONE 13:e0192737. <https://doi.org/10.1371/journal.pone.0192737>
36. Niemuth, N.D., A.J. Ryba, **A.T. Pearse**, S.M. Kvas, D.A. Brandt, B. Wangler, J.E. Austin, and M.J. Carlisle. 2018. Opportunistically collected data reveal habitat selection by migrating whooping cranes in the U.S. Northern Plains. The Condor: Ornithological Applications 120:343–356. <http://doi.org/10.1650/CONDOR-17-80.1>
37. **Pearse, A.T.**, D.A. Brandt, B.K. Hartup, and M.T. Bidwell. 2018. Mortality in Aransas-Wood Buffalo whooping cranes: timing, location, and causes. Pages 125–138 in J.B. French, Jr., S.J. Converse, and J.E. Austin, editors, Whooping Cranes: Biology and Conservation. Biodiversity of the World: Conservation from Genes to Landscapes. Academic Press, San Diego, CA. ISBN: 978-0-12-803555-9, <http://dx.doi.org/10.1016/B978-0-12-803555-9.00006-2>
38. Hooten, M.B., H.R. Scharf, T.J. Hefley, **A.T. Pearse**, and M.D. Weegman. 2018. Animal movement models for migratory individuals and groups. Methods in Ecology and Evolution 9:1692–1705. <http://dx.doi.org/10.1111/2041-210X.13016>
39. Baasch, D.M., P.D. Farrell, S. Howlin, **A.T. Pearse**, J.M. Farnsworth, and C.B. Smith. 2019. Whooping crane use of riverine stopover sites. PLoS One 14:e0209612. <https://doi.org/10.1371/journal.pone.0209612>
40. Baasch, D.M., P.D. Farrell, **A.T. Pearse**, D.A. Brandt, A.J. Caven, M.J. Harner, G.D. Wright, and K.L. Metzger. 2019. Diurnal habitat selection of migrating whooping cranes in the Great Plains. Avian Conservation and Ecology 14:6 <http://www.ace-eco.org/vol14/iss1/art6/>
41. VonBank, J.A., D.A. Brandt, **A.T. Pearse**, D.B. Wester, and B.M. Ballard. 2019. Using morphological measurements to predict subspecies of midcontinent sandhill cranes. Wildlife Society Bulletin 43:737–744. <http://doi.org/10.1002/wsb.1020>
42. Fino, S., J.D. Stafford, **A.T. Pearse**, and J.A. Jenks. 2019. Incidental captures of plains spotted skunks in central South Dakota. Prairie Naturalist 51:33–36.
43. Caven, A.J., E.M. Brinley Buckley, K.C. King, J.D. Wiese, D.M. Baasch, G.D. Wright, M.J. Harner, **A.T. Pearse**, M. Rabbe, D.M. Varner, B. Krohn, M. Arcilla, K.D. Schroeder, and K.F. Dinan. 2019. Temporospatial shifts in sandhill crane staging in the Central Platte River Valley in response to climatic variation and habitat change. Monographs of the Western North American Naturalist 79:33–76. <https://scholarsarchive.byu.edu/mwnan/vol11/iss1/4>
44. **Pearse, A.T.**, K.L. Metzger, D.A. Brandt, M.T. Bidwell, M.J. Harner, D.M. Baasch, and W. Harrell. 2020. Heterogeneity in migration strategies of whooping cranes. The Condor: Ornithological Applications 122:1-15. <https://doi.org/10.1093/condor/duz056>
45. Varner, D.M., **A.T. Pearse**, A.A. Bishop, J.I. Davis, J.C. Denton, R.C. Grosse, H.M. Johnson, E.J. Munter, K.D. Schroeder, R.E. Spangler, M.P. Vrtiska, and A.E. Wright. 2020. Roosting habitat use by sandhill cranes and waterfowl on the North and South Platte Rivers in Nebraska. Journal of Fish and Wildlife Management 11:56–67. <https://doi.org/10.3996/042019-JFWM-030>
46. **Pearse, A.T.**, G.A. Sargeant, G.L. Krapu, and D.A. Brandt. 2020. Population and harvest dynamics of midcontinent sandhill cranes. Journal of Wildlife Management 84:902-910. <http://dx.doi.org/10.1002/jwmg.21865>
47. Metzger, K.L., S.E. Lehnen, S.E. Sesnie, M.J. Butler, **A.T. Pearse**, and G. Harris. 2020. Identifying sustainable winter habitat for whooping cranes. Journal of Nature Conservation. <https://doi.org/10.1016/j.jnc.2020.125892>

48. **Pearse, A.T.**, K.L. Metzger, D.A. Brandt, J.A. Shaffer, M.T. Bidwell, and W. Harrell. 2021. Migrating whooping cranes avoid wind-energy infrastructure when selecting stopover habitat. *Ecological Applications*: e02324. <https://doi.org/10.1002/eap.2324>
49. **Pearse, A.T.**, M.H. Sherfy, M. Wimer, M. Khalil, M.T. Wiltermuth (editors). 2021. U.S. Geological Survey Migratory Bird Science Activities–2020–2021: U.S. Geological Survey Circular, 1480. <https://doi.org/10.3133/cir1480>

In Production

50. Caven, A.J., **A.T. Pearse**, D.A. Brandt, M.J. Harner, G.D. Wright, D.M. Baasch, E.M. Brinley Buckley, K.L. Metzger, A.E. Lacy, and M.R. Rabbe. Whooping crane stopover length in relation to stopover site characteristics. *Proceedings of the North American Crane Workshop*.
51. **Pearse, A.T.**, C.L. Amundson, and M. Vrtiska. Migration and winter events. *Migration and Wintering Waterfowl*. B. Ballard, J. Fleskes, and M. Brasher, editors. Texas A&M University Press.

Data Releases

1. **Pearse, A.T.**, D.A. Brandt, W.C. Harrell, K.L. Metzger, D.M. Baasch, and T.J. Hefley. 2015. Map of whooping crane stopover site use intensity within the Great Plains from satellite telemetered birds, 2010–2014: U.S. Geological Survey data release, <http://dx.doi.org/10.5066/F7862DHM>
2. **Pearse, A.T.**, D.A. Brandt, and G.L. Krapu. 2016. Wintering sandhill crane exposure to wind energy development in the central and southern Great Plains, USA datasets: U.S. Geological Survey data release, <http://dx.doi.org/10.5066/F7QV3JMK>
3. **Pearse, A.T.**, D.A. Brandt, and G.L. Krapu. 2016. Sandhill crane roosts use, channel characteristics, and environmental variables along the Platte River, Nebraska, 2003–2007: U.S. Geological Survey data release, <http://dx.doi.org/10.5066/F73J3B44>
4. **Pearse, A.T.**, D.A. Brandt, and G.L. Krapu. 2017. Sandhill crane phenology at the Platte River, Nebraska, 2001–2007: U.S. Geological Survey data release, <https://doi.org/10.5066/F78S4NVM>
5. **Pearse, A.T.**, D.A. Brandt, M. Rabbe, and M.T. Bidwell. 2017. Spatial data for estimating whooping crane migration corridor: U.S. Geological Survey data release, <https://doi.org/10.5066/F75B01NJ>
6. **Pearse, A.T.**, D.A. Brandt, and G.L. Krapu. 2017. Sandhill crane locations, autumn 2013 migration: U.S. Geological Survey data release, <https://doi.org/10.5066/F7F76BGR>
7. **Pearse, A.T.**, M. Rabbe, M. Bidwell, L. Juliusson, L. Craig-Moore, D.A. Brandt, and W. Harrell. 2018. Map of whooping crane migration corridors: U.S. Geological Survey data release, <https://doi.org/10.5066/F7FT8K74>
8. **Pearse, A.T.**, D.A. Brandt, J.A. VonBank, and G.L. Krapu. 2019. Morphological measurements and subspecies of midcontinent sandhill cranes: U.S. Geological Survey data release, <https://doi.org/10.5066/P9A5IXCM>
9. **Pearse, A.T.**, K.L. Metzger, D.A. Brandt, M.T. Bidwell, M.J. Harner, D.M. Baasch, and W. Harrell. 2019. Characterization of whooping crane migrations and stopover sites used in the Central Flyway, 2010–2016: U.S. Geological Survey data release, <https://doi.org/10.5066/P9NRAY6F>
10. **Pearse, A.T.**, D. A. Brandt, and G. L. Krapu. 2020. Fecundity data for midcontinent sandhill cranes, 2003–2006: U.S. Geological Survey data release, <https://doi.org/10.5066/P9WMRBMV>
11. **Pearse, A.T.**, D.A. Brandt, D.M. Baasch, M.T. Bidwell, J.A. Conkin, M.J. Harner, W. Harrell, and K.L. Metzger. 2020. Location data for whooping cranes of the Aransas-Wood Buffalo Population, 2009–2018: U.S. Geological Survey data release, <https://doi.org/10.5066/P9Y8KZJ9>

12. **Pearse, A.T.**, D.A. Brandt, K.L. Metzger, M.T. Bidwell, and W. Harrell 2020. Whooping crane migration habitat selection data and distance to wind-energy infrastructure, 2010–2016: U.S. Geological Survey data release, <https://doi.org/10.5066/P9SVV311>

Outreach Articles

1. **Pearse, A.T.**, R.M. Kaminski, S.J. Dinsmore, and K.J. Reinecke. 2004. Delta duck details: What you need to know. Mississippi Department of Wildlife Fisheries and Parks, Wildlife Issues 4(1):7.
2. **Pearse, A.T.**, S.J. Dinsmore, R.M. Kaminski, and K.J. Reinecke. 2004. Studying abundance and distribution of ducks in the Mississippi Delta. Delta Wildlife Magazine 12(1):19-20.
3. **Pearse, A.T.** 2004. Effects of predator removal on duck production. Wildlife Trends 4(4): 20-25.
4. **Pearse, A.T.**, R.M. Kaminski, S.J. Dinsmore, and K.J. Reinecke. 2005. Waterfowl abundance and distribution in the Mississippi Delta. Delta Wildlife Magazine 13(2):14-16.
5. Kaminski, R.M., **A.T. Pearse**, J.D. Stafford, and K.J. Reinecke. 2005. Where have all the Mallards gone? Delta Wildlife Magazine 13(2):23–26.
6. Kaminski, R.M., and **A.T. Pearse**. 2007. Habitat ingredients for wintering ducks. Mississippi Department of Wildlife Fisheries and Parks, Wildlife Issues 7(2):15.
7. Kaminski, R.M., and **A.T. Pearse**. 2008. Habitat ingredients for wintering ducks. Delta Wildlife Magazine 16(1):6–7.
8. Strickland, B., R.M. Kaminski, **A.T. Pearse**, and W.D. Jones. 2008. Catfish-duck ponds for the Mississippi Delta. Mississippi State Cooperative Extension Service Publication. 2482.
9. **Pearse, A.T.**, and B. Strobel. 2011. Remote tracking of Aransas-Wood Buffalo Whooping Cranes. Unison Call (Newsletter of the North American Crane Working Group). Vol 22, no 2.

PROFESSIONAL PRESENTATIONS – Noteworthy and Recent (2011-present)

1. **Pearse, A.T.**, G.L. Krapu, and D.A. Brandt. 2009. Relationships between migrating sandhill cranes and agriculture in the central Platte River Valley. Special symposium “Connections among wetlands, wildlife, and agriculture.” Annual meeting of the Society of Wetland Scientists, Madison, WI. (Invited)
2. **Pearse, A.T.**, R.T. Alisauskas, G.L. Krapu, and R.R. Cox, Jr. 2011. Energetics of greater white-fronted geese during spring migration. Special Symposium “Ecology of waterbird migration” at the 34th annual meeting of the Waterbird Society, Grand Island, NE. (Invited)
3. **Pearse, A.T.**, G.L. Krapu, D.A. Brandt, F. Chavez-Ramirez, and W. Wehtje. 2011. Migration ecology of the Aransas-Wood Buffalo Population of whooping cranes. 12th North American Crane Workshop, Grand Island, NE.
4. Wehtje, W., F. Chavez-Ramirez, D.A. Brandt, G.L. Krapu, and **A.T. Pearse**. 2011. Using satellite telemetry to gain new insights into whooping crane stopover locations and migratory behavior. Joint meetings of the Association of Field Ornithologists, Cooper Ornithological Society, and Wilson Ornithological Society, Kearney, NE.
5. **Pearse, A.T.**, R. Swanson, M.H. Sherfy, and G.L. Krapu. 2011. U.S. Geological Survey Priority Ecosystem Science at the Platte River: accomplishments and future directions. Climate, Water and Ecosystems–Shaping the Great Plains Symposium, Lincoln, NE.

6. **Pearse, A.T.**, D.A. Brandt, G.L. Krapu, and M. Post van der Burg. 2012. Evaluating transmitter effects on sandhill cranes: implications for whooping crane research. North American Ornithological Conference, Vancouver, BC.
7. Wiltermuth, M.T., M.J. Anteau, **A.T. Pearse**, and M.H. Sherfy. 2012. Habitat selection and movements of piping plover broods on Lake Sakakawea, ND. Central and Mountains Section of The Wildlife Society meeting, Bismarck, ND.
8. **Pearse, A.T.** 2013. Advancing knowledge of whooping crane migration across the Great Plains. 18th Annual Information Seminar, Rainwater Basin Joint Venture, Hastings, NE. (Invited)
9. **Pearse, A.T.**, S. Bearhop, and J. Belant. 2013. Advancing knowledge for conservation of waterfowl habitats. Plenary Presentation. 6th North American Duck Symposium and Ecology and Management of North American Waterfowl Conference, Memphis, TN. (Invited Plenary Presentation)
10. Stafford, J., A. Janke, **A.T. Pearse**, M. Anteau, M. Eichholz, A. Fox, J. Straub, J. Elmberg, and C. Arzel. 2013. Waterfowl habitat use and selection – Spring migration and pre-breeding. Plenary Presentation. 6th North American Duck Symposium and Ecology and Management of North American Waterfowl Conference, Memphis, TN. (Invited Plenary Presentation)
11. Brandt, D.A., G.L. Krapu, and **A.T. Pearse**. 2013. Distribution of northern-nesting geese relative to sandhill cranes in the central Platte River Valley, Nebraska. 6th North American Duck Symposium and Ecology and Management of North American Waterfowl Conference, Memphis, TN.
12. Casady, D.J., J. Drahota, **A.T. Pearse**, L.M. Reichart, and M. Vrtiska. 2013. Wintering body condition of spring migratory northern pintails in the Rainwater Basin. 6th North American Duck Symposium and Ecology and Management of North American Waterfowl Conference, Memphis, TN.
13. Hagy, H.M., J.D. Stafford, M.L. Schummer, **A.T. Pearse**, and R.M. Kaminski. 2013. Practical application of and potential bias associated with foraging thresholds in estimates of carrying capacity for waterfowl. 6th North American Duck Symposium and Ecology and Management of North American Waterfowl Conference, Memphis, TN.
14. **Pearse, A.T.**, D. Brandt, M. Harner, K. Metzger, W. Harrell, M. Bidwell, and D. Baasch. 2014. Migration ecology of Aransas-Wood Buffalo whooping cranes. 13th North American Crane Workshop, Lafayette, LA.
15. Brandt, D., **A.T. Pearse**, B. Hartup, M. Bidwell, F. Chavez-Ramirez, and B. Strobel. 2014. Capture and deploying GPS PTTs on Aransas-Wood Buffalo whooping cranes: lessons learned with new techniques and technologies. 13th North American Crane Workshop, Lafayette, LA.
16. Metzger, K., M. Harner, G. Wright, W. Harrell, **A.T. Pearse**, M. Bidwell, and D. Baasch. 2014. Space use of wintering whooping cranes. 13th North American Crane Workshop, Lafayette, LA.
17. Harner, M. G. Wright, **A.T. Pearse**, D. Baasch, K. Metzger, M. Bidwell, and W. Harrell. 2014. Characterization of stopover sites used by whooping cranes as determined from telemetry-marked birds. 13th North American Crane Workshop, Lafayette, LA.
18. Bidwell, M., D. Baasch, D. Brandt, J. Conkin, **A.T. Pearse**, M. Harner, and K. Metzger. 2014. Habitat use by Aransas-Wood Buffalo whooping cranes in the oil sands mining region. 13th North American Crane Workshop, Lafayette, LA.
19. Baasch, D., **A.T. Pearse**, M. Harner, W. Harrell, and M. Bidwell. 2014. Behavioral movements of Aransas-Wood Buffalo whooping cranes: anomalies or indications of ways to further enhance species' recovery. 13th North American Crane Workshop, Lafayette, LA.

20. Harrell, W., M. Bidwell, **A.T. Pearse**, D. Brandt, M. Harner, K. Metzger, and D. Baasch. 2014. Meshing new information from the Whooping Crane Tracking Partnership with species recovery goals—next steps. 13th North American Crane Workshop, Lafayette, LA.
21. **Pearse, A.T.**, D. Brandt, G. Wright, K. Metzger, W. Harrell, M. Bidwell, and D. Baasch. 2015. Migration of Aransas-Wood Buffalo whooping cranes in North Dakota. North Dakota Chapter of The Wildlife Society meeting, Mandan, ND
22. Niemuth, N.D., A. J. Ryba, J. E. Austin, D.A. Brandt, M.A. Carlisle, S. Kvas, **A.T. Pearse**, and B. Wangler. 2015. Identifying threats and guiding conservation planning for migrant whooping cranes in North Dakota. North Dakota Chapter of The Wildlife Society meeting, Mandan, ND.
23. **Pearse, A.T.**, D. Varner, R. Spangler, J. Denton, J. Davis, K. Schroeder, M. P. Vrtiska, E. Munter, and H. Johnson. 2016. Distribution of spring migrating waterfowl along the North and South Platte Rivers in western Nebraska. 7th North American Duck Symposium. Annapolis, MD.
24. **Pearse, A.T.**, D. A. Brandt, B. Hartup, and M. Bidwell. 2016. Timing, location, and causes of mortality in migratory whooping cranes. North American Ornithological Conference. Washington, DC.
25. **Pearse, A.T.**, D. A. Brandt, B. Hartup, and M. Bidwell. 2017. Seasonal mortality in Aransas-Wood Buffalo whooping cranes. North American Crane Workshop, Chattanooga, TN.
26. Krapu, G.L., D.A. Brandt, **A.T. Pearse**, and B.M. Ballard. 2017. A major new spring staging area for the midcontinent population of sandhill cranes in South Dakota: probable causes, characteristics, and conservation plans. North American Crane Workshop, Chattanooga, TN.
27. Brandt, D.A., P.J. Pietz, D.A. Buhl, W.E. Newton, G.L. Krapu, and **A.T. Pearse**. 2017. Nocturnal roosting behavior of sandhill cranes on the Platte River, Nebraska. North American Crane Workshop, Chattanooga, TN.
28. Wells, E.D., B.M. Ballard, S.L. Oldenberger, D.P. Collins, D.A. Brandt, **A.T. Pearse**, and H.L. Perotto-Baldivieso. 2017. Wintering sandhill crane habitat selection along Texas Gulf Coast. North American Crane Workshop, Chattanooga, TN.
29. Fairhurst, G.D., M.T. Bidwell, B.K. Hartup, S. Cabezas, J.A. Conkin, T.A. Marchant, K.L. Metzger, **A.T. Pearse**, and C. Soos. 2017. Does health on natal grounds drive migratory behaviours of juvenile whooping cranes? North American Crane Workshop, Chattanooga, TN.
30. Wells, E.D., B.M. Ballard, S.L. Oldenburger, D.P. Collins, D.A. Brandt, **A.T. Pearse**, and H.L. Perotto-Baldivieso. 2017. Selection of roosting habitat by wintering sandhill cranes along the Texas Gulf Coast. American Ornithological Society, East Lansing, MI.
31. Masto, N.M., M.R. Kneece, R.M. Kaminski, B.E. Ross, **A.T. Pearse**, P. Gerard, and K. Barrett. 2017. Aerial strip-transect surveys of waterfowl and waterbirds in South Carolina: summary and revisions of 2016-2017 surveys. Southeastern Fish and Wildlife Conference, Louisville, KY.
32. Fino, S.R., J.D. Stafford, **A.T. Pearse**, and J.A. Jenks. 2018. Relating predator community dynamics and duck nest survival in eastern South Dakota. Midwest Fish and Wildlife Conference, Milwaukee, WI.
33. Wells, E.D., B.M. Ballard, S.L. Oldenburger, D.P. Collins, D.A. Brandt, **A.T. Pearse**, H.L. Perotto-Baldivieso, and D. Wolfson. 2018. Autumn and wintering movement ecology of Gulf Coast subpopulation sandhill cranes. Texas Chapter of The Wildlife Society, Dallas, TX.
34. Fino, S.R., J.D. Stafford, **A.T. Pearse**, J.A. Jenks, and R.C. Lonsinger. 2018. Relating predator community dynamics and duck nest survival in eastern South Dakota. South Dakota Chapter of The Wildlife Society, Oacoma, SD.

35. Varner, D.M., **A.T. Pearse**, A.A. Bishop, J.I. Davis, J.C. Denton, R.C. Grosse, H.M. Johnson, E.J. Munter, K.D. Schroeder, R.E. Spangler, M.P. Vrtiska, and A.E. Wright. 2018. Habitat use of sandhill cranes and waterfowl on the North and South Platte Rivers in Nebraska. North American Arctic Goose Conference and Workshop, Lincoln, NE.
36. **Pearse, A.T.**, D.A. Brandt, M.T. Bidwell, K.L. Metzger, M.J. Harner, D.M. Baasch, and W. Harrell. 2018. Migration strategies in Central Flyway whooping cranes. 12th Platte River Basin Ecosystem Symposium, Wood River, NE.
37. Converse, S.J., C.S. Teitelbaum, P. Mendgen, **A.T. Pearse**, B. Abrahms, and T. Mueller. 2018. Culture shapes movements of a reintroduced migratory bird. Reintroducing Migratory Birds Symposium, associated with the International Wildlife Reintroduction Conference, Chicago, IL. (Invited)
38. Toy, D. L., E.S. DeKeyser, M.J. Anteau, **A.T. Pearse**, J.E. Norland, D.C. Roberts. 2019. Towards an understanding of farming wetlands: considering economics, social, and ecological issues. North Dakota Chapter of The Wildlife Society, Bismarck, ND.
39. Bidwell, M.T., J.A. Conkin, R. Wiacek, J. Ball, **A.T. Pearse**, D.A. Brandt, W. Harrell, K. Metzger, and R. Kindopp. 2019. Movement patterns and habitat use of endangered whooping cranes during migration through Canada's oil sands mining region. American Ornithological Society, Anchorage, AK.
40. Bidwell, M.T., D.A. Brandt, J.A. Conkin, W. Harrell, R. Kindopp, K. Metzger, and **A.T. Pearse**. 2019. Movement patterns and behaviour of whooping cranes throughout the annual cycle: insights from satellite tracking. Society of Canadian Ornithologists, Quebec City, QB.
41. **Pearse, A.T.**, and M. French. 2019. Two decades of nest survival in the Nebraska Sandhills: the 'southern' or future Prairie Pothole Region? 8th North American Duck Symposium. Winnipeg, MB.
42. Brandt, D.A., G.L. Krapu, and **A.T. Pearse**. 2019. Comparison of brood composition and characteristics between the Coteau and Glaciated Plains of the Dakotas. 8th North American Duck Symposium. Winnipeg, MB.
43. Varner, D., **A.T. Pearse**, and A. Bishop. 2019. Development of a long-term monitoring program for waterfowl in the Rainwater Basin Region. 8th North American Duck Symposium. Winnipeg, MB.
44. Toy, D.L., M.J. Anteau, **A.T. Pearse**, and E. DeKeyser. 2019. Dabbling duck use of agriculturally manipulated and unmanipulated wetlands in the Drift Prairie of North Dakota. 8th North American Duck Symposium. Winnipeg, MB.
45. Anchor, C.A., J.D. Stafford, and **A.T. Pearse**. 2019. Evaluating post-fledging movements of hatch year mallards in the Dakotas. 8th North American Duck Symposium. Winnipeg, MB.
46. Fino, S.R., J.D. Stafford, **A.T. Pearse**, J.A. Jenks, and R.C. Lonsinger. 2019. Relating predator community composition and duck nest survival in eastern South Dakota. North American Duck Symposium. Winnipeg, MB.
47. **Pearse, A.T.**, D.A. Brandt, K.L. Metzger, W. Harrell, M.T. Bidwell, and D.M. Baasch. 2020. Presence of wind towers displace migrating whooping cranes. North American Crane Workshop. Lubbock, TX.
48. Caven, A.J., **A.T. Pearse**, D.M. Baasch, D.A. Brandt, M.J. Harner, G.D. Wright, J.M. Malzahn, E.M. Brinley Buckley, A.E. Lacy, and K.L. Metzger. 2020. Whooping crane stay length in relation to stopover site characteristics. North American Crane Workshop. Lubbock, TX.
49. Brautigam, K.J., W.P. Johnson, D.P. Collins, J.R. Smith, W.C. Conway, O.N. Fitzsimmons, G.L. Krapu, D.A. Brandt, **A.T. Pearse**, and B.A. Grisham. 2020. A 20-year look at areas of importance

used by overwintering mid-continent population of sandhill cranes. Texas Chapter of the Wildlife Society. Corpus Christi, TX.

50. Anchor, C.E., **A.T. Pearse**, M.L. Szymanski, R.M. Murano, and J.D. Stafford. 2020. Habitat selection by post-fledging mallards in the southern Prairie Pothole Region. North Dakota Wildlife Society. Bismarck, ND.
51. Anchor, C.E., **A.T. Pearse**, R.J. Murano, M.L. Szymanski, and J.D. Stafford. 2020. Habitat Use by hatch-year mallards in North and South Dakota. South Dakota Chapter of The Wildlife Society Annual Meeting, Chamberlain, SD.
52. Toy, D.L., M.J. Anteau, **A.T. Pearse**, and E. DeKeyser. 2020. Dabbling duck use of agriculturally manipulated and unmanipulated wetlands in the Drift Prairie of North Dakota and South Dakota. North Dakota Chapter of the Wildlife Society. Bismarck, ND.
53. Toy, D.L., M.J. Anteau, **A.T. Pearse**, and E. DeKeyser. 2021. Is farming within prairie pothole wetlands profitable? North Dakota Chapter of the Wildlife Society.
54. Ellis, K.S., **A.T. Pearse**, D.A. Brandt, M.T. Bidwell, W. Harrell, and M. Post van der Burg. 2021. Balancing siting of future wind-energy infrastructure and associated habitat loss for migrating whooping cranes. The Wildlife Society.

GRADUATE STUDENT ADVISING AND COMMITTEES

Adjunct Research Professor at South Dakota State University (2017–present)

Co-major advisor:

Samantha Fino, Ph.D. candidate, South Dakota State University, 2017–present; Co-advised with Dr. Joshua Stafford; Project title: Predator cascade and nest success: changes in foraging patterns as a function of grassland patch dynamics and vegetation composition. Expected completion: December 2022.

Cynthia Anchor, M.S. student, South Dakota State University, 2018–present, Co-advised with Dr. Joshua Stafford; Project title: Post-fledging movement and habitat selection by mallards in the fall and their effect on spring recruitment. Expected completion: December 2022.

Graduate student committee:

Dustin Casady, M.S. student, University of Nebraska–Kearney, 2011–2013, Thesis advisor: Dr. Letitia Reichart; Thesis title: Combining lipid dynamics, body condition, and winter origin of spring migratory northern pintails in the Rainwater Basin to evaluate habitat use. Graduated 2013.

Dustin Toy, Ph.D. student, North Dakota State University, 2017–present; Thesis advisor: Dr. Edward DeKeyser; Project title: Understanding consequences of management strategies for farmed wetlands to ecosystem services in the Prairie Pothole Region, expected completion: May 2022.

TECHNICAL TRAINING

Introduction to Structured Decision Making – CSP3171, National Conservation Training Center, 2009.

U.S. Geological Survey Supervisory Challenge, 2015.

First Aid, CPR, and AED – American Heart Association, 2016–2018.

HONORS AND AWARDS

2005 David H. Nabi Memorial Award, Mississippi State University (A peer-nominated award given by the Department of Wildlife and Fisheries, to a graduate student that has given her/his time to assist students, faculty, and staff.)

2005–2006 Ernest A. Gluesing Memorial Award for outstanding Doctoral Student, Department of Wildlife and Fisheries, Mississippi State University

2006–2007 Ernest A. Gluesing Memorial Award for outstanding Doctoral Student, Department of Wildlife and Fisheries, Mississippi State University

2007 Graduate Student Research Award, College of Forest Resources, Mississippi State University

MEMBERSHIPS

The Wildlife Society

North Dakota Chapter of TWS

American Ornithological Society

North American Crane Working Group

References available upon request.



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Wyoming-Montana Water Science Center

Helena Office
3162 Bozeman Avenue
Helena, Montana 59601

Cheyenne Office
521 Progress Circle, Suite 6
Cheyenne, WY 82007

February 4, 2022

To:
Chadwin Smith, Ph.D.
Independent Science Coordinator
Platte River Recovery Implementation Program
4111 4th Ave. Suite 6
Kearney, NE 68845

From:
Jason S. Alexander, Ph.D.
Supervisory Hydrologist – Surface Water Studies Chief
U.S. Geological Survey Wyoming-Montana Water Science Center
307-287-1836
jalexand@usgs.gov

Subject: Application for Independent Scientific Advisory Committee (ISAC)

Dear Dr. Smith,

I am writing to express interest in the solicitation by the Platte River Recovery and Implementation Program (PRRIP) for candidates to serve on the PRRIP ISAC. My experience spans twenty-two years and includes private water resources engineering consulting, academic research, and ten years as a hydrologist with the U.S. Geological Survey. Since 2004, the bulk of my work has involved researching and advising on human-effects on river systems in the mountain west and Great Plains of North America. This research has spanned research topics from the effects of invasive vegetation on channel form to prediction of greenwave ungulate migrations using streamflow data. My work is almost exclusively motivated by needs to inform and improve river and land management for listed species or species of concern. The interdisciplinary nature of my work requires development and maintenance of strong working relationships with scientists and stakeholders across a wide range of expertise and interests. I have worked closely with farmers, ranchers, conservation districts, tribes, non-profit groups, academics, and state and federal agencies. It is difficult, sometimes contentious, and requires a great deal of patience and persistence. In short, I have a great deal of experience and skill navigating the difficult work of using science to inform decision making in an adaptive framework.

The skillsets I bring are best suited for the 'Fluvial Geomorphology' or 'River Restoration' positions. My interest in the ISAC is straightforward. I am an expert in fluvial processes in low-slope sand bed rivers of the great plains, including the Platte

River. I have 15 academic journal or government publications on the subject as well as a host of presentations at professional meetings. A large portion of my life and professional career has been dedicated to exploring and understanding these so-called 'flyover' rivers so that they can be better managed in balance with the inevitable needs of the economies that depend on them. This involves application of physical theory to develop conceptual and quantitative scientific tools for use in everyday river management problems. I have a strong ethic of independence and objectivity in my work and pride myself on letting data and research findings drive stakeholder discussions and decision making. Much of my recent work has involved development of probabilistic tools for prediction of locations and geometries of sandbars in Mississippi-Missouri River system. This work is directly tied to understanding creation, destruction, and flooding of nesting habitat for the interior least tern and piping plover but is widely applicable to other species and river systems. My expertise on sandbars has also taken me to rivers of the Ganges basin in India, which have similar morphologies to rivers of the great plains and are experiencing river development challenges like those of the Platte.

It is no secret that a small part of my work has involved challenging some of the findings of the PRRIP scientists. However, I would hope those challenges would be interpreted as healthy, rigorous scientific debate with the common goal of improving understanding of these important ecosystems. I would also hope that such scientific debate would be considered an important component of the ISAC and would enrich the rigor and impact of PRRIP science for the greater good. Thank you for your consideration.

Best regards,

Jason Alexander

Attachment(s)

- CV for Dr. Jason S. Alexander

Jason Scott Alexander

U.S. Geological Survey – Water Mission Area – Wyoming-Montana Water Science Center - 402.630.5766
– jalexand@usgs.gov; [Staff profile](#).

EDUCATION

PhD - Geology – University of Wyoming, Dept. of Geology and Geophysics – May 2020

Major advisor: Dr. Brandon McElroy

Dissertation: “Scales, controls, and habitats of fluvial macroform sandbars”

M.S. – Watershed Science – Utah State University, Dept. of Watershed Sciences – Dec. 2007

Major advisor: Dr. John C. Schmidt

Thesis: “The timing and magnitude of channel adjustments in the upper Green River below Flaming Gorge Dam in Browns Park and Lodore Canyon, Colorado: and analysis of the pre- and post-dam river using high-resolution dendrogeomorphology and repeat topographic surveys”.

B.S. – Geology and Watershed Science [dual] – Colorado State University – Dept. of Earth Resources – May 2000

Senior Thesis: “Hydrologic Analysis and feasibility of surface coal mining, Watering Trough basin, Colorado.”

PROFESSIONAL EXPERIENCE

Supervisory Hydrologist [GS-1315-13]– U.S. Geological Survey, Cheyenne, Wyoming – August, 2021 to present. [40+ hrs. per week].

- Managing time, schedules, and performance for team of 17 scientists in the Surface Water Studies Section (50% of time).
- Additional duties as described in ‘Hydrologist’ position below (50% of time).

Hydrologist [GS-1315-12]– U.S. Geological Survey, Cheyenne, Wyoming – September 2018 to July 2021. [40+ hrs. per week]

- Project chief of several complex scientific investigations involving management of sediment in rivers and streams in Wyoming and Montana. Current projects include:
 - Willwood Dam sediment management alternatives for the Shoshone River, Cody, WY.
 - Using real-time sediment monitoring to identify anthropogenic sources of fluvial suspended sediment in Flat Creek, Jackson, WY.
 - Using sediment fingerprinting to identify landscape sources of fine sediment impairing trout spawning gravels, Littlefield Creek, Rawlins area, WY.
- Member of USGS’s Montana-Wyoming Flood Frequency team.
 - Analysis and implementation of Bulletin 17C flood frequency techniques for various river basins in across Montana.

Supervisory Hydrologist [GS-1315-13]– U.S. Geological Survey, Cheyenne, Wyoming – January, 2021 to May, 2021. [40+ hrs. per week] *120-day detail.

- Managing time, schedules, and performance for team of 13 people in the Groundwater-Water Quality Section (50% of time).
- Additional project chief duties as described in ‘Hydrologist’ position above (50% of time).

Graduate Research Assistant – University of Wyoming Department of Geology and Geophysics, Laramie, Wyoming – January 2014 to May 2020. [40+ hrs. per week]

- Designed large-scale field and data experiments to investigate scales and controls of fluvial macroform habitats in moderate-to-large sand-bed rivers in the Great Plains of the United States and Ganges plains of India.
- Topographic and bathymetric surveys to support LiDAR and hyperspectral imaging of river systems.
- Collection of low-altitude aerial images to generate structure-from-motion point cloud digital elevation models.

Hydrologist [GS-1315-12]– U.S. Geological Survey, Lincoln, Nebraska – December 2007 to March 2014. [40+ hrs. per week]

- Project chief of numerous scientific investigations of moderate to high complexity. Managed/co-managed budgets, schedules, and logistics for science teams of 2 to 5 people.
- Co-lead of USGS NAWQA Ecology Team
- Authored or co-authored 11 U.S. Geological Survey reports, 3 peer-reviewed scientific journals, and 1 agency report.
- Wrote grants to successfully obtain more than \$500,000 in funding for various geomorphology-related scientific investigations in Nebraska and South Dakota.

Integrated Water Management Analyst – Nebraska Department of Natural Resources, Lincoln, Nebraska – August 2007 to December 2007. [40+ hrs. per week]

- Researched and advised on water management policies for the State of Nebraska.
- Wrote a report on feasibility of improving streamflows by removing riparian vegetation.

Graduate Research Assistant – Department of Watershed Sciences, Utah State University – June 2004 to June 2007. [40+ hrs. per week]

- Co-lead of geomorphology-riparian vegetation monitoring program on the Green River in Lodore Canyon, Dinosaur National Monument.
- Field surveys of channel morphology and bed-material transport on the Snake River in Teton National Park and the Provo River in Heber Valley, Utah.

Engineering Specialist – Wright Water Engineers Inc., Glenwood Springs, Colorado – May 2002 to June 2004. [40+ hrs. per week]

- Field surveys of river channel and pond morphology as legal basis for water rights applications
- River and canal discharge measurements
- HEC-RAS hydraulic modeling for FEMA FIRM mapping

Geomorphologist – Stetson Engineers, Inc., San Rafael, California – December 2000 to May 2002. [40+ hrs. per week]

- Field surveys of river channel morphology
- Field mapping of fine sediment sources
- HEC-RAS hydraulic modeling for flood mapping (Los Angeles County Public Works)

ACADEMIC FELLOWSHIPS AND INTERNSHIPS

- **CUAHSI Pathfinder Fellowship**, January to May 2018 – Worked with ecologists at the Ashoka Trust for Research in Ecology and the Environment (ATREE) Traveled to India on field surveys of sandbar habitats on the Ganges, Ghandak, Son, and Chambal Rivers to support conservation of Ganges river dolphin and gharial crocodile.
- **Teaching Assistant**, Department of Geology and Geophysics, University of Wyoming: “Water, Dirt, and Climate”. September 2014 – December 2014.
- **Teaching Assistant**, Department of Geology and Geophysics, University of Wyoming: “Stratigraphy and Sedimentology”. January 2014 – May 2014.

- **Teaching Assistant**, Department of Earth Resources, Colorado State University, ER140 - Introduction to Geology. Fall 1999, spring 1999, fall 1998.
- **Field Technician**, Dr. Ellen Wohl, Department of Earth Resources, Colorado State University. Summers 1999 and 1998.
- **NSF-REU Intern**, Dr. Ellen Wohl, Department of Earth Resources, Colorado State University. Summer 1997

PUBLISHED SCIENCE WRITING

Alexander, J.S., Murr, M.L., and Eddy-Miller, C.A., 2022, Testing the potential of streamflow data to predict spring migration of an ungulate herd, *Plos One* 17:1, e0262078.

Anderson, P.J., Aldridge, C.L., Alexander, J.S., Assal, T.J., Aulenbach, S., Bowen, Z.H., Chalfoun, A.D., Chong, G.W., Copeland, H., Edmunds, D.R., Germaine, S., Graves, T., Heinrichs, J.A., Homer, C.G., Huber, C.C., Johnston, A., Kauffman, M.J., Manier, D.J., McShan, R.R., Eddy-Miller, C.A., Miller, K.A., Monroe, A.P., O'Donnell, M.S., Ortega, A., Walters, A.W., Wieferich, D., Wyckoff, T.B., and Zeigenfuss, L., 2020, U.S. Geological Survey science for the Wyoming Landscape Conservation Initiative—2018 annual report: U.S. Geological Survey Open-File Report 2021–1067, 33 p., <https://doi.org/10.3133/ofr20211067>

Alexander, J.S., Huzurbazar, S., and McElroy, B.J., 2021, Examining the fluvial alteration hypothesis amidst recovery of the Interior Least Tern (*Sterna antillarum*), *Ecosphere* 12:7, p.e03491.

Alexander, J.S., McElroy, B.J., Huzurbazar, S., and Murr, M.L., 2020, Elevation gaps in fluvial sandbar deposition and their consequences for paleodepth inversion: *Geology*, DOI:10.1130/G47521.1.

Alexander, J.S., McElroy, B.J., Huzurbazar, S., Elliott, C., and Murr, M.L., 2020, Deposition potential and flow-response dynamics of emergent sandbars in a sandy-braided river: *Water Resources Research*, DOI:10.1029/2018WR024107

Alexander, J.S., Jorgensen, J.G., Brown, M.B., 2018, Reproductive ecology of interior least tern and piping plover in relation to Platte River hydrology and sandbar dynamics—Editorial: *Ecology and Evolution*, DOI:10.1002/ece3.4109.

Dilbone, E., Legleiter, C., Alexander, J.S. and McElroy, B., 2018, Spectrally based bathymetric mapping of a dynamic, sand-bedded channel: Niobrara River, Nebraska, USA. *River Research and Applications* DOI:10.1002/rra.3270.

Schaepe, N.J., Alexander, J.S., and Folz-Donahue, Kiernan, 2016, Effects of streamflows on stream-channel morphology in the eastern Niobrara National Scenic River, Nebraska, 1988-2010: U.S. Geological Survey Scientific Investigations Report 2016-5004, 30 p.

Rus, D.L., Galloway, J.M., and Alexander, J.S., 2015, Characteristics of sediment transport at selected sites along the Missouri River 2011-2012: U.S. Geological Survey Scientific Investigations Report 2015-5127, 34 p.

Mueller, E.R., Grams, P.E., Schmidt, J.C., Hazel, J.E., Jr., Alexander, J.S., and Kaplinski, M., 2014, The influence of controlled floods on fine sediment storage in debris fan-affected canyons of the Colorado River basin: *Geomorphology*, v. 226, p. 65-75.

Mueller, E.R., Grams, P.E., Schmidt, J.C., Hazel, J.E., Jr., Kaplinski, M., Alexander, J.A., and Kohl, K., 2014, Monitoring and research to describe geomorphic effects of the 2011 controlled flood on the Green River in the Canyon of Lodore, Dinosaur National Monument, Colorado and Utah: U.S. Geological Survey Scientific Investigations Report 2014-5022, 66 p.

Alexander, J.S., Jacobson, R.B., and Rus, D.L., 2013, Sediment transport and deposition in the lower Missouri River during the 2011 flood: U.S. Geological Survey Professional Paper 1798–F, 27 p

Alexander, J.S., Schultze, D.M., and Zelt, R.B., 2013, Emergent sandbar dynamics in the lower Platte River in eastern Nebraska—Methods and results of pilot study, 2011: U.S. Geological Survey Scientific Investigations Report 2013–5031, 42 p. with appendixes.

Galloway, J.M., Rus, D.L., and Alexander, J.S., 2013, Characteristics of sediment transport at selected sites along the Missouri River during the high-flow conditions of 2011: U.S. Geological Survey Scientific Investigations Report 2013-5006, 31 p.

Braulik, G.T., Reichert, A.P., Ehsan, T., Khan, S., Northridge, S.P., Alexander, J.S., and Garstang, R., 2012, Habitat use by a freshwater dolphin in the low-water season: *Aquatic Conservation—Marine and Freshwater Ecosystems*, v. 22, p. 533-546.

Alexander, J.S., Wilson, R.W., and Green, W.R., 2012, A brief history and summary of the effects of river engineering and dams on the Mississippi River system and delta: U.S. Geological Survey Circular 1375, 43 p.

Schaepe, N.J., and Alexander, J.S., 2011, Sediment samples and channel-geometry data, lower Platte River watershed in Nebraska, 2010: U.S. Geological Survey Data Series Report 2011-572, 22 p.

Alexander, J.S., Zelt, R.B., and Schaepe, N.J., 2010, Hydrogeomorphic and hydraulic habitats of the Niobrara River, Nebraska—with special emphasis on the Niobrara National Scenic River: U.S. Geological Survey Scientific Investigations Report 2010-5141, 62 p.

Soenksen, P.J., Flyr, B.B., Alexander, J.S., and Schaepe, N.J., 2010, Streamflow gains and losses in the Niobrara River Basin, Nebraska, 1980 and 2009: *Journal of Environmental Hydrology*, v. 18, 18 p.

Alexander, J.S., R.B. Zelt, and N. Schaepe, 2009, Geomorphic segmentation, hydraulic geometry, and hydraulic microhabitats of the Niobrara River – Methods and initial results: U.S. Geological Survey Scientific Investigations Report 2009-5008, 52 p.

Hallum, D., Alexander, J., Ostdiek, A., Cartwright, T., Lear, J., Pun, M., Bradley, J., Josiah, S., Koester, P., and Kloch, D., 2008, Assessment of resources available to quantify non-beneficial consumptive water use by riparian vegetation in Nebraska: Nebraska Department of Natural Resources Technical Report Number 2008-01, 58 p.

PUBLISHED DATA RELEASES

Alexander, J.S., Buchmiller, S.J., McCarthy, P.M., Siefken, S.A., and Armstrong, D.W., 2021, Peak-flow frequency analyses for selected streamgages in and near Powell County, Montana, based on data through water year 2019: U.S. Geological Survey data release, <https://doi.org/10.5066/P9D1ICQB>.

Siefken, S.A., Armstrong, D.W., McCarthy, P.M., and Alexander, J.S., 2021, Peak-flow frequency analyses for selected streamgages in and near Teton County, Montana, based on data through water year 2019: U.S. Geological Survey data release, <https://doi.org/10.5066/P95IFBAH>.

Siefken, S.A., Chase, K.J., Armstrong, D.W., Alexander, J.S., McCarthy, P.M., and Buchmiller, S.J., 2021, Peak-flow frequency analyses for selected streamgages in and near the Milk River Basin, Montana, based on data through water year 2018, Part 1: U.S. Geological Survey data release, <https://doi.org/10.5066/P9Y53FX3>.

Alexander, J.S., and Densmore, B.K., 2019, Orthophotography Classification and Ground Surveys to Understand Sandbar Formation, Geometry, and Persistence in the Lower Platte River in Nebraska, 2006-2014: U.S. Geological Survey data release, <https://doi.org/10.5066/F77S7MZC>.

PUBLISHED ABSTRACTS AND PROCEEDINGS

Alexander, J.S., McElroy, B.J., and Murr, M.L., Bankfull paleodepth scaling from clinoforms—a unique dataset from the sandy, braided Missouri National Recreational River, USA. Poster Presentation. In Program with Abstracts 10th Symposium on River, Coastal and Estuarine Morphodynamics 2017, Trento, Italy.

Alexander, J.S., McElroy, B.J., and Huzurbazar, S.V., Distribution and uncertainty of bankfull paleo-depth estimates from fluvial clinoform heights exposed in outcrop. Oral presentation. In Program with Abstracts International Conference on Fluvial Sedimentology 2017, Calgary, Canada.

Alexander, J.S., Murr, M.L., and McElroy, B.J., Depositional potential, maximum height, and erosional dynamics of emergent sandbars—lessons from the lower Platte River. Oral Presentation. In Program with Abstracts Missouri River Natural Resources Conference—Annual Meeting 2017, Nebraska City, NE.

Alexander, J.S., Murr, M.L., and McElroy, B.J., Depositional and erosional dynamics of emergent sandbars—a case study of the Platte River, Eastern Nebraska. Oral Presentation. In Program with Abstracts American Geophysical Union—Annual Meeting 2016, San Francisco, CA.

Alexander, J.S., McElroy, B., and Murr, M., Minding the gaps—fluvial paleodepth revisited. Oral Presentation. In Program with Abstracts Geological Society of America—Annual Meeting 2016, Denver, CO.

Lundstrom, S., McBeth, J., Alexander, J.S., 2016, Quaternary geologic mapping using LiDAR data for a dynamic sandy riverscape in the northern great plains—the Norden area of the Niobrara National Scenic River Valley Corridor, Nebraska. Poster Presentation. In Program with Abstracts Geological Society of America—Annual Meeting 2016, Denver, CO.

McElroy, B.J., Mahon, R.C., Ashley, T. and Alexander, J.S., 2015, December. Scaling of sand flux over bedforms-experiments to field scale. In AGU Fall Meeting Abstracts (Vol. 2015, pp. EP13C-07).

Lundstrom, S., Alexander, J.S., 2014, Contrasts between the late Quaternary geologic records of the Niobrara National Scenic River (NIOB) and the Missouri National Recreational River (MNRR) of the Central Great Plains—Relations to late Pleistocene glaciation of the Laurentide ice sheet. Poster Presentation. In Program with Abstracts Geological Society of America—Annual Meeting 2014, Vancouver, B.C.

Alexander, J.S., 2014, Seasonal dynamics of sandbars in the lower Platte River, Nebraska. Oral presentation. In Program with Abstracts Geological Society of America, North Central Section—Annual Meeting 2014, Lincoln, NE.

Lundstrom, S., and Alexander, J.S., 2014, Geomorphic responses to moderate rainfall events in the aftermath of a major recent fire across the valley of the Niobrara National Scenic River, Nebraska. Oral presentation. In Program with Abstracts Geological Society of America, North Central Section—Annual Meeting 2014, Lincoln, NE.

Alexander, J.S., and Zelt, R.B., 2012, Geometries and distributions of emergent sandbars in the lower Platte River: Implications for informed management of large sandy bed rivers in the Great Plains Region. Poster presentation. In Program with Abstracts of University of Nebraska Water Center: 2012 Water—Science, Practice, and Policy 2012, Lincoln, Nebraska.

Alexander, J.S., and Zelt, R.B., 2011, Sandbar dynamics in the lower Platte River Pilot Study—methods and initial results. Oral presentation. In Program with Abstracts of University of Nebraska Water Center: 2011 Climate, Water and Ecosystems Conference, Lincoln, Nebraska.

Lundstrom, S.C., Berry, M.E., and Alexander, J.S., 2011, Holocene incision interrupted by aggradational episodes along the middle Niobrara River, northern Nebraska—complex landscape response to postglacial climate history. Oral presentation. In Program with Abstracts of Geological Society of America—Annual Meeting 2011, Minneapolis, MN.

Woodward, B.K., Alexander, J.S., and Howle, J., 2011, Estimation of alluvial erosion and deposition rates at two temporal and spatial scales along the Belle Fourche River. Oral Presentation., In Program with Abstracts of the Western South Dakota Hydrology Conference, Rapid City, South Dakota.

Alexander, J.S., Stamm, J.F., Woodward, B.K., and Lamothe, P., 2011, A classification of alluvial landforms associated with mine tailings along the Belle Fourche River, western South Dakota. Oral Presentation. In Program with Abstracts of the Western South Dakota Hydrology Conference, Rapid City, South Dakota.

Alexander, J.S., 2010, Hydraulic and hydrogeomorphic characteristics of the Niobrara River in the National Scenic Reach, Nebraska. Oral Presentation., In Program with Abstracts of the University of Nebraska Water Center: 2010 Platte River Basin Symposium.

Alexander, J.S., Zelt, R.B., and Stamm, J.F., 2010, Ice-related longitudinal and lateral connection and disconnection of rivers and floodplains, some examples from the Niobrara and Belle Fourche Rivers—Great Plains, United States.

Oral presentation. In Program with Abstracts of Geological Society of America – Annual Meeting 2010, Denver, Colorado.

Alexander, J.S., Woodward, B.K., Stamm, J.F., Lamothe, P., Maddox, A., Howle, J., and Larson, D., 2010, Legacy mine tailings and alluvial deposits along the Belle Fourche River, South Dakota—an integrated, multi-scale investigation of channel dynamics. Poster presentation. In Program with Abstracts of Geological Society of America, Rocky Mountain Section – Annual Meeting 2010, Rapid City, South Dakota.

Alexander, J.S., and J.C. Schmidt, 2007, A tale of two rivers: channel adjustments to restorative floods in the Green River in Dinosaur National Monument as compared to those in the Colorado River in Grand Canyon, N.P. Oral presentation. In Program with Abstracts of American Geophysical Union – Fall Meeting 2007, San Francisco, CA.

Alexander, J.S., Dean, D.J., Scott, M.J., Shafroth, P.B., and Schmidt, J.C., 2007, Using new high-resolution dendrogeomorphic tools to reconstruct a fine-scaled history of 20th century floodplain deposition and channel narrowing, Oral presentation. In Program with Abstracts of 2007 Geological Society of America Annual Meeting, Denver, Colorado.

Alexander, J.S., Scott, M.L., and J.C. Schmidt, 2006, Hydrologic scenarios for floodplain building in a vertically accreting, suspended sediment river. Oral presentation. In Program with Abstracts of American Geophysical Union-Fall Meeting 2006, San Francisco, CA.

Alexander, J.S., Scott, M.L., and J.C. Schmidt, 2006, Chicken or Egg? Floodplain sedimentation as the precursor or result of tamarisk invasion. Oral presentation. In Program with Abstracts of American Geophysical Union-Fall Joint Assembly Meeting 2006, Baltimore, MA.

Alexander, J.S., Schmidt, J.C., and Scott, M.L., 2005, Evaluating channel change at Tamarisk removal and control reaches following a prescribed flood on the upper Green River, Lodore Canyon, Dinosaur National Monument. Poster presentation. In Program with Abstracts of 2005 Geological Society of America, Annual Meeting, Salt Lake City, UT.

Rubin, D.M., Draut, A.E., Schmidt, J.C., Topping, D.J., Alexander, J.S., Brown, K.M., Fuller, A.E., Galbraith, D., Hanes, D.M., Hernandez, J., Johnson, K., Kaplinski, M., Melis, T.S., Nelson, N., Wright, S.A., 2005, Sedimentology of deposits of the 2004 flood in Grand Canyon, Colorado River Ecosystem Science Symposium Abstracts, U.S. Geological Survey, Southwest Biological Science Center, p. 87.

ACADEMIC RESEARCH GRANTS / AWARDS / SCHOLARSHIPS

- University of Wyoming – Department of Geology and Geophysics Outstanding PhD Student 2019
- Earl and Marie Anderson Scholarship, August 2017 - \$1,000
- Chevron student travel grant, December 2016 - \$1,800
- W.E. Andrau Scholarship, August 2016 - \$1,000
- Anadarko Scholarship, August 2016 - \$5,780
- Geological Society of America graduate student research grant, April 2016 - \$2,500
- National Science Foundation – National Center for Airborne Laser Mapping, 2015 graduate student seed grant – monetary value unknown; grant paid for near-infrared and bathymetric LiDAR of 40-km of Niobrara River to support my research.
- University of Wyoming Water Resources Environmental Science and Engineering, 2014 student research grant - \$4,860 (for research equipment).
- “Best College of Natural Resources Research Presentation”, for presentation of REU work in the CSU spring 1998 University Research Symposium.
- “Best of Sediment Transport Session” for presentation of REU work in the CSU fall 1997 Student Water Symposium.

COLLEGIATE MEMBERSHIPS

- Member of 1998 Colorado State University Student Water Symposium planning committee.

- Vice-President of CSU Geology Club 1998; Secretary 1997.
- Inducted to CSU Golden Key National Honor Society fall 1997.

PROFESSIONAL TRAINING AND SKILLS COURSES

- Statistical methods for environmental data analysis (USGVS-OED) - April 2009
- Using StorRM within MD_SWMS (USGS-OED) - March 2009
- Field Water Quality Methods for Ground-Water and Surface-Water (USGS-OED) - May 2009
- Sediment data collection techniques (USGS-OED) - March 2010
- Sediment records computation and interpretation (USGS-OED) - May 2010
- Statistical methods for trend and load analysis (USGS-OED) - February 2011
- Motorboat operator certification course (through USGS-UNL COOP unit) – May 2011
- Quality-control sample design and interpretation (USGS-OED) – January 2012
- American Canoe Association Swiftwater Rescue Level 4 – May 2017

PROFESSIONAL MEMBERSHIPS

- American Geophysical Union (since 2004)
- Geological Society of America (since 2004)

REFERENCES – PROFESSIONAL

1. Joanna Thamke, Supervisory Hydrologist, U.S. Geological Survey, Wyoming-Montana Water Science Center. jothamke@usgs.gov; 406.457.5923. (Current supervisor at USGS).
2. David Waterstreet, Program Manager, Wyoming Department of Environmental Quality, Water Quality Division. david.waterstreet@wyo.gov; 307-777-6709 (David and I work closely on creative solutions to sediment management on the Shoshone River, Wyoming).
3. Dr. Brandon McElroy, Assistant Professor, Department of Geology and Geophysics, University of Wyoming. bmcelroy@uwyo.edu; 307-760-5931. (co-author and PhD committee chair).
4. Dr. Snehalata Huzurbazar, Professor, Department of Mathematics, West Virginia University. Snehalata.huzurbazar@mail.wvu.edu; 307.721.9835. (co-author and PhD committee member).

REFERENCES – PERSONAL

5. Dr. Robert Mahon, Assistant Professor, Department of Earth and Environmental Sciences, University of New Orleans. rcmahon@uno.edu; 504.280.1392 (graduate student office mate for 4 years).
6. Dr. Brett Ziercher M.D., Emergency Medicine Specialist, San Juan Regional Medical Center, Farmington, New Mexico. bziercher@yahoo.com; 970.769.4262 (friend of more than 35 years).
7. Stefan Kirby, Senior Geologist, Utah State Geological Survey. stefankirby@utah.gov; 801.537.3349. (friend of more than 20 years).

Sharon Bywater-Reyes, Ph.D.
Professor of Environmental Geosciences
University of Northern Colorado
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<https://www.researchgate.net/profile/Sharon-Bywater-Reyes>
<https://scholar.google.com/citations?user=xEKmYvQAAAAJ&hl=en>

Chadwin Smith, Ph.D.
Independent Science Coordinator
Platte River Recovery Implementation Program
4111 4th Ave., Suite 6
Kearney, NE 68845

December 20th, 2021

Dear Dr. Smith,

I am interested in the fluvial geomorphology (vegetation emphasis) Independent Scientific Advisory Committee (ISAC) seat of the Platte River Recovery Implementation Program (PRRIP). I am well-qualified for this advisory position and interested in expanding my service within the Platte River Watershed. I started my research career in 2007 where I began research on interactions among climate, tectonics, and fluvial systems (M.S. Geology University of Wyoming 2009; Bywater-Reyes et al., 2010). Since then, I have earned a Ph.D. in Fluvial Geomorphology (2015, University of Montana), conducted research as a postdoctoral scholar, and will soon be a tenured professor of Environmental Geoscience at the University of Northern Colorado where I teach hydrology and geomorphology, conduct research on river restoration and invasive species dynamics, and serve the Coalition for the Poudre River Watershed in an advisory capacity regarding river restoration projects. I collectively have 10 years of experience working within river science, and ~14 years conducting high-impact research (since graduating with a B.S. Geology in 2007 Summa Cum Laude).

My Ph.D. research focused explicitly on vegetation-river interactions. As an EPA Star Fellow, I quantified the conditions under which riparian vegetation can survive flood flows and the associated impact vegetation encroachment can have on sedimentation and flood hydraulics, with an emphasis on cottonwoods and tamarisk. By linking field experiments measuring seedling uprooting forces to numerical calculations of flow forces, I showed that substantial bed scour is required to uproot seedlings (Bywater-Reyes et al., 2015). Using remote sensing (LiDAR), GIS, and spatial statistical techniques, I characterized relationships among vegetation morphology and river topography at the patch and reach scales (Bywater-Reyes et al., 2017). I showed that channel topography is correlated with vegetation density across scales, demonstrating vegetation's impact on channel morphology. Finally, my simulations of vegetation's impact on channel-bend and meander processes using a high-resolution hydrodynamic model quantified how vegetation modifies flood hydraulics under varied vegetation and flood conditions (Bywater-Reyes et al., 2018).

Since starting at University of Northern Colorado in 2017, I have continued my line of research investigating influences on river form and function with implications for river management. I collaborate with local consultants (Stillwater Sciences), nonprofits (e.g., Coalition for the Poudre River

Watershed), and municipalities (e.g., City of Greeley, City of Windsor, Larimer County, City of Fort Collins) to monitor several river restoration sites throughout the Front Range of Colorado. For one of these projects, I mentored a master's student (Haylie Brown, 2020) who evaluated the geomorphic and ecological effectiveness of a river restoration project: "Developing Metrics and Protocols for Evaluating Restoration Success for the Little Thompson River, Colorado." I have also expanded my research investigating impacts of native versus invasive species on river processes. I am working with collaborators to study the distribution, composition, and hydrogeomorphic impacts of Russian olive on the Powder River of Montana. In these projects, I have shown my ability to work on interdisciplinary teams in a collaborative capacity.

I look forward to the opportunity to discuss my experience with you in more depth and discuss the potential to work with PRRIP. Please do not hesitate to contact me with any additional questions.

Sincerely,



Sharon Bywater-Reyes, Ph.D.

Works Cited here*:

Bywater-Reyes, Sharon, et al. "Flow and scour constraints on uprooting of pioneer woody seedlings." *Water Resources Research* 51.11 (2015): 9190-9206.

Bywater-Reyes, Sharon, Rebecca M. Diehl, and Andrew C. Wilcox. "The influence of a vegetated bar on channel-bend flow dynamics." *Earth Surface Dynamics* 6.2 (2018): 487-503.

Bywater-Reyes, Sharon, Andrew C. Wilcox, and Rebecca M. Diehl. "Multiscale influence of woody riparian vegetation on fluvial topography quantified with ground-based and airborne lidar." *Journal of Geophysical Research: Earth Surface* 122.6 (2017): 1218-1235.

Bywater-Reyes, Sharon, et al. "Effect of late Cenozoic aridification on sedimentation in the Eastern Cordillera of northwest Argentina (Angastaco basin)." *Geology* 38.3 (2010): 235-238.

*See CV for full list of publications, experience, and qualifications

Sharon Bywater-Reyes
University of Northern Colorado
College of Natural and Health Sciences
Email: sharon.bywaterreyes@unco.edu

Education

PhD, University of Montana, 2015.

Area of Study: Geosciences

Dissertation/Thesis Title: The influence of pioneer riparian vegetation on river processes from the plant to reach scale

MS, University of Wyoming, 2009.

Area of Study: Geology

Dissertation/Thesis Title: Tectonic and climatic evolution of the Angastaco Basin (25°-26°S, eastern Cordillera, NW Argentina)

BA, Southern Oregon University, 2007.

Area of Study: Language and Culture with a Concentration in German

BS, Southern Oregon University, 2007.

Area of Study: Geology

Professional Academic Experience

Assistant Professor of Environmental Geosciences, University of Northern Colorado. (2017 - Present).

Postdoctoral Scholar, Oregon State University. (2015 - 2017).

Research Scientist, Enhanced Oil Recovery Institute. (2009 - 2011).

Assistant Coordinator, University of Wyoming. (2010).

Licensures and Certifications

Certified Remote Pilot, FAA. (July 15, 2019 - Present).

RESEARCH, SCHOLARSHIP, AND CREATIVE WORKS

Publications

Juried

Journal Article

Published

Rachels, A., Bladon, K., Bywater-Reyes, S., Hatten, J. (2020). Quantifying effects of forest harvesting on sources of suspended sediment to an Oregon Coast Range headwater stream. *Forest Ecology and Management*, 466, 1-13.
<https://doi.org/10.1016/j.foreco.2020.118123>. DOI:
doi.org/10.1016/j.foreco.2020.118123

Full Text: [1-s2.0-S0378112720301572-main-1.pdf](#)

Fratkin, M., Segura, C., Bywater-Reyes, S. (2020). The influence of lithology on channel geometry and bed sediment organization in mountainous hillslope-coupled streams. *Earth Surface Processes and Landforms*, 45(10), 2365-2379.

<https://doi.org/10.1002/esp.4885>. DOI: doi.org/10.1002/esp.4885

Full Text: [esp.4885-1.pdf](#)

Bladon, K. D., Bywater-Reyes, S., LeBoldus, J. M., Keiro, S., Segura, C., Ritokova, G., Shaw, D. C. (2019). Increased streamflow in catchments affected by a forest disease epidemic. *Science of the Total Environment*, 691, 112-123.

<https://doi.org/10.1016/j.scitotenv.2019.07.127>. DOI:

doi.org/10.1016/j.scitotenv.2019.07.127

Journal article: [Bladon_SciTotEnviron_2019-1.pdf](#)

Lightbody, A., Kui, L., Stella, J. C., Skorko, K., Bywater-Reyes, S., Wilcox, A. C. (2019). Riparian Vegetation and Sediment Supply Regulate the Morphodynamic Response of an Experimental Stream to Floods. *Frontiers in Environmental Science, section Freshwater Science*. <https://doi.org/10.3389/fenvs.2019.00040>. DOI:

doi.org/10.3389/fenvs.2019.00040

Journal article: [fenvs-07-00040\(1\)-1.pdf](#)

Bladon, K. D., Segura, C., Cook, N. A., Bywater-Reyes, S., Reiter, M. (2018). A multi-catchment analysis of headwater and downstream temperature effects from contemporary forest harvesting. *Hydrologic Processes*, 32, 293-304.

[http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1099-1085](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-1085). DOI:

[10.1002/hyp.11415](https://doi.org/10.1002/hyp.11415)

Full Text: [Bladon_et_al-2018-Hydrological_Processes-1.pdf](#)

Bywater-Reyes, S., Wilcox, A. C., Diehl, R. M. (2018). The influence of a vegetated bar on channel-bend flow dynamics. *Earth Surface Dynamics*, 6, 487-503.

<https://www.earth-surf-dynam.net/6/487/2018/>. DOI: [10.5194/esurf-2017-56](https://doi.org/10.5194/esurf-2017-56)

Full Text: [VegBar-1.pdf](#)

Bywater-Reyes, S., Bladon, K. D., Segura, C. (2018). Relative influence of landscape variables, discharge, and forest management on sediment yields in temperate mountain catchments. *Water Resources Research*, 54, 5126-5124.

<https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2017WR021728>

Full Text: [Bywater-Reyes_et_al-2018-Water_Resources_Research_\(2\)-1.pdf](#)

Bywater-Reyes, S., Segura, C., Bladon, K. (2017). Geology and geomorphology control suspended sediment yield and modulate increases following timber harvest in temperate headwater streams. *Journal of Hydrology*, 548, 754-769.

<https://doi.org/10.1016/j.jhydrol.2017.03.048>

Bywater-Reyes, S., Wilcox, A., Diehl, R. (2017). Multiscale influence of woody riparian vegetation on fluvial topography quantified with groundbased and airborne lidar. *Journal of Geophysical Research Earth Surface*, 122(6), 1218-1235.

<https://doi.org/10.1002/2016JF004058>. DOI: [10.1002/2016JF004058](https://doi.org/10.1002/2016JF004058)

Bywater-Reyes, S., Wilcox, A., Stella, J., Lightbody, A. (2015). Flow and scour constraints on uprooting of pioneer woody seedlings. *Water Resources Research*,

51(11), 9190-9206. <https://doi.org/10.1002/2014WR016641>. DOI: 10.1002/2014WR016641

Carrapa, B., Huntington, K., Clementz, M., Quade, J., Bywater-Reyes, S., Schoenbohm, L., Canavan, R. (2014). Uplift of the Central Andes of NW Argentina associated with upper crustal shortening, revealed by multiproxy isotopic analyses. *Tectonics*, 33(6), 1039-1054. <https://doi.org/10.1002/2013TC003461>. DOI: 10.1002/2013TC003461

Carrapa, B., Bywater-Reyes, S., DeCelles, P., Mortimer, E., Gehrels, G. (2011). Late Eocene–Pliocene basin evolution in the Eastern Cordillera of northwestern Argentina (25°–26°S): regional implications for Andean orogenic wedge development. *Basin Research*, 24(3), 249 - 268. <https://doi.org/10.1111/j.1365-2117.2011.00519.x>. DOI: 10.1111/j.1365-2117.2011.00519.x

Bywater-Reyes, S., Carrapa, B., Clementz, M., Schoenbohm, L. (2010). Effect of late Cenozoic aridification on sedimentation in the Eastern Cordillera of northwest Argentina (Angastaco basin). *Geology*, 38(3), 235–238. <https://doi.org/10.1130/G30532.1>. DOI: 10.1130/G30532.1

Submitted

Bywater-Reyes, S., Pratt-Sitaula, B. A Remote Field Course Implementing High-Resolution Topography Acquisition and Applications Applied to Geomorphology. *Geoscience Communication*(MS No.: gc-2021-26 MS type: Research article). Full Text: [BywaterReyes PrattSitaula HighResTopoCovidCourse GeoscienceCommunication submit-1.pdf](#)
Confirmation letter: [\[External\]gc-2021-26 \(author\) - Editor assigned-1.pdf](#)

Professional Presentations

Invited

Juried

Bywater-Reyes, S., 2020 Riparian Restoration Conference, "Designing for ecological disturbance in river restoration to promote native species regeneration: A look at the River Bluffs Project on the Poudre River.," Rivers Edge West, Grand Junction, CO. (February 4, 2020).

Bywater-Reyes, S., 2020 Riparian Restoration Conference, "The Importance of Plant Traits on River Processes and How to Incorporate them into Revegetation Strategies," RiversEdge West, Grand Junction, CO. (February 4, 2020).

Bywater-Reyes, S. (Author & Presenter), Geological Society of America 2019 Annual Meeting, "Tamarix versus Populus plant traits differentially influence river morphodynamics in alluvial rivers," Phoenix, AZ. (September 22, 2019).

Bywater-Reyes, S. (Author & Presenter), Diehl, R. M. (Author), Li, K. (Author), Lightbody, A. (Author), Stella, J. C. (Author), Wilcox, A. C. (Author), American Geophysical Union Annual Meeting, "Flume and field investigations link woody riparian vegetation plant traits to morphodynamics across scales (Invited)," American Geophysical

Union, Washington DC. (December 12, 2018).

Bywater-Reyes, S. (Author & Presenter), Diehl, R. M. (Author), Wilcox, A. C. (Author), Merritt, D. M. (Author), Society of Wetland Scientists, "Observations from the flume to the field on linkages between plant response and effect traits in riparian ecosystems," Denver, CO. (May 31, 2018).

Non-juried

Bywater-Reyes, S. (Author & Presenter), Shanahan, J. (Author & Presenter), Sholtes, J. (Author & Presenter), Ash, J. (Coordinator/Organizer), Colorado Stream Restoration Network, "Practicing Resiliency in Urban Stream Corridors," Colorado Riparian Association, Online. (November 18, 2020).

Bywater-Reyes, S., 2020 Emerging Applications for sUAS (unmanned aerial systems), "Integrating UAS-SM into remote field teaching," GAGE/UNAVCO, remote. (August 18, 2020).

Bywater-Reyes, S., University of Wyoming Geology Seminar, "The influence of vegetation on river processes with a focus on the "Tamarisk Problem"," University of Wyoming, Laramie, WY. (March 9, 2020).

Bywater-Reyes, S. (Author & Presenter), University of Colorado Boulder Geography Seminar, "Tamarix versus Populus plant traits differentially influence morphodynamics in alluvial rivers," University of Colorado Boulder, Boulder, CO. (September 13, 2019).

Bywater-Reyes, S. (Author & Presenter), Romulo, C. (Author & Presenter), Poudre Heritage Alliance Pub Talk, "Putting the Ecosystem into Ecosystem Services," Poudre Heritage Alliance, Greeley, CO. (August 13, 2019).
Presentation: [PubTalk-Aug13 2019-FB event \(1\)-1.png](#)

Bywater-Reyes, S., Colorado State University Geoscience Seminar, "Relative Influence of Landscape Variables, Discharge, and Forest Management on Sediment Yields in Temperate Mountain Catchments," Colorado State University, Fort Collins, CO. (March 29, 2018).

Bywater-Reyes, S. (Author & Presenter), Natural Resources of the West: Fire, Water, and Forests, "Relative influence of landscape variables, discharge, and forest management on sediment yields in temperate mountain catchments," Colorado Mesa University, Grand Junction, CO. (November 13, 2017).

Not Invited

Juried

Bywater-Reyes, S. (Author & Presenter), Reveles-Hernandez, A. (Author), Franklin, S. (Author), Yow, J. (Author), Espinoza, E., American Geophysical Union Annual Meeting, "Assessment of Russian olive as an ecogeomorphic agent on a northern river," American Geophysical Union, New Orleans. (August 3, 2021).
Confirmation letter: [abstract-1.pdf](#)

Pratt-Sitaula, B. (Author & Presenter), Bywater-Reyes, S. (Author), Geological Society of America Annual Meeting 2020, "Tools for Teaching Geophysics Remotely," Geological Society of America, remote. (October 29, 2020).
Presentation: [GSA poster remote field 2020-1.pdf](#)

Shellito, L. (Author & Presenter), Keenan, S. (Author), Bergstrom, C. (Author), Reinsvold, L. (Author), Novak, J. (Author), Bywater-Reyes, S. (Author), Earth Educators' Rendezvous 2020, "Promoting Inclusion in the Geosciences with an Equity-Minded Syllabus," Earth Educators' Rendezvous, online. (July 15, 2020).
Presentation: [equity_syllabus_poster-1.pdf](#)

Brown, H. (Author & Presenter), Lanier, C. (Author & Presenter), Bywater-Reyes, S. (Author), Franklin, S. (Author), 2020 Riparian Restoration Conference, "Applying Geomorphic Analysis and Plant Traits to Assess Success of the Little Thompson Restoration Site," Rivers Edge West, Grand Junction, CO. (February 4, 2020).

Brown, H. (Author & Presenter), Bywater-Reyes, S. (Author), Franklin, S. (Author), 50th Binghamton Geomorphology Symposium, "Developing Metrics and Protocols for Evaluating Restoration Success for the Little Thompson River," Denver, CO. (October 12, 2019).

Bywater-Reyes, S. (Author & Presenter), US International Association of Landscape Ecology, "Multi-scale influences of plant traits on river morphodynamics with implications for rivers in the presence of Tamarix versus Populus," Fort Collins, CO. (April 9, 2019).

Brown, H. (Author & Presenter), Bywater-Reyes, S. (Author), US International Association of Landscape Ecology, "Restoration along the Front Range (Colorado) as a case study for assessing success," Fort Collins, CO. (April 6, 2019).

Stella, J. C. (Author & Presenter), Kui, L. (Author), Diehl, R. M. (Author), Bywater-Reyes, S. (Author), Wilcox, A. C. (Author), Shafroth, P. B. (Author), Lightbody, A. (Author), Annual Meeting of the American Geophysical Union, "Reciprocal interactions between fluvial processes and riparian plants at multiple scales: ecogeomorphic feedbacks drive coevolution of floodplain morphology and vegetation communities," New Orleans, LA. (December 14, 2017).

Fratkin, M. (Author & Presenter), Segura, C. (Author), Bywater-Reyes, S. (Author), Annual Meeting of the American Geophysical Union, "Longitudinal transport capacity trends in steep unglaciated basins with contrasting lithology in the Oregon Coast Range," New Orleans, LA. (December 13, 2017).

Bladon, K. D. (Author), Bywater-Reyes, S. (Author), LeBoldus, J. M. (Author), Segura, C. (Author), Ritokova, G. (Author), Shaw, D. C. (Author), Annual Meeting of the American Geophysical Union, "Elevated annual water yields related to epidemic foliage disease of Douglas-fir in the Pacific Northwest," New Orleans, LA. (December 12, 2017).

Rachels, A. A. (Author & Presenter), Bladon, K. D. (Author), Bywater-Reyes, S. (Author), Annual Meeting of the American Geophysical Union, "Quantifying ratios of

suspended sediment sources in forested headwater streams following timber-harvesting operations," New Orleans, LA. (December 12, 2017).

Rachels, A. A. (Author & Presenter), Segura, C. (Author), Bywater-Reyes, S., Geological Society of America Annual Meeting, "Determining the sources of suspended sediment in Oregon Coast Range headwater streams following forest-harvesting operations," Seattle, WA. (October 25, 2017).

Fratkin, M. (Author & Presenter), Segura, C. (Author), Bywater-Reyes, S. (Author), Geological Society of America Annual Meeting, "Investigating the hillslope and in-channel drivers of transport capacity in variable lithology: A case study in the Oregon Coast Range," Seattle, WA. (October 25, 2017).

Bywater-Reyes, S. (Author & Presenter), Bladon, K. D. (Author), Segura, C. (Author), Geological Society of America Annual Meeting, "Relative influence of landscape variables, discharge, and forest management on sediment yields in temperate mountain catchments," Seattle, WA. (October 25, 2017).

Media Contributions

Internet

UNC News. (October 13, 2020).

Web Address: https://www.unco.edu/nhs/earth-atmospheric-sciences/news/poudre_tour.aspx

UNC News. (July 21, 2020).

Web Address: https://www.unco.edu/nhs/earth-atmospheric-sciences/news/boulder_research.aspx

UNC News. (May 26, 2020).

Web Address: <https://www.unco.edu/news/articles/students-river-observations-coronavirus.aspx>

Cache la Poudre Heritage Blog. (May 21, 2020).

Web Address: https://poudreheritage.org/unc-water_quality_project/

UNC News. (September 18, 2019).

Web Address: <https://www.unco.edu/news/articles/augmented-reality-sandbox-earth-sciences.aspx>

unc_colorado Instagram. (October 23, 2018).

Web Address: <https://www.instagram.com/p/BpTFGTxjm3L/>

CONTRACTS, FELLOWSHIPS, GRANTS AND SPONSORED RESEARCH

Funded

Bywater-Reyes, S. (Principal), "Donation of GEO XH Handheld GPS units," Sponsored by City of Loveland, Local, \$18,000.00.

Bywater-Reyes, S., "Lower Poudre River Water Quality Monitoring," Sponsored by Cache la Poudre River National Heritage Area, Federal, \$3,000.00.

Bywater-Reyes, S. (Co-Principal), Lukens, C. (Co-Principal), Metz, A. (Supporting), Romulo, C. (Supporting), "Quantifying Erosion Susceptibility as a Function of Lithology, with Implications for Landscape Evolution and Management," Sponsored by Purdue Rare Isotope Measurement Laboratory, State, \$13,875.00.
Award Letter: [PRIME-1.pdf](#)

Bywater-Reyes, S. (Principal), Franklin, S. (Co-Principal), "Quantifying Russian Olive Invasion in the Powder River Basin," Sponsored by University of Northern Colorado CARES, University of Northern Colorado, \$9,988.00.
Award Letter: [Bywater Reyes RSCW Successful Award letter-1.pdf](#)
Other Document 1: [RSCW_BywaterReyesFranklin_sbf_svbr-1.docx](#)

Bywater-Reyes, S. (Principal), Romulo, C. (Co-Principal), "Quantifying Erosion Susceptibility as a Function of Geomorphic Variables, Trail Type, and Use with Implications for Trail Planning," Sponsored by City of Boulder Sponsored Research Program, State, \$10,000.00. (August 1, 2020 - Present).

Other Document 1: [Bywater Reyes Romulo BoulderOSMP_V5-1.pdf](#)

Bywater-Reyes, S. (Co-Principal), Franklin, S. (Co-Principal), Vorster, A. (Supporting), Evangelista, P. (Supporting), Moody, J. (Supporting), "Mapping the Distribution of Russian Olive in the Powder River Basin," Sponsored by NASA Develop, Federal. (June 1, 2021 - December 31, 2021).

Bywater-Reyes, S. (Principal), "UNC River Restoration Research through Networking and Community Partnerships," Sponsored by University of Northern Colorado Research, Dissemination and Faculty Development Program, University of Northern Colorado, \$7,816.90. (November 19, 2019 - December 31, 2021).
Award Letter: [Fall 2019 RDFD award letter Bywater-Reyes QR146-1.pdf](#)
Other Document 1: [RDFD_Info-1.pdf](#)

Bywater-Reyes, S., "Identifying Greeley, CO Drinking-Water Vulnerability under Climate-Change Scenario," Sponsored by New Project Program (NPP), University of Northern Colorado, \$5,000.00. (October 18, 2017 - October 18, 2019).
Award Letter: [Bywater-Reyes SharonQN048-1.pdf](#)

Bywater-Reyes, S., "Identifying Greeley, CO Drinking-Water Vulnerability under Climate-Change Scenarios," Sponsored by Faculty Teaching Reassignment for RSCW, University of Northern Colorado. (January 8, 2018 - May 11, 2018).

Not Funded

Bywater-Reyes, S. (Co-Principal), Bentley, A. (Co-Principal), "Building a Weld County, Colorado Geoscience Pipeline through Outreach and Place-Based Learning for Secondary and Community College Students," Sponsored by NSF IUSE Geopaths, Federal, \$350,000.00.

Other Document 1: [Bywater Reyes et al Geopaths Proposal-1.pdf](#)

Bywater-Reyes, S., "Impact of Riparian Enclosures on Stream Morphology and Habitat at Rocky Mountain National Park," Sponsored by Rocky Mountain National Park Continental Divide Research Learning Center (CDRLC), Federal, \$66,601.00.

Jarnevich, C. (Principal), Vorster, A. (Co-Principal), Bywater-Reyes, S. (Co-Principal), Franklin, S. (Co-Principal), "Quantifying Ecological and Hydrological Drivers of Russian Olive Invasion

in the Powder River Watershed with Predictions of Future Changes and Ecosystem Impacts Under Climate Change," Sponsored by North Central Climate Adaptation Center, Federal, \$349,644.00.

Other Document 1: [CASC RussianOlive StatementFormatted Submitted-1.docx](#)

Bywater-Reyes, S., "Quantifying phreatophyte resiliency and water use under a gradient in groundwater conditions," Sponsored by Colorado Water Institute, Federal, \$48,873.00.

Bywater-Reyes, S. (Co-Principal), Franklin, S. (Co-Principal), "Quantifying Russian Olive Invasion in the Powder River Basin," Sponsored by Montana Native Plant Society, State, \$3,000.00.

Bywater-Reyes, S., "Streamflow intermittence in a changing landscape: causes, changes, and strategies for the future," Sponsored by Colorado State University, Federal, \$56,319.00. (June 1, 2018 - June 1, 2020).

TEACHING

Teaching Experience

University of Northern Colorado

Courses Taught:

ESCI 474, Principles of Surface and Groundwater Hydrology, 6 courses. 4.00 credit hours.

ESCI 490, Colloquium in Earth Sciences, 1 course. 1.00 credit hours.

ESCI 491, Geoscience Field Issues, 1 course. 3.00 credit hours.

ESCI 492, Earth Science Internship, 1 course. 3.00 credit hours.

ESCI 574, Principles of Surface and Groundwater Hydrology, 6 courses. 4.00 credit hours.

ESCI 591, Geoscience Field Issues, 1 course. 3.00 credit hours.

ESCI 599, Seminar in Earth Sciences, 1 course. 1.00 credit hours.

ESCI 600, Introduction to Earth Science Research, 1 course. 2.00 credit hours.

ESCI 692, Earth Science Internship, 5 courses. 3.00 credit hours.

ESCI 697, Graduate Research, 2 courses. 2.00 credit hours.

ESCI 699, Thesis, 2 courses. 3.00 credit hours.

GEOL 100, General Geology, 4 courses. 4.00 credit hours.

GEOL 110, Our Geological Environment, 5 courses. 3.00 credit hours.

GEOL 201, Physical Geology, 1 course. 4.00 credit hours.

GEOL 422, Directed Studies, 17 courses. 2.00 credit hours.

GEOL 460, Geomorphology, 8 courses. 4.00 credit hours.

GEOL 483, Soils, 3 courses. 3.00 credit hours.

GEOL 560, Geomorphology, 4 courses. 4.00 credit hours.

GEOL 583, Soils, 1 course. 3.00 credit hours.

GEOL 622, Directed Studies, 9 courses. 2.00 credit hours.

New Programs Developed/Major Program Revision: 10 courses.

Earth Science - Environmental Emphasis

Environmental and Sustainability Studies

Environmental and Sustainability Studies Curriculum Changes

Environmental and Sustainability Studies National Association of Geoscience Workshop

GEOL 100 Laboratory

GEOL 491 Geoscience Field Issues Using High-Resolution Topography to Understand Earth
Surface Processes

Geology Success Lesson Implementation Coordinator

MA Earth Science

National Association of Geoscience Teachers Workshop

Academic Advising

Fall 2019: 10 undergraduate students advised, 3 graduate students advised, approximately 20 hours spent per year.

Fall 2018: 14 undergraduate students advised, 1 graduate students advised, approximately 20 hours spent per year.

Spring 2018: 7 undergraduate students advised, approximately 10 hours spent per year.

Fall 2017: 6 undergraduate students advised, approximately 10 hours spent per year.

Directed Student Learning

Directed Individual/Independent Study. (January 15, 2021 - Present).

Advised: Jennifer Rios

Directed Individual/Independent Study. (January 15, 2021 - Present).

Advised: Juan Perez

Directed Individual/Independent Study. (January 10, 2021 - Present).

Advised: Zachary Canaday

Master's Thesis Committee Chair. (August 15, 2020 - Present).

Advised: Ara Metz

Directed Individual/Independent Study. (August 20, 2020 - December 20, 2020).

Advised: Jennifer Rios

Supporting Document: [DirectStudies_FinalReport_Fall2020-1.docx](#)

Directed Individual/Independent Study. (January 20, 2020 - June 20, 2020).

Advised: Juan Perez

[RSPARROW_finalsubmission-1.docx](#)

Master's Thesis Committee Chair. (August 18, 2018 - June 15, 2020).

Advised: Haylie Brown

Supporting Document: [BGS Poster-1.pdf](#)

Supporting Document: [IALE Poster_HBrown_V4-1.pdf](#)

Supporting Document: [THESIS_HaylieBrown_08042020-1.pdf](#)

Directed Individual/Independent Study. (September 1, 2019 - December 1, 2019).

Advised: Alexi Richmond

[Poudre River Cross-Sectional Assessment_Fall2019-2.pdf](#)

Directed Individual/Independent Study. (September 1, 2019 - December 1, 2019).

Advised: Courtney Lanier

[LanierCourtney_fall2019_FinalReport-1.docx](#)

Directed Individual/Independent Study. (September 1, 2019 - December 1, 2019).

Advised: Curtis Crawford

[Poudre River Cross-Sectional Assessment_Fall2019-1.pdf](#)

Directed Individual/Independent Study. (May 1, 2019 - July 1, 2019).

Advised: Bailey Sexton

[Bailey Sexton Report Final-1.docx](#)

Directed Individual/Independent Study. (January 8, 2019 - May 6, 2019).

Advised: Theron Verna

[Verna_FinalWriteup-1.docx](#)

Directed Individual/Independent Study. (January 15, 2019 - May 1, 2019).

Advised: Haylie Brown

Directed Individual/Independent Study. (January 10, 2019 - May 1, 2019).

Advised: Jacob Hooker

[StreamCalc-1.zip](#)

Master's Thesis Committee Member. (August 1, 2018 - May 1, 2019).

Advised: Davitia James

Directed Individual/Independent Study. (August 18, 2018 - December 10, 2018).

Advised: Kacy Sylvia

[Sylvia_Final_directed_Spring_2019-1.docx](#)

Directed Individual/Independent Study. (January 8, 2018 - May 10, 2018).

Advised: Dustin Wilson

[Wilson_Spring_2018_Grain Size Analysis Report_Final-1.docx](#)

Directed Individual/Independent Study. (January 8, 2018 - May 10, 2018).

Advised: Jane Allen

[Allen_Spring_2018_Directed Study - Lower-Poudre River Analysis_Final-1.docx](#)

Directed Individual/Independent Study. (December 11, 2017 - May 10, 2018).

Advised: William Radmacher

[Radmacher_Spring_2018_Paper_Final-1.docx](#)

Directed Individual/Independent Study. (August 21, 2017 - December 8, 2017).

Advised: Michael Davis

Supporting Document: [Davis_Fall_2017_Michael_Lake_EmilyFinalApproved-1.pdf](#)

Non-Credit Instruction

Workshop, Center for Enhancement of Teaching and Learning, 6 participants. (August 1, 2020 - January 1, 2022).

Guest Lecture, Colorado State University, 20 participants. (August 18, 2021).

SERVICE

University Service

Attendee, Meeting, UNC Budget and Visioning. (September 1, 2018 - Present).

Track Organizer, Earth and Environmental Network. (April 1, 2018 - Present).

Special Institutional Assignment, Aims2UNC Initiative. (October 1, 2018 - September 1, 2019).

Attendee, Meeting, OSP Director Search. (May 1, 2019 - May 29, 2019).

College Service

Committee Member, NHS Advising and Retention Committee. (September 1, 2018 - Present).

Task Force Member, NHS Student Advising and Success. (March 1, 2019 - September 1, 2019).

Department Service

Committee Chair, Social Media and Web. (September 1, 2018 - Present).

Committee Member, Graduate Committee. (August 1, 2018 - Present).

Recruitment, EAS Recruitment and Outreach. (January 1, 2018 - Present).

Workshop Organizer, NAGT Traveling Workshop. (January 1, 2019 - October 1, 2019).

Supporting Documentation: [Report for U. Northern Colorado Earth and Atmosph Sci faculty DB-1.docx](#)

Program Service

Committee Member, EAS Graduate Committee. (May 1, 2019 - Present).

Committee Member, Environmental and Sustainability Studies Curriculum Sub-committee. (September 1, 2018 - Present).

Committee Member, McNair Graduate Panel. (June 13, 2019).

Professional Service

Reviewer, Journal Article, Earth Surface Processes and Landforms. (November 4, 2020 - Present).

Officer, President/Elect/Past, Association for Women Geoscientists Laramide Chapter, Denver, CO. (September 1, 2020 - Present).

Reviewer, Grant Proposal, National Science Foundation. (February 20, 2020 - Present).

Reviewer, Journal Article, Biogeosciences. (July 2019 - Present).

Reviewer, Journal Article, Journal of Geophysical Research Earth Surface, Malden, MA. (October 17, 2018 - Present).

Reviewer, Journal Article, Geophysical Research Letters, Malden, MA. (May 2018 - Present).

Reviewer, Journal Article, Water, Beijing. (January 1, 2018 - Present).

Officer, President/Elect/Past, Association for Geoscientists Laramide Chapter, Denver, CO. (October 2020 - October 2022).

Session Chair, American Geophysical Union, New Orleans, Louisiana. (June 2021 - December 2021).

Task Force Chair, Unlearning Racism in the Geosciences. (January 1, 2021 - June 30, 2021).
Supporting Documentation: [EAS UNCO Deliverable Session0 Signed-1.pdf](#)

Reviewer, Journal Article, International Journal of Environmental Research and Public Health. (February 2021).

Reviewer, Journal Article, REVISTA BOSQUE, Valdivia. (December 2020).

Outreach Coordinator, Association for Geoscientists Laramide Chapter, Denver, CO. (September 1, 2018 - September 1, 2020).

Reviewer, Journal Article, Sedimentary Geology. (September 5, 2019).

Reviewer, Journal Article, IEEE. (August 7, 2019).

Reviewer, Journal Article, Geosciences. (June 28, 2019).

Reviewer, Journal Article, Ecohydrology. (April 26, 2019).

Reviewer, Journal Article, Resources. (April 18, 2019).

Reviewer, Conference Paper, Earth Surface Processes and Landforms, Lusanne. (May 15, 2018).

Reviewer, Journal Article, Proceedings A. (September 12, 2017).

Supporting Documentation: [Gmail - Report received for RSPA-2017-0547-1.pdf](#)

Reviewer, Journal Article, Geomorphology. (September 3, 2017).

Supporting Documentation: [Gmail - Thank you for your review of GEOMOR-6972-1.pdf](#)

Reviewer, Journal Article, Sustainability. (July 27, 2017).

Supporting Documentation: [sustainability-202959-peer-review-v2-1.pdf](#)

Public/Community Service

Board Member, Poudre Heritage Alliance Board, Greeley, CO. (June 1, 2019 - Present).

Board Member, Coalition for the Poudre River Watershed, Fort Collins, CO. (January 1, 2019 - Present).

Supporting Documentation: [Coalition-1.PNG](#)

UNC liaison and scholar in residence, Poudre Learning Center, Greeley, CO. (February 28, 2018 - Present).

Grant Proposal Reviewer, External, Poudre Heritage Alliance Large Grant Committee, Greeley, CO. (March 2021 - June 2021).

Guest Speaker, Confluence Institute, Greeley, CO. (May 21, 2021).

Grant Proposal Reviewer, External, Caring for Our Watersheds, Greeley, CO. (January 2, 2021).

Board Member, City of Greeley Get Outdoors Committee, Greeley, CO. (August 1, 2020 - December 1, 2020).

Supporting Documentation: [get-outdoors-greeley-strategic-plan---02-02-21-1.pdf](#)

Guest Speaker, North Glen High School GoSTEM, North Glen, CO. (February 14, 2020).

Committee Member, Middle South River Alliance, Evans, CO. (October 1, 2018 - September 20, 2019).

Task Force Member, Party for the Poudre, Greeley, CO. (September 12, 2019).

Guest Speaker, Poudre Girls Camp, Greeley, CO. (July 25, 2019).

Member, Children's Water Festival, Greeley, CO. (April 24, 2019).

Track Organizer, Forum for the Poudre River Watershed, Greeley, Fort Collins, CO. (February 2, 2019).

Volunteer Expert, Dinosaur Ridge Girl Scout Day, Morrison, CO. (October 13, 2018).

Program Coordinator, Evans Summer Camp Fossil Day, Greeley, CO. (July 26, 2018).

Judge, Longs Peak Science Fair, Greeley, CO. (January 27, 2018).

Judge, Dos Rios Science Fair, Greeley, CO. (January 18, 2018).

Attendee, Meeting, Tour de Frack, 350 Colorado, Greeley, CO. (July 11, 2017).

Consulting

Litigation, State of Montana, Missoula, MT. (November 18, 2016 - April 24, 2017).

DEVELOPMENT ACTIVITIES ATTENDED

Faculty Fellowship, "Faculty Learning Community," UNC, Greeley, CO, USA. (September 1, 2019 - Present).

Workshop, "IDD Canvas Quizzes for Math and Science," University of Northern Colorado, Greeley, CO, USA. (May 6, 2020).

Workshop, "SAFE Zone Training," University of Northern Colorado, Greeley, CO, USA. (November 12, 2019).

Workshop, "High Resolution Topography and 3D Imaging II: Introduction to Structure from Motion (SfM) Photogrammetry.," Geological Society of America, Phoenix, AZ, USA. (September 21, 2019).

Workshop, "NAGT Traveling Workshop: Building Stronger Geoscience and Environmental Science Departments and Programs," National Association of Geoscience Teachers, Greeley, CO, USA. (September 7, 2019 - September 8, 2019).

Workshop, "CSU Drone Flight School," CSU Drone Center, Greeley, CO, USA. (July 7, 2019 - July 11, 2019).

Workshop, "Courageous Conversations," UNC HHMI Team, Greeley, CO, USA. (May 22, 2019 - May 23, 2019).

Faculty Fellowship, "Inclusive Excellence Teacher Scholars," University of Northern Colorado, Greeley, CO, United States. (August 9, 2018 - May 9, 2019).

Continuing Education Program, "Course and Program Assessment," UNC CETL, Greeley, CO, USA. (September 1, 2018 - May 1, 2019).

Workshop, "Do the Flip," UNC, Greeley, CO, USA. (April 11, 2019).

Workshop, "CMS Training - Pt. 1," University of Northern Colorado, Greeley, CO, United States. (December 12, 2018).

Workshop, "Measuring Water Resources with GPS, Gravity, and Traditional Methods:

- Undergraduate Teaching Module," UNAVCO at the American Geophysical Union, Washington DC, USA. (December 11, 2018).
- Workshop, "SSC Campus Training," University of Northern Colorado Center for the Enhancement of Teaching and Learning, Greeley, CO, United States. (November 27, 2018).
- Workshop, "Program Level Assessment Methods," University of Northern Colorado Office of Assessment, Greeley, CO, United States. (November 5, 2018).
- Workshop, "Curriculum Mapping," University of Northern Colorado Office of Assessment, Greeley, CO, United States. (October 23, 2018).
- Workshop, "Practical Strategies for Creating Inclusive & Equitable Classrooms," University of Northern Colorado Center for the Enhancement of Teaching and Learning, Greeley, CO, United States. (October 11, 2018).
- Workshop, "Low Stakes, No Stakes: Formative Classroom Assessment Techniques," University of Northern Colorado Center for the Enhancement of Teaching and Learning, Greeley, CO, United States. (September 24, 2018).
- Workshop, "Faculty Forum: Make Advising a Breeze with SSC Campus," University of Northern Colorado Center for the Enhancement of Teaching and Learning, Greeley, CO, United States. (September 20, 2018).
- Workshop, "Developing Program-Level Learning Outcomes," University of Northern Colorado Office of University Assessment, Greeley, CO, United States. (September 13, 2018).
- Workshop, "Zoom and Panopto: Media Tools for Student Engagement," University of Northern Colorado, Greeley, CO, United States. (August 23, 2018).
- Continuing Education Program, "Summer Soil Institute," Colorado State University, Fort Collins, CO, USA. (June 17, 2018 - June 30, 2018).
- Conference Attendance, "Flipped Learning Academy," University of Northern Colorado, Greeley, CO, United States. (June 14, 2018 - June 15, 2018).
- Workshop, "Active Learning in STEM Classes Big and Small," University of South Florida, Greeley, CO, USA. (May 18, 2018).
- Continuing Education Program, "Groups in Canvas," CETL, University of Northern Colorado, Greeley, CO, United States. (January 3, 2018).
- Workshop, "Using Groups in Canvas," University of Northern Colorado Instructional Design and Development, Greeley, Colorado, USA. (January 3, 2018).
- Workshop, "Landlab Earth Surface Modeling Toolkit: Building and Applying Models of Coupled Earth Surface Processes," Geological Society of America, Seattle, WA, USA. (October 21, 2017).
- Continuing Education Program, "Van Training," University of Northern Colorado, Greeley, CO, United States. (September 14, 2017).

AWARDS AND HONORS

Scholarship/Research

New Faculty Recognition, UNC Office of Sponsored Programs. (April 11, 2019).

PROFESSIONAL MEMBERSHIPS

Association for Women Geoscientists. (December 29, 2017 - Present).

500 Women Scientists. (November 27, 2017 - Present).

Earth Science Women's Network. (September 1, 2017 - Present).

American Geophysical Union. (December 1, 2014 - Present).

Geological Society of America. (September 1, 2007 - Present).

Dr. Michal Tal
Assistant Professor
Aix-Marseille University
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Europôle de l'Arbois, BP 80
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February 24, 2022

Subject: Application for ISAC member position

Dear ISAC member selection panel,

It is my sincere pleasure to submit this application for consideration to serve as a member on the Independent Scientific Advisory Committee (ISAC) for the Platte River Recovery Implementation Program (PRRIP). I hope the committee will find that my experience and interests are uniquely aligned with the goals of the program and the desired qualifications of panel members and consider me fully qualified to provide expert advice in fluvial geomorphology (with a focus on the interactions of vegetation and braiding) and river restoration. (Please refer to my CV for details of the references listed here. PDFs of all references are available upon request).

I completed my undergraduate in Physical Geography from the Hebrew University of Jerusalem in 1999 and went on to obtain a PhD in Geology with a minor in Civil Engineering in 2007 from the University of Minnesota. Following my PhD, I moved to France to join my husband (a French national). I worked as a postdoc for 3 years at the Institute of Global Physics in Paris and was hired as an assistant professor at the University of Aix-Marseille / CEREGE Laboratory (Aix-en-Provence) in 2010 where I currently hold a joint appointment in Earth Science and Geography. This past summer my husband was transferred to a job in the Burgundy-Franche-Comté region in eastern France, and my family relocated to the city of Besançon. As a result of this relocation and the absence of a mechanism for transferring my academic position, I am considering stepping down from my post at the end of this academic year and establishing myself as an independent consultant. The work of the ISAC is particularly timely and very well aligned with my immediate professional goals and interests.

The challenges on the Platte River embody many of the major themes I have been interested in and worked on throughout my career including riparian vegetation encroachment in response to changes in water and sediment supply, environmental flows, and habitat restoration. Having been introduced to fluvial geomorphology as an undergraduate student in Israel, I became familiar with the unique challenges associated with water-stressed systems early on in my career. My interest in experimental fluvial geomorphology (during my undergraduate I conducted physical experiments to determine whether ephemeral rivers developed surface armouring) led me to pursue my studies at the Saint Anthony Falls Laboratory in Minneapolis, a world-renown institute for interdisciplinary experimental river science. My strong motivation to conduct research addressing questions at the heart of river management led me to choose to study the interactions of riparian vegetation and channel dynamics as the topic of my PhD. Specifically, I studied how the opportunistic colonization of braid plain during low flows by riparian vegetation could lead braided rivers to evolve to single-thread channels (Tal et al., 2004; Tal and Paola, 2007; Tal and Paola 2010). My work has had a broad impact on both the scientific and management communities.

Although my experiments were not designed to be a prototype of any specific river system, the existing and ongoing studies on the Platte River were a major inspiration for my PhD and informed the specific questions I aimed to answer (analysis of flow discharge and channel width data from USGS gauging stations along the Platte were an important part of the first paper I published, Tal et al., 2004). Throughout my studies I interacted extensively with Tim Randle from the U.S. Bureau of Reclamation to ensure that my experiments were relevant to the challenges his team was dealing with on the Platte River. Given the clear connection between my experiments and the Platte, in 2006 I was invited by a pair of naturalists from Minnesota familiar with my work to travel with them to Rowe Sanctuary to witness the spring migration of the Sandhill Cranes. Experiencing first-hand the birds' dependence on Platte River habitat, and learning about the importance of preserving and restoring it, strongly contributed to my sense of the relevancy and need for the research I was conducting. In 2012 I had the opportunity to return to the Platte as part of a collaboration with a geochemist and ecologist to study the impacts of the spread of non-native grass *Phragmites australis* (common reed) on silica sequestration (Triplett et al., 2014; Triplett et al., 2020). During my PhD I was invited to work at the National Institute of Water and Atmospheric Research (NIWA) in Christchurch, New Zealand. There I analyzed aerial imagery to quantify vegetation encroachment in response to flow diversions for hydroelectricity on the Waitaki River (an alpine gravel-bed river in contrast to the Platte's sand-bed river; Hicks et al., 2008).

Scientific questions aimed at informing river management and restoration have been at the heart of the research program I directed at AMU over the past 11 years. On the Buëch River, an alpine gravel bed river that constitutes a major tributary of the Durance River, my research group has been studying how well existing empirical and numerical formulations predict sediment flux based on a unique set of data consisting of sediment volumes accumulated in a large gravel pit (capacity 180 000 m³) dredged by the French electric company (EDF) at the downstream end of the river (discharge is measured at a nearby dam). Also, using high-resolution photogrammetry (acquired by drone) to measure bed evolution, we have applied the morphological method to estimate sediment flux along a 7 km reach of braid plain and studied its relation to channel morphology and hydraulics (PhD Coutaz, 2021; ZABR-AE report, 2021). On the Rhone River, my group has focused on quantifying the impacts of channel narrowing due to embankments (constructed at the end of the 19th century) and flow diversions for hydroelectricity and gravel mining (throughout the 2nd half of the 20th century) on bed elevation, surface grain size, and sediment flux, using bed samples, historical bathymetry, and numerical

modeling (PhD Parrot, 2015; Vazquez-Tarrio et al., 2019; OSR reports 2014, 2017, 2020). On both the Buëch and Rhone rivers, we are using 1D morphodynamic modeling to study the impacts of dams and gravel augmentation to mitigate the effects of sediment deficits below them and we are collaborating with eco-hydraulic engineers specialized in statistical habitat models to determine how post-dam and post-reinjection changes in hydraulics and surface grain size affect the quality of fish habitat (OSR report 2021, ZABR-AE report 2021).

I have continued to maintain a keen interest in riparian vegetation and channel morphodynamics in both gravel-bed and sand-bed rivers, and, owing to the expertise I established through my PhD work, I am frequently invited to collaborate, supervise, and evaluate work on this topic. The projects range from quantifying vegetation encroachment in response to changes in discharge and sediment loads and requirements to mitigate it to directly improving the predictive capabilities of numerical models (Gran et al., 2015; Winterberger, 2015; Jourdain, 2017; Hortobagy, 2018; Serlet, 2018; Bodwes, 2021; Jiaz, 2022).

My research has always been carried out within the framework of partnerships between scientists and river managers (e.g. OSR, EDF, CNR, SMIGIBA, SMAVD, etc.) and collaborations amongst different disciplines (Earth Science, Geography, Engineering, Ecology, etc.). These experiences have only reinforced my strong belief in the need for cross-disciplinary and multi-institute platforms, such as the PRRIP, to ensure the success of large-scale restoration projects.

Serving as a member of ISAC and contributing to the continued success of the PRRIP's missions would be both an honor and an incredible opportunity to use my expertise to help ensure the protection and restoration of a river system that has inspired me for many years. I would like the panel to know that if I am selected, I am fully committed to traveling to the U.S. for the biannual ISAC meetings and to accommodate virtual meetings and conference calls in U.S. time zones.

I thank the panel for considering my candidacy and remain available to answer any questions and provide any additional information.

Sincerely,
Michal Tal

Curriculum vitae

Prof. Michal TAL *Telephone:* +33 (0) 629347240 *e-mail:* tal@cerege.fr

Appointment (2010 - present)

Assistant Professor, Department of Geography and Department of Earth Science, Aix-Marseille University, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement ([CEREGE](#)) UMR 7330, Europôle de l'Arbois, BP 80, 13545 Aix-en-Provence cedex 04, France

My research focuses on quantifying river trajectories resulting from natural and anthropogenic modifications and determining the relative magnitudes and timescales of each. To do this I study topographic evolution, sediment distributions, transport capacities, and riparian vegetation. My work is based on a variety of tools including high resolution photogrammetry, historical records and imagery, and hydraulic and morphodynamic modeling. I teach undergraduate and graduate courses in physical geography and Earth Science in fluvial geomorphology, river morphodynamics, river restoration, GIS, and risk management.

Professional preparation

- 2009 – 2010 Postdoctoral researcher, Laboratoire d'Hydraulique Saint Venant, Ecole des Ponts ParisTech (ENPC), Paris, France
- 2007 – 2009 Postdoctoral researcher, Institut de Physique du Globe de Paris (IPGP), Université Paris Diderot, Paris, France
- 2008 PhD, major Geology, minor Civil Engineering, University of Minnesota, Minneapolis, Minnesota, USA, Thesis: Interactions between riparian vegetation, channel morphology, and flow dynamics," Advisor: Chris Paola
- 1999 B.A., Geography *magna cum laude*, The Hebrew University of Jerusalem, Jerusalem, Israel, Senior project: Experiments on the effect of hydrograph characteristics on vertical grain sorting in gravel bed rivers dynamics," Advisor: Marwan Hassan

Publications

"" Denotes student advisee or postdoc of MT*

Peer-reviewed articles

Laura Triplett, Michal Tal, Zachary Wagner, Karin Kettenring. Invasion of a Widespread, Non-Native Grass Causes Downstream Reductions in Bioavailable Silica. *Journal of the American Water Resources Association*, Wiley, 2020, 56 (5), pp.810-819. <10.1111/1752-1688.12868>. <hal-03153035>

*Issa Sakho, Philippe Dussouillez, Doriane Delanghe, Boris Hanot, Guillaume Raccasi, et al.. Suspended sediment flux at the Rhone river mouth (France) based on ADCP measurements during flood events. *Environmental Monitoring and Assessment*, Springer Verlag (Germany), 2019, 191 (8), pp.508. <10.1007/s10661-019-7605-y>. <hal-02317880>

*Vazquez-Tarrio, D., Tal, M., Camenen, B., Piégay, H., 2019, Effects of continuous embankments and successive run-of-the-river dams on bedload transport capacities along the Rhône River, France. *Science of the Total Environment*, Elsevier, 2019, 658, pp.1375-1389.

Coraline Wintenberger, Stéphane Rodrigues, Sabine Greulich, Jean-Gabriel Bréhéret, P. Jugé, et al.. Control of Non-migrating Bar Morphodynamics on Survival of *Populus nigra* Seedlings during Floods. *Wetlands*, Springer Verlag, 2019, 39 (2), pp.275-290. [10.1007/s13157-018-1121-7](https://doi.org/10.1007/s13157-018-1121-7). halshs-02045329

*Vazquez-Tarrio, D., Recking A., Liébault, F., Tal, M., Menéndez-Duarte, R. 2018, Particle transport in gravel-bed rivers: Revisiting passive tracer data. *Earth Surface Processes and Landforms*, Wiley, doi: 10.1002/esp.4484

*Jourdain, C., Belleudy, P., Tal, M., Malavoi, J.R., 2017, The role of hydrology on vegetation removal in a heavily managed gravel bed river: the Isère, Combe de Savoie, France, <http://geomorphologie.revues.org/11761>

Metivier, F., C. Paola, J. L. Kozarek, M. Tal, 2016, Experimental studies and practical challenges in fluvial geomorphology, in *Tools in Fluvial Geomorphology*, Second Edition, Eds. M. Kondolf and H. Piegay, John Wiley & Sons, Ltd, pp 456 – 475.

Bertoldi, W., M. Welber, A.M. Gurnell, L. Mao, F. Comiti, M. Tal, 2015, Physical modeling of the combined effect of vegetation and wood on river morphology, *Geomorphology* 246, 178–187, doi:10.1016/j.geomorph.2015.05.038.

Gran, K. B., Tal, M., Wartman, E.D., 2015, Co-evolution of riparian vegetation and channel dynamics in an aggrading braided river system, Mount Pinatubo, Philippines. *Earth Surf. Process. Landforms*, 40, 1101–1115. doi: 10.1002/esp.3699.

Thomas, R.E., M.F. Johnson, L.E. Frostick, D.R. Parsons, T.J. Bouma, J.T. Dijkstra, O. Eiff, S. Gobert, P-Y. Henry, P. Kemp, S.J. McLelland, F.Y. Moulin, D. Myrhaug, A.Neyts, M. Paul, W. E. Penning, S. Puijalon, S.P. Rice, A. Stanica, D.Tagliapietra, M. Tal, A.Tørum, M.I. Voutsoukas, 2014, Physical modeling of water, fauna and flora: knowledge gaps, avenues for future research and infrastructural needs, *Journal of Hydraulic Research*, DOI: 10.1080/00221686.2013.876453

Triplett, L.D., K.M. Kettenring, M. Tal, C. Smith, 2014, The potential for multiple signatures of invasive species in the geologic record. *Anthropocene*, 10.1016/j.ancene.2014.06.002.

*Wickert, A. D., J. M. Martin, M. Tal, W. Kim, B. Sheets, and C. Paola, 2013, River channel lateral mobility: metrics, time scales, and controls, *J. Geophys. Res. Earth Surf.*, 118, 396–412, doi:10.1029/2012JF002386.

Tal, M., Kim W., Lajeunesse E., Limare A., Métiver F., Frey P., 2012, The use of imagery in flume experiments, in *Fluvial Remote Sensing for Science and Management*, Eds. Patrice Carbonneau and Hervé Piegay, John Wiley & Sons Ltd., West Sussex.

Limare, A., M.Tal., M. Reitz, E. Lajeunesse, F. Metivier, 2011, Optical method for measuring bed topography and flow depth in an experimental flume, *Solid Earth*, 2, 143–154, doi:10.5194/se-2-143-2011

Tal, M., C. Paola, 2010, Effects of vegetation on channel morphodynamics: results and insights from laboratory experiments, *Earth Surface Processes and Landforms*, doi: 10.1002/esp.1908

Tal, M., C. Paola, 2010, Effects of vegetation on channel morphodynamics: results and insights from laboratory experiments, *Earth Surface Processes and Landforms*, doi: 10.1002/esp.1908

Hicks, D.M., Duncan, M.J., Lane, S.N., Tal, M., Westaway, R., 2008, Contemporary morphological change in braided gravel-bed rivers: new developments from field and laboratory studies, with particular reference to the influence of riparian vegetation, in *Gravel Bed Rivers 6; From Process Understanding to River Restoration*, Eds. H. Habersack, H. Piegay, and M. Rinaldi, Elsevier, pp. 557 – 586.

Murray, A.B., M.A.F. Knappen, M. Tal, M.L. Kirwan, 2008, Biomorphodynamics: Physical-biological feedbacks that shape landscapes, *Water Resources Research*, doi: 10.1029/2007WR006410.

Tal, M., Paola, C., 2007, Dynamic single-thread channels maintained by the interactions of flow and vegetation, *Geology*, v. 35, p. 347-350, doi: 10.1130/G23260A.1.

Tal, M., Gran, K., Murray, A.B., Paola, C., Hicks, D.M., 2004, Riparian vegetation as a primary control on channel characteristics in multi-thread rivers, in *Riparian Vegetation and Fluvial Geomorphology: Hydraulic, Hydrologic, and Geotechnical Interactions*, Eds. Sean J. Bennett and Andrew Simon, American Geophysical Union Monograph, pp. 43 – 58.

Scientific reports

Michal Tal, Nicolas Lamouroux, Fred Liebault, *Sadegh Jafarinik, *Jonathan Coutaz, Guillaume Brousse, 2021. Evaluation of the effects of river management and restoration on hydro-sedimentary dynamics and habitat of along the Buëch River downstream of the Saint-Sauveur dam based on morpho-sedimentary monitoring, 1D morphodynamic modeling, and statistical models. Final report for a project funded by the French Water Agency (ZABR-AE 2018 – 2021).

*Alyssa Serlet, Michal Tal. 1D Morphodynamic modeling of the Peage de Roussillon reach, Rhone River, France, 2020. Final report for a research axis funded by the Rhone Sediment Observatory (OSR5 2018 - 2020) ([hal-03293550](#))

Michal Tal, *Daniel Vázquez Tarrío, Philippe Dussouillez, Hervé Piégay, Benoit Camenen, *Amel Ati, Long-term morphodynamic evolution of the Rhone River, France, 2017. Final report for a research axis funded by the Rhone Sediment Observatory (OSR4 2015 - 2017)

*E. Parrot, Hervé Piégay, Lise Vaudor, Guillaume Fantino, Michal Tal. Analysis of bed evolution along the Rhone's main channel from Lake Geneva to the Mediterranean Sea, 2014. Action 1. Final report for a research axis funded by the Rhone Sediment Observatory (OSR2 2010 - 2013) ([hal-03446806](#))

*E. Parrot, Hervé Piégay, Lucile Hammou, Guillaume Fantino, Michal Tal. Characterisation of sediment continuity along the Rhone River, 2014. Action 2. Final report for a research axis funded by the Rhone Sediment Observatory (OSR2 2010 - 2013) ([hal-03446810](#))

Advising

Postdocs

2019 – 2022, Alyssa Serlet: 1D morphodynamic modeling of the Rhone River

2018 – 2019, Sadegh Jafarinik: 1D morphodynamic modeling of the Buëch River

2017 – 2018, Daniel Vazquez Tarrío: bedload transport along the Rhone River

2013 – 2014, Issa Sakho: Estimating suspended sediment transport using passive acoustic techniques

PhDs

2016 – 2020 (director)

Jonathan Coutaz, Interactions amongst morphological evolution, sediment transport, and hydraulics along a gravel-bed braided river: The Buëch River, Alpes de Haute-Provence. Aix-Marseille University ([Coutaz, 2021](#))

2013-2017 (co-director)

Camille Jourdain, The impact of floods on sediment and vegetation dynamics in a gravel-bed river: The Isère River, Combe de Savoie. Université Grenoble Alpes ([Jourdain, 2017](#))

2010 – 2015, (co-director)

Elsa Parrot, Spatio-temporal analysis of the morphology of the Rhône River from Lake Geneva to the Mediterranean Sea, Université Jean-Moulin Lyon III ([Parrot, 2015](#)).

Scientific steering and evaluation

PhD thesis committees

2021-2022, Li Jiaz, EDF and Univ. of Tours, Implementation of a novel approach accounting for the influence of vegetation on sediment transport in GAIA

2018, Guillaume Brousse, Univ. Paris Diderot, Restoration efficiency and recovery of altered torrential rivers

2014-2015, Coraline Winterberger, Univ. François Rabelais – Tours, Fluvial dynamics and pioneer woody vegetation of Salicaceae in mixed sand-bed rivers

2013-2014, Sandrine Tacon, Univ. Lyon II, Spatio-temporal analysis of braided river morphology based on LiDAR

2012-2013, Pauline Leduc, IRSTEA – Grenoble, Experimental study of braided river dynamics

2010 - 2012, Margot Chapuis, Aix-Marseille Univ. Mobility of coarse river sediments in a highly managed alpine river: elements for the management of the lower Durance Valley

PhD defense juries

2021, Jules LeGuern, Univ. of Tours, Morphodynamics of a mixed sand-gravel river: Acoustic methods for quantifying bedload and analysis of bedform interactions in river channels

2021, Bas Bodewes, Univ. of Hull, Representing vegetation in experimental models of river systems

2020, Léo Szewczyk, Univ. PSL Paris, Bedload fill of abandoned channels

2020, Gabrielle Seignemartin, Univ. Lyon II, Contemporary evolution of the Rhône River "Girardon dike fields": geohistoric approach based on morpho-sedimentary, geochemical and phytoecological indicators

2020, Guillaume Brousse, Univ. Paris Diderot, Restoration efficiency and recovery of altered torrential rivers

2020, Maxime Morel, Univ. Claude Bernard Lyon I, Intercontinental modeling of the hydraulic geometry of stream reaches and applications for the ecological management of catchments.

[2018, Alyssa Serlet](#), Trento University and Queen Mary University of London, Biomorphodynamics of river bars in channelized, hydropower-regulated rivers

[2018, Borbála Hortobágy](#), Univ. Clermont Auvergne, Multi-scale interactions between riparian vegetation and hydrogeomorphic processes (the lower Allier River)

2017, Pauline Delorme, Institut de Physique du Globe de Paris, Morphology of alluvial fans

[2015, Coraline Winterberger](#), Univ. François Rabelais – Tours, Fluvial dynamics and pioneer woody vegetation of Salicaceae in mixed sand-bed rivers

2012, Margot Chapuis, Aix-Marseille Univ., Mobility of coarse river sediments in a highly managed alpine river: elements for the management of the lower Durance Valley

Collaborations

Research collaborations

University of South Carolina, Columbia, Department of Civil and Environmental Engineering, South Carolina, USA

University of Minnesota – Duluth, Department of Earth & Environmental Sciences, Duluth, Minnesota, USA

University of Texas at Austin, Department of Geological Sciences, Austin, Texas, USA

Aix-Marseille University, Mediterranean Institute of marine and terrestrial Biodiversity and Ecology
CNRS Environment – City – Society Laboratory, UMR 5600, Lyon, France
Univ. Grenoble Alpes, Laboratoire d'Etude des Transferts en Hydrologie et Environnement, Grenoble, France
Gustavus Adolphus College, Department of Geology and Environmental Studies, St Peter, Minnesota, USA
Utah State University, Ecology Center and Department of Watershed Sciences, Quinney College of Natural Resources, Logan, Utah, USA
INRAE Grenoble, ETNA research unit - Torrential Erosion, Snow and Avalanches, Grenoble, France
INRAE Lyon, Interdisciplinary research unit for the management and restoration of river systems and their catchments, Lyon, France
Grenoble Institute of Engineering and Management, Grenoble, France
Grenoble Institute of Environmental Geosciences, Grenoble, France
Polytechnic Institute, Univ. of Tours, Tours, France

Industrial and socio-economic partnerships

[French Water Agency](#)

Electricité de France ([EDF](#))
Compagnie Nationale du Rhône ([CNR](#))
Durance River Basin Syndicate ([SMAVD](#))
Buech River Basin Syndicate ([SMIGIBA](#))
Isere River Basin Syndicate ([SISARC](#))
Bléone River Basin Syndicate ([SMAB](#))

_____ Diverse responsibilities and activities _____

Rhone Sediment Observatory ([OSR](#)): coordinate multiple research axes on sediment transport and channel morphology
Rhone Basin Long-Term Environmental Research Observatory ([ZABR / RBLTER](#)): Scientific steering committee and CEREGE liaison
Study of consequences of fluvial maintenance operations on [biodiversity in the Mareau-aux-Prés islands](#) (National Reserve of Saint-Mesmin, Loire River, France): proposal evaluation
Expert committee member to evaluate a project for the construction of a [levee between Tarascon and Arles, SYMADREM](#)

Scientific peer review

Nature Geoscience
Earth Surface Processes and Landforms
Geomorphology
Journal of Geophysical Research – Earth Surface
Water Resources Research

ESurf

Outreach

Participation in the Annual Science Festival, CEREGE

Participation in the Annual meeting of university and high school science teachers, CEREGE

Participation in annual meetings of scientific researchers and river managers in the Rhone and Durance river basins



January 13, 2022

Chadwin Smith, Ph.D.
Independent Science Coordinator
Platte River Implementation Program
4111 4th Ave., Suite 6
Kearney, NE 68845

Dear Dr. Smith:

I am writing in response to a solicitation that I received related to a search for technical consultants to serve on the Independent Scientific Advisory Committee (ISAC) for the Platte River Recovery Implementation Program (PRRIP). It is my understanding that the PRRIP currently has three (3) open seats on the ISAC in 2022 for an initial three-year appointment; one of which includes a technical advisor with expertise in Fluvial Geomorphology with an emphasis on physical processes in sandbed braided channels in the Platte River basin. I am very interested in this type of professional development opportunity and I believe that my training, work experience and leadership background would be of significant value to your project group. Please find attached an updated CV and leadership profile statement. A summary of my training and experience follows.

I am currently a tenured Professor of Geology in the Earth and Environmental Science Department at Western Oregon University (WOU), and hold state licensure as a professional geologist in Oregon (G1968) and Washington (LG3140). I have over 23 years of teaching, research and service experience at WOU with an emphasis on Geomorphology, Environmental Geology and Geographic Information Systems. I completed my Ph.D. in Fluvial Geomorphology at West Virginia University. The focus of my research was on comparative geomorphic analysis of three forested watersheds in the Central Appalachians of Virginia and West Virginia, upper Potomac and Ohio river basins, respectively. The study emphasized geomorphic mapping, hillslope-channel interconnections, sediment storage, and sediment transport efficiency over historic / geologic time scales. My master's degree research at Washington State University similarly focused on fluvial sedimentology and basin analysis, with studies involving meandering and braided river facies in ancient environments, using modern analogs for comparison, including the Platte River amongst others. My graduate training focused on sedimentology, geomorphology, and surface processes with an emphasis on river systems, sediment transport and watershed science. During my intervening graduate school years, I also worked as a consulting environmental geologist for industry and government in western Pennsylvania, with a focus on contaminant hydrogeology, groundwater-surface water interactions, water quality, environmental assessment / remediation, landfill permitting, and abandoned mine land reclamation.

As a professor of geology in the Earth and Environmental Science program at Western Oregon University, I have significant experience teaching related courses within my specialty areas of expertise including ES322 Geomorphology, ES473 Environmental Geology, ES476 Hydrology, and ES492 Applications in Geographic Information Systems. In addition to my course rotations during the academic year, I have also offered a summer field course ES470 River Environments of Oregon, that involves a one-week curriculum with a focus on river restoration and fluvial geomorphology in the Deschutes River Basin of Central Oregon.

My research program at Western Oregon University is interdisciplinary in nature, built around a foundation of fluvial geomorphology, watershed science and geographic information systems. Research grants and awards dating back to 1999 total over \$1M at varying levels of scale and scope, with funding agencies including: U.S. Geological Survey, U.S. Department of Education, National Science Foundation, National Institutes of Justice, NASA Oregon Space Grant, U.S. Environmental Protection Agency, Oregon Watershed Enhancement Board, WOU Faculty Development Grant Committee, Oregon Community Foundation, and Murdock Trust. This research experience spans a diverse array of topics including watershed analysis, fluvial geomorphology, sedimentology, terrain morphometry, rapid bio-assessment of salmonid, environmental restoration, invasive plant distribution, aquifer characterization and novel GIS-based spatial analysis of fingerprint patterns.

In terms of leadership and advisory experience, I have served in a wide variety of management positions including six years as chair of the WOU Division of Natural Sciences and Mathematics (collective departments of Biology, Chemistry, Earth and Physical Science, Mathematics), two years as interim chair of the WOU Music Department, one year as interim chair of the WOU Chemistry Department, and six years as board member/past chair of the Oregon State Board of Geologist Examiners. During these administrative appointments, I worked in direct collaboration with a highly diverse group of stakeholders to manage business operations, provide council to ameliorate complicated organizational issues between disparate cultures, facilitate scheduling logistics in dynamic multivariate environments, provide leadership to cultivate a sense of positive teamwork, budget oversight and management. I have also served as a technical consultant and advisor on a wide variety of professional service projects including watershed assessment in the Luckiamute River Watershed (Willamette Basin, Oregon), GIS analysis of rapid bio-assessment surveys (salmonid-count snorkel surveys) of 100's of miles of channel network in the Luckiamute and Upper Nehalem river systems (western Oregon), technical advisor on terrain mapping and restoration design for the Luckiamute Watershed Council, external proposal reviewer for the U.S. Geological Survey and Bureau of Reclamation, manuscript reviewer for journals of Mountain Science and Geomorphology, and contributor to community development of the Key Concepts in Geomorphology textbook by Bierman and Montgomery.

Through my experience as a consulting geologist and grant writer, I am very well versed with RFP development, proposal preparation, and review / scoring criteria. In addition, I also possess a high degree of familiarity with the culture of contracting, scientific consulting, vendor alignment, subcontracts and all manner of business related therein. Depending on the philosophy of the ISAC Member Selection Panel, I believe that I can offer experienced fresh eyes as an objective technical advisor from outside the immediate PRRIP community, and make a valuable contribution to long term project success. For ease of reference, refer to the detailed summary of my relevant PRRIP / ISAC technical experience presented below, as excerpted from the attached CV. Given my broad range of experiences, and research focus on fluvial geomorphology, sediment transport and invasive plant studies; I believe that my profile is well aligned with the solicitation that I received in regards to the PRRIP / ISAC search.

Finally, given my current position as a professor of geology at Western Oregon University, my assigned job duties include a full complement of teaching, research and service. The PRRIP / ISAC opportunity is directly aligned with my service workload expectation, and dovetails nicely with my teaching and research interests. Hence, why I am highly interested in this type of professional development opportunity. Given that I operate on a 9-month annual academic contract (Sept. 15-June 15), and summer schedules are highly flexible and open, I have ample time already built into my existing work schedule to accommodate the effort commitment required to serve as a member on the ISAC advisory panel.

Please let me know if I can be of assistance or if you have any follow-up questions (contact information provided below). I am highly interested in this opportunity. Thank you for your time and consideration. All the best wishes for success with your ISAC search process and achieving your PRRIP project goals.

Sincerely,



Steve Taylor Ph.D., LG/RG, Professor of Geology
Earth and Environmental Science Department
Western Oregon University
Monmouth, Oregon 97361
503-838-8398
taylors@wou.edu

SUMMARY OF RELEVANT PRRIP / ISAC TECHNICAL EXPERIENCE

PROFESSIONAL REGISTRATION

2016-Present **Washington Licensed Geologist (LG3140)**

2002-Present **Oregon Registered Professional Geologist (G1968)**

CONTINUING EDUCATION AND PROFESSIONAL DEVELOPMENT

2013 River Restoration Northwest Applied Field Methods: "Case Study of Johnson Creek Flood Mitigation Project, Portland, Oregon", Portland Environmental Services.

2010 National Science Foundation Professional Development Workshop: "New Tools in Process-Based Analysis of Lidar Topographic Data", University Corporation for Atmospheric Research (UCAR), Boulder, Colorado.

2007 Portland State University River Restoration Short Course: "EPP221 Introduction to River Restoration", Portland, Oregon.

2006 Portland State University River Restoration Short Course: "EPP223 Stream Reconnaissance and Assessment Tools", Portland, Oregon.

GRANTS-CONTRACTS-FELLOWSHIPS-FUNDED PROJECTS

2021-Present Ash Creek Water Control District, Polk County, Oregon: "Invasive Plant Survey of the Ash Creek Drainage" (Co-PI with B. Dutton, \$3100)

2019-2020 Western Oregon University Faculty Professional Development Grant: "Lithologic Controls on Watershed Morphology in the Central Oregon Coast Range: LiDAR-Based Terrain Analysis of the Luckiamute River Basin with Implications for Restoration Design" (PI, \$3400)

2011-2013	Oregon Watershed Enhancement Board: "Water Quality Monitoring in the Mid-Willamette Valley" (Co-PI with P. Flatt, Cooperative Agreement with Oregon Dept. of Agriculture and Polk Soil and Water Conservation District, \$15,000)
2010-2011	NASA Oregon Space Grant: "Comparative Hydrogeomorphic Analysis of Western Oregon Watersheds Using Airborne Laser Swath Altimetry (LIDAR)" (Co-PI and faculty supervisor for B. Snook, WOU Student, \$5000)
2010-2012	Contract Agreement Upper Nehalem Watershed Council: "GIS Analysis and Results from Rapid Bio-Assessment (RBA) and Limited Factors Analysis (LFA) in the Upper Nehalem Watershed, Tillamook County, Oregon" (PI with WOU student assistants, \$17,000)
2010-2012	U.S. Environmental Protection Agency, Greater Research Opportunities (GRO) Fellowship for Undergraduate Environmental Study: "The Distribution and Occurrence of Nitrate in Groundwater Supplies of the Mid-Willamette Valley: Implications for Water Resource Management in the Monmouth-Independence Area, Oregon" (Co-PI and faculty supervisor for K. Dana, WOU Student, \$45,100)
2010-2011	NASA Oregon Space Grant: "Land Cover Analysis Utilizing Aerial Photography, Remote Sensing and Geographic Information Systems: Application to Riparian Zones in the Mid-Willamette Basin, Oregon" (Co-PI and faculty supervisor for R. Stanley, WOU Student, \$5000)
2007	National Science Foundation-Research Opportunity Award: "The Influence of Geomorphic and Anthropogenic Processes on Decadal-Scale Sediment Yield in the Western Cascades, Oregon" (HJ Andrews LTER Supplement, Project Partnership with F. Swanson, \$13,000)
2007	Western Oregon University Faculty Professional Development Grant: "The Influence of Forestry Practice on Geomorphic Processes in Oregon" (PI, \$2100)
2005-2006	Northwest Invasive Weed Management Partnership: "Reconnaissance Survey of Japanese Knotweed Distribution in the Luckiamute River Basin" (Co-PI with B. Dutton, \$2000)
2005-2006	Oregon Community Foundation Grant: "Geomorphic and Anthropogenic Influences on the Distribution of Invasive Plant Species in the Luckiamute Watershed" (Co-PI with B. Dutton, Year 2 Supplemental, \$5000)
2004-2006	Center for Water and Environmental Sustainability (OSU/U.S. Geological Survey): "Hydrogeomorphic Analysis of the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach" (PI, \$15,000)
2004-2005	Western Oregon University Faculty Professional Development Grant: "Geomorphic and Anthropogenic Influences on the Distribution of Invasive Plant Species in the Luckiamute Watershed" (Co-PI with B. Dutton, \$6000)
2003-2004	Oregon Community Foundation Grant: "Geomorphic and Anthropogenic Influences on the Distribution of Invasive Plant Species in the Luckiamute Watershed" (Co-PI with B. Dutton, \$7000)

2002 Western Oregon University, Faculty Professional Development Grant: "Geomorphic Controls on Sediment Transport Efficiency in the Luckiamute Watershed, Polk and Benton Counties Oregon" (PI, \$3000)

PUBLICATIONS-REPORTS-ABSTRACTS (Reverse Chronological Order)

Taylor, S.B., 2021, LiDAR-Based Hydrogeomorphic Analysis of the Luckiamute River Basin, Central Oregon Coast Range: Abstracts with Program, Fall Meeting, Geological Society of America, Portland, Oregon.

Taylor, S.B., 2019, Surficial Map Criteria for Unglaciaded Landscapes in the Oregon Coast Range: Analog Application from the Central Appalachian Mountains: Geological Society of America, Cordilleran Section Meeting, May 2019, Portland, Oregon.

Taylor, S.B., 2018, Lithologic Controls on Watershed Morphology in the Central Oregon Coast Range: LiDAR-Based Terrain Analysis of the Luckiamute River Basin with Implications for Restoration Design: Abstracts with Program, Fall Meeting, American Geophysical Union, Washington, D.C.

Taylor, S.B., 2015, Grain-Size Analysis of Channel Gravels in Hack and Goodlett's Little River Basin: A Benchmark for Comparison in Central Appalachian Watersheds Underlain by the Acadian Clastic Wedge: Abstract, Annual Meeting, Geological Society of America, Baltimore, MD.

Taylor, S.B., Dutton, B., Francisco, C., Keller, R., Leet, A., Noll, K., Snook, B., Stanley, R., Vreeland, W., Aldrich, P., 2014, Geomorphic Perspectives on Watershed Assessment in the Oregon Coast Range: Results from Collaborative Service-Learning Projects at Western Oregon University: Abstracts with Program, River Restoration Northwest Conference, Skamania, WA.

Taylor, S.B., Stanley, R., MacNab, I, and Dutton, B., 2009, Historic Land-Cover Analysis of the Luckiamute River Basin, Central Oregon Coast Range: Preliminary Results from the Earth Science Program for Undergraduate Research at Western Oregon University: Abstracts with Programs, Geological Society of America, v. 41, no. 7.

Stanley, R., and Taylor, S.B., 2009, Land Cover Analysis Utilizing Geographic Information Systems and Historic Aerial Photography: A Case Study of Riparian Zones in the Luckiamute River Basin, Central Oregon Coast Range: Abstracts with Programs, Geological Society of America, v. 41, n7.

Taylor, S.B. and Dutton, B.E., 2009, Invasive Plant Distribution in the Luckiamute River Basin, Central Oregon Coast Range: Preliminary Analysis of Geomorphic and Land-Use Variables: Association of American Geographers, Abstracts with Programs, National Meeting, Las Vegas, NV.

Taylor, S.B., 2007, Watershed Assessment, River Restoration, and the Geoscience Profession in Oregon: Oregon Geology, v. 68, p. 26-30.

Taylor, S.B., Dutton, B.E., Noll, K., and Pirot, R., 2007, Riparian Plant Distribution in the Luckiamute River Basin, Central Oregon Coast Range: Preliminary Analysis of Geomorphic and Anthropogenic Controls: Geological Society of America, Abstracts with Programs, v. 39, no. 6.

Noll, K., Dutton, B.E., Taylor, S.B., Pirot, R., 2007, Distribution of Invasive Plant Species in The Luckiamute Watershed, Oregon Coast Range: Vegetative Response to Geomorphic Processes and Disturbance Regime in The Riparian Corridor: Geol. Soc. of America, Abstr. with Programs, v. 39, no. 6.

Taylor, S.B., 2007, Geomorphic Analysis of the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Proceedings of the Oregon Academy of Science, Volume 63, p. 30-31.

Taylor, S.B., Dutton, B., Noll, K., and Cairns, M., 2007, Environmental Studies in the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Proceedings of the Oregon Academy of Science, Volume 63, p. 34-35.

Taylor, S.B., Dutton B., Noll, K., 2007, Environmental Studies in the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Unpublished Field Trip Guide, Proceedings of the 63rd Annual Meeting of the Oregon Academy of Science, Western Oregon University, Monmouth, Oregon, 70 p.

Taylor, S.B., 2006, Hydrogeomorphic Analysis of the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Final Technical Report, U.S. Geological Survey Small-Grants Program, Corvallis, OR, 12 p.

Taylor, S.B., and Kite, J.S., 2006, Comparative Geomorphic Analysis of Surficial Deposits at Three Central Appalachian Watersheds: Implications for Controls on Sediment-Transport Efficiency: *Geomorphology*, v. 78, p. 22-43.

Taylor, S.B., 2005, Lithologic Controls on Watershed Morphology in the Central Oregon Coast Range: Towards Extrapolation of Tyee-Based Models to Other Bedrock Types – Mountain Rivers Session: Assoc. of American Geographers, Abs. with Programs, v. 37, Annual Meeting, Denver, CO

Taylor, S.B., 2002, Bedrock Control on Slope Gradients in the Luckiamute Watershed, Central Coast Range, Oregon: Implications for Sediment Transport and Storage: American Geophysical Union Abstracts with Programs, Fall Meeting 2002, San Francisco, California.

Taylor, S.B., Dutton, B.E., and Poston, P.E., 2002, Luckiamute River watershed, upper Willamette Basin, Oregon – An integrated environmental study for K-12 Educators, in Moore, G.W., ed., Field Guide to Geologic Processes in Cascadia: Oregon Dept. of Geol. and Min. Industries Spec. Paper 36, p. 167-186.

Taylor, S.B. and Swartzentruber, R.L., 2002, Year 2 Partners in Science Research Project - Case Study of Anderson Creek Debris Flow Site, Lincoln County, Oregon: Abstracts with Program, Partners in Science National Conference, San Diego, California.

Taylor, S.B., Madarish, D., and Kite, J.S., 2001, Gravel distribution analysis of three channel systems in the central Appalachians: Comparative evaluation of sediment-transport efficiency and valley-erosion dynamics: Abstracts with Program, Binghamton Symposium, Mountain Geomorphology: Integrating Earth Systems, University of North Carolina, Chapel Hill, North Carolina, p. 49-50.

Taylor, S.B., 2000, Sediment-storage budgets for colluvium-dominated watersheds in the central Appalachians: Geological Society of America, Abstracts with Program, Fall 2000 National Meeting, v. 32, no. 7.

Taylor, S.B., 2000, Geomorphic Controls on Debris Flow Hazards and Sediment-Transport Efficiency in the Central Appalachians - Final Technical Report to the NASA Earth System Science Program (Contract No. ESS/97-0080): Submitted to the ESS Program, NASA Headquarters, Washington, D.C.

Taylor, S.B., Johnson, S.Y., Fraser, G.T., and Roberts, J.W., 1988, Sedimentation and tectonics of the lower and middle Eocene Swauk Formation in eastern Swauk Basin, central Cascades, central Washington: Canadian Journal of Earth Science, Vol. 25, No. 7, 22 p.

UNPUBLISHED TECHNICAL REPORTS (Reverse Chronological Order)

Taylor, S.B., Dutton B., Noll, K., 2007, Environmental Studies in the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Unpublished Field Trip Guide, Proceedings of the 63rd Annual Meeting of the Oregon Academy of Science, Western Oregon University, Monmouth, Oregon, 70 p.

Taylor, S.B., 2006, Hydrogeomorphic Analysis of the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Final Technical Report, OSU Institute for Water and Watersheds, U.S. Geological Survey Small-Grants Program, Corvallis, Oregon, 12 p.

Taylor, S.B., 2004, Geology of the Luckiamute River watershed, upper Willamette Basin, Polk and Benton Counties, Oregon: in Garono, R.J., Anderson, B.D., Harma, K., Buhl, C., and Adamus, P., Luckiamute / Ash Creek / American Bottom Watershed Assessment: Unpublished Technical Document, Luckiamute Watershed Council, Western Oregon University, Monmouth, Oregon, Appendix A – 19 p.

Taylor, S.B., 1999. Geomorphic controls on sediment transport efficiency in the Central Appalachians: A comparative analysis of three watersheds underlain by the Acadian Clastic Wedge. Ph.D. Dissertation, West Virginia University, Morgantown, WV, 463 p.

Taylor, S.B. and Kite, J.S., 1998, Surficial and bedrock geology of the Little River basin, George Washington National Forest, Augusta County, Virginia: Submitted to the U.S. Geological Survey National Cooperative Mapping Program (EDMAP Contract 1434-HQ-97-AG-01782), Reston, VA.

Taylor, S.B. and Kite, J.S., 1997, Surficial and bedrock geology of the upper North Fork drainage basin, Monongahela National Forest, Pocahontas County, West Virginia: Submitted to the U.S. Geological Survey National Cooperative Mapping Program (EDMAP Contract 1434-HQ-96-AG-01561), Reston, VA, multiple map sheets with report.

Taylor, S.B., Kite, J.S., and Kuhn, K., 1996, Bedrock and surficial geology of the Fernow Experimental Forest, Tucker County, West Virginia: Submitted to the USDA Northeastern Forest Experiment Station, Timber and Watershed Laboratory, Parsons, WV, multiple map sheets with report.

Anderson, R.W. and Taylor, S.B., 1993, Results of groundwater impact assessment at disposal cell 1, J & J Landfill, Fayette County, Pennsylvania: Submitted to PA Dept. of Environmental Resources.

Anderson, R.W. and Taylor, S.B., 1993, Pump-testing and preliminary hydrogeologic impact assessment of the production well-field at Mystic Rocks Golf Course, Fayette County, Pennsylvania: Submitted to Nemaquin Woodlands, Inc.

Anderson, R.W. and Taylor, S.B., 1992, Municipal waste permit application: geology and hydrogeology of an abandoned surface mine complex, southern coal district, Illinois: Submitted to Laidlaw Waste Systems.

Anderson, R.W. and Taylor, S.B., 1992, Expert witness testimony: Angerman vs. Buskey, hydrogeologic impact assessment of gas well drilling in Westmoreland County, Pennsylvania: submitted for review to Westmoreland County Court.

Anderson, R.W. and Taylor, S.B., 1992, Residual solid waste permit application: geology and hydrogeology of the White Pines permit area, Lycoming County, Pennsylvania: submitted to PA Dept. of Environmental Resources.

Taylor, S. B., 1985, Stratigraphy, sedimentology, and paleogeography of the Swauk Formation in the Liberty area, central Cascades, Washington: Unpub. M. S. Thesis, Washington State University, Pullman, Washington, 199 p.

Stephen B. Taylor, Ph.D., Professor of Geology
Earth and Environmental Science Department
Western Oregon University

EDUCATION

- 1999 **Ph.D. - Geology**, West Virginia University, Morgantown, WV. Emphasis Area: Geology, Fluvial Geomorphology and Hydrology.
- 1988 **Post-Master's Graduate Work**, Geology, University of New Mexico, Albuquerque, NM.
- 1985 **M.S. - Geology**, Washington State University, Pullman, WA. Emphasis: Clastic Depositional Systems, Fluvial Sedimentology, Sedimentary Basin Analysis.
- 1982 **B.S. - Geology**, Slippery Rock University, Slippery Rock, PA. Senior Thesis Topic: Subsurface Basin Analysis of Silurian Strata, Northwestern Pennsylvania.

PROFESSIONAL EXPERIENCE

- 2010-Present **Professor of Geology**, Earth and Environmental Science Department, Western Oregon University (WOU), Monmouth, Oregon; Focus: Environmental Geology, Geomorphology, GIS, Hydrology
- 2020-2021 **Interim Chair**, Chemistry Department, Western Oregon University
- 2019 **Visiting Professor of Geographic Information Science**, School of Urban Planning and Landscape Architecture, Xuchang University, Henan Province, China; WOU Office of International Education & Development.
- 2017-2019 **Interim Chair**, Music Department, Western Oregon University.
- 2017-2019 **Project Coordinator**, Natural Sciences Building Remodel, Western Oregon University.
- 2008-2014 **Chair**, Division of Natural Sciences and Mathematics, Western Oregon University, Monmouth, Oregon.
- 2005-2011 **Member/Chair**, Oregon State Board of Geologist Examiners, Salem, Oregon.
- 2005-2011 **Member**, Council of Examiners, National Association of State Boards of Geology (ASBOG).
- 2004-2010 **Associate Professor of Geology**, Earth and Physical Science Department, Western Oregon University, Monmouth, Oregon.
- 2007-2008 **Research Associate (Sabbatical)**, College of Forestry, Oregon State University, Corvallis, OR.
- 2005 **Visiting Professor of Environmental Geology**, Environmental Science Department, Willamette University, Salem, Oregon.
- 1999-2004 **Assistant Professor of Geology**, Earth and Physical Science Department, Western Oregon University, Monmouth, Oregon.
- 2000-2003 **Project Coordinator**, PT3 Grant Initiative (Preparing Tomorrow's Teachers to Use Technology, \$1.2M), College of Liberal Arts and Sciences, Western Oregon University.
- 2001 **Visiting Professor of Geography**, Dept. of Geography, University of Oregon, Eugene, Oregon.
- 1999 **Project Geologist**, U.S. Filter - Chester Engineers, Inc., Pittsburgh, Pennsylvania.
- 1995-1999 **Research Assistant**, Department of Geology and Geography, West Virginia University, Morgantown, West Virginia. Funded PhD student.
- 1993-1997 **Instructor**, Earth Sciences Department, California University of Pennsylvania.

PROFESSIONAL EXPERIENCE (Cont.)

- 1990-1995 **Instructor**, Division of Science and Technology, Westmoreland County Community College, Youngwood, Pennsylvania.
- 1990-1994 **Senior Hydrogeologist**, Anderson Geological Services, Washington, Pennsylvania.
- 1990 **Instructor**, School of Arts and Sciences, Waynesburg College, Waynesburg, Pennsylvania.
- 1989-1990 **Hydrogeologist**, Geraghty and Miller, Inc., Environmental Consultants, Washington Trust Building, Washington, Pennsylvania.
- 1988-1989 **Research Assistant**, Dept. of Geology, University of New Mexico, Albuquerque, New Mexico.
- 1986-1987 **Project Scientist**, Dept. of Agronomy and Soils, Washington State University, Pullman, Washington.
- 1985 **Geophysical Survey Technician**, Practical Geophysics, Inc., 1634 Winder Lane, Salt Lake City, Utah.
- 1983-1984 **Teaching/Research Assistant**, Dept. of Geology, Washington State University, Pullman, Washington.

PROFESSIONAL REGISTRATION

- 2016-Present **Washington Licensed Geologist (LG3140)**
- 2002-Present **Oregon Registered Professional Geologist (G1968)**
- 1994-1999 **Pennsylvania Registered Professional Geologist (PG-001002; expired)**

PROFESSIONAL SOCIETIES

American Geophysical Union, Assoc. of American Geographers, Geological Society of America

CONTINUING EDUCATION AND PROFESSIONAL DEVELOPMENT

- 2021 Professional development workshop: “How to Have and Facilitate Difficult Conversations in the Classroom (Concepts and Action), Western Oregon University (2.5 hour facilitated by Nicole Stokes, PhD, Chief Diversity Officer, St. Joseph’s University).
- 2021 Professional development conference attendance at the 2021 Earth Educators Rendezvous sponsored by the National Association of Geoscience Teachers (NAGT) and Science Education Resource Center (SERC) at Carlton College. In addition to viewing general technical sessions, participated in one multi-day workshop: “Designing and Facilitating High Quality Online Earth Science Courses”.
- 2020 Professional development conference attendance at the 2020 Earth Educators Rendezvous sponsored by the National Association of Geoscience Teachers (NAGT) and Science Education Resource Center (SERC) at Carlton College. In addition to viewing general technical sessions, participated in two multi-day workshops: “The Water-Literate Citizen: Help Develop a New Framework Document for Water Literacy” and “Creating Inquiry-Based Labs for Introductory Geology Courses”.
- 2019 Professional development workshop: “Diversity, Equity and Inclusion”, Western Oregon University (8 hour facilitated by Nicole Stokes, PhD, Chief Diversity Officer, St. Joseph’s University)
- 2013 River Restoration Northwest Applied Field Methods: “Case Study of Johnson Creek Flood Mitigation Project, Portland, Oregon”, Portland Environmental Services.
- 2010 National Science Foundation Professional Development Workshop: “New Tools in Process-Based Analysis of Lidar Topographic Data”, University Corporation for Atmospheric Research (UCAR), Boulder, Colorado.

CONTINUING EDUCATION AND PROFESSIONAL DEVELOPMENT (Cont.)

- 2007 Portland State University River Restoration Short Course: “EPP221 Introduction to River Restoration”, Portland, Oregon.
- 2006 Portland State University River Restoration Short Course: “EPP223 Stream Reconnaissance and Assessment Tools”, Portland, Oregon.
- 1993 National Institute of Construction Engineering Technicians (NICET) Short Course on the Installation of Geosynthetic Liner Systems.
- 1989, 1993 40 Hr OSHA Health and Safety Training for Hazardous Waste Workers

ACADEMIC HONORS

- 2012 Outstanding Faculty Advising Merit Award, National Academic Advising Association
- 2010 Faculty Advisor of the Year, Western Oregon University
- 2010 Outstanding Achievement in Scholarly Research, Western Oregon University
- 1998 Selected as outstanding PhD student in Geology at West Virginia University with departmental nomination to Phi Kappa Phi honor society.
- 1997 Honorable Mention, Mackin Research Grant, Geological Society of America
- 1995-1996 Meritorious Graduate Scholarship, West Virginia University
- 1982 Graduated Summa Cum Laude, Geology, from Slippery Rock University.
- 1982 Charter member of Slippery Rock Chapter of Sigma Gamma Epsilon.
- 1981 Recipient of National Association of Geology Teachers Scholarship.
- 1980-1981 Recipient of Outstanding Sophomore and Junior Awards in Geology, Slippery Rock University.
- 1978-1982 Dean's List Honor Student at Slippery Rock University.

GRANTS-CONTRACTS-FELLOWSHIPS-FUNDED PROJECTS

- 2021-Present Ash Creek Water Control District, Polk County, Oregon: “Invasive Plant Survey of the Ash Creek Drainage” (Co-PI with B. Dutton, \$3100)
- 2021-Present Western Oregon University faculty Professional Development Teaching Reassignment Award for manuscript preparation: “Novel Use of Geographic Information Systems for Latent Fingerprint Analysis” (4-credit course release, ~\$9000)
- 2021 Western Oregon University Faculty Professional Development Travel Grant for participation at the 2021 Earth Educator’s Rendezvous (National Association of Geoscience Teachers, \$450)
- 2021 Western Oregon University faculty Professional Development Travel Grant for research presentation at the Fall 2021 national meeting of the Geological Society of America, Portland, Oregon (\$735)
- 2019-2020 Western Oregon University Faculty Professional Development Grant: “Lithologic Controls on Watershed Morphology in the Central Oregon Coast Range: LiDAR-Based Terrain Analysis of the Luckiamute River Basin with Implications for Restoration Design” (PI, \$3400)
- 2015-2016 Western Oregon University Faculty Professional Development Grant: “Geomorphic Analysis of Late Quaternary Cinder Cones at Newberry Volcano, Central Oregon: Landform Evolution and Eruptive History in a Back-Arc Setting” (PI, \$2500)
- 2011-2013 Oregon Watershed Enhancement Board: “Water Quality Monitoring in the Mid-Willamette Valley” (Co-PI with P. Flatt, Cooperative Agreement with Oregon Dept. of Agriculture and Polk Soil and Water Conservation District, \$15,000)

GRANTS-CONTRACTS-FELLOWSHIPS-FUNDED PROJECTS (Cont.)

- 2010-2011 NASA Oregon Space Grant: “Comparative Hydrogeomorphic Analysis of Western Oregon Watersheds Using Airborne Laser Swath Altimetry (LIDAR)” (Co-PI and faculty supervisor for B. Snook, WOU Student, \$5000)
- 2010-2012 Contract Agreement Upper Nehalem Watershed Council: “GIS Analysis and Results from Rapid Bio-Assessment (RBA) and Limited Factors Analysis (LFA) in the Upper Nehalem Watershed, Tillamook County, Oregon” (PI with WOU student assistants, \$17,000)
- 2010-2012 U.S. Environmental Protection Agency, Greater Research Opportunities (GRO) Fellowship for Undergraduate Environmental Study: “The Distribution and Occurrence of Nitrate in Groundwater Supplies of the Mid-Willamette Valley: Implications for Water Resource Management in the Monmouth-Independence Area, Oregon” (Co-PI and faculty supervisor for K. Dana, WOU Student, \$45,100)
- 2010-2011 NASA Oregon Space Grant: “Land Cover Analysis Utilizing Aerial Photography, Remote Sensing and Geographic Information Systems: Application to Riparian Zones in the Mid-Willamette Basin, Oregon” (Co-PI and faculty supervisor for R. Stanley, WOU Student, \$5000)
- 2009-2012 National Institutes of Justice: “Application of Spatial Statistics to Latent Print Identifications: Towards Improved Forensic Science Methodologies” (Co-PI with E. Dutton and project team P. Aldrich, B. Dutton, \$685,800)
- 2008 Cascades Volcano Association: “Geomorphic Analysis of Late Quaternary Cinder Cones at Newberry Volcano, Central Oregon: Landform Evolution and Eruptive History in a Back-Arc Setting” (PI, \$500)
- 2007 National Science Foundation-Research Opportunity Award: “The Influence of Geomorphic and Anthropogenic Processes on Decadal-Scale Sediment Yield in the Western Cascades, Oregon” (HJ Andrews LTER Supplement, Project Partnership with F. Swanson, \$13,000)
- 2007 Western Oregon University Faculty Professional Development Grant: “The Influence of Forestry Practice on Geomorphic Processes in Oregon” (PI, \$2100)
- 2005-2006 Northwest Invasive Weed Management Partnership: “Reconnaissance Survey of Japanese Knotweed Distribution in the Luckiamute River Basin” (Co-PI with B. Dutton, \$2000)
- 2005-2006 Oregon Community Foundation Grant: “Geomorphic and Anthropogenic Influences on the Distribution of Invasive Plant Species in the Luckiamute Watershed” (Co-PI with B. Dutton, Year 2 Supplemental, \$5000)
- 2004-2006 Center for Water and Environmental Sustainability (OSU/U.S. Geological Survey): “Hydrogeomorphic Analysis of the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach” (PI, \$15,000)
- 2004-2005 Western Oregon University Foundation Grant: “Spatial Analysis of Cinder Cone Distribution at Newberry Volcano” (PI, Student Research Grant, \$1000)
- 2004-2005 WOU Center for Teaching and Learning Research Grant: “Morphometric Analysis of Cinder Cones at Newberry Volcano” (Co-PI with J. Templeton, \$800).
- 2004-2005 Western Oregon University Faculty Professional Development Grant: “Geomorphic and Anthropogenic Influences on the Distribution of Invasive Plant Species in the Luckiamute Watershed” (Co-PI with B. Dutton, \$6000)

GRANTS-FELLOWSHIPS-FUNDED PROJECTS (Cont.)

- 2003-2004 Oregon Community Foundation Grant: “Geomorphic and Anthropogenic Influences on the Distribution of Invasive Plant Species in the Luckiamute Watershed” (Co-PI with B. Dutton, \$7000)
- 2002 Western Oregon University, Student Technology Fund: “Technology Infrastructure Development in the Natural Sciences at Western Oregon University” (Lead Lobbyist, \$150,000)
- 2002 Western Oregon University, Faculty Professional Development Grant: “Geomorphic Controls on Sediment Transport Efficiency in the Luckiamute Watershed, Polk and Benton Counties Oregon” (PI, \$3000)
- 2002 Western Oregon University, PT3 (U.S. Dept. of Education) Faculty Grant: “Integrating Digital-Based Pedagogy into the Earth and Physical Science Curriculum at Western Oregon University” (Co-PI with J. Templeton and J. Myers, \$7000)
- 2002 Murdock Trust Partners in Science Extension Grant (PI, see below, \$2000)
- 2001 Western Oregon University, Faculty Professional Development Grant (\$3000)
- 2001 Western Oregon University, PT3 (U.S. Dept. of Ed.) Faculty Grant (\$10,000)
- 2000-2001 Murdock Trust Partners in Science Research Grant: “Geomorphic Hazards Assessment in West Central Oregon” (PI, \$15,000)
- 2000-2001 Oregon Collaborative for Excellence in Preparation of Teachers (OCEPT) Fellowship (\$1000)
- 2000 ESRI University GIS Software Donation Award (Lead Liaison, \$10,000)
- 1999 Western Oregon University, Faculty Professional Development Grant (\$3000)
- 1997-1999 NASA Earth System Science Fellowship (ESS/97-0080) (\$70,000)
- 1997 U.S. Geological Survey - EDMAP Program (1434-HQ-97-AG-01782) (\$10,000)

PUBLICATIONS-REPORTS-ABSTRACTS (Reverse Chronological Order)

- Taylor, S.B., 2021, LiDAR-Based Hydrogeomorphic Analysis of the Luckiamute River Basin, Central Oregon Coast Range: Abstracts with Program, Fall Meeting, Geological Society of America, Portland, Oregon.
- Taylor, S.B., 2019, Surficial Map Criteria for Unglaciaded Landscapes in the Oregon Coast Range: Analog Application from the Central Appalachian Mountains: Geological Society of America, Cordilleran Section Meeting, May 2019, Portland, Oregon.
- Taylor, S.B., 2018, Lithologic Controls on Watershed Morphology in the Central Oregon Coast Range: LiDAR-Based Terrain Analysis of the Luckiamute River Basin with Implications for Restoration Design: Abstracts with Program, Fall Meeting, American Geophysical Union, Washington, D.C.
- Taylor, S.B., 2015, Grain-Size Analysis of Channel Gravels in Hack and Goodlett's Little River Basin: A Benchmark for Comparison in Central Appalachian Watersheds Underlain by the Acadian Clastic Wedge: Abstract, Annual Meeting, Geological Society of America, Baltimore, MD.
- Templeton, J.H., Taylor, S.B., 2014, Engaging Undergraduate Geoscience Students through Field-Based Learning Activities in the Pacific Northwest: Case Studies from the Earth Science Program at Western Oregon University: Abstract, Cordilleran Meeting, Geological Soc. of America, Bozeman, MT.
- Taylor, S.B., Dutton, B., Francisco, C., Keller, R., Leet, A., Noll, K., Snook, B., Stanley, R., Vreeland, W., Aldrich, P., 2014, Geomorphic Perspectives on Watershed Assessment in the Oregon Coast Range: Results from Collaborative Service-Learning Projects at Western Oregon University: Abstracts with Program, River Restoration Northwest Conference, Skamania, WA.

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- Taylor, S.B., Stanley, R., Aldrich, P., Dutton, B., Dutton, E., Hidalgo, S., 2012, Novel Use of GIS for Spatial Analysis of Fingerprint Patterns: Proceedings of the Urban and Regional Information Systems Association (URISA) Annual Meeting, Portland, Oregon.
- Stanley, R., Dutton, E., Taylor, S., Aldrich, P., and Dutton, B., 2012, Geographic Information Systems and Spatial Analysis – Part 1: Quantifying Fingerprint Patterns and Minutiae Distributions: Proceedings of the American Academy of Forensic Sciences National Meeting, Atlanta, GA.
- Dutton, E., Taylor, S., Aldrich, P., Dutton, B., and Stanley, R., 2012, Geographic Information Systems and Spatial Analysis – Part 2: A Monte Carlo Approach to Estimating Probabilities for Latent Print Identification: Proceedings of the American Academy of Forensic Sciences National Meeting, Atlanta.
- Hidalgo, S., Dutton, B., Stanley, R., Aldrich, P., Dutton, E., and Taylor, S., 2012, A Geometric Morphometric Approach to Fingerprint Analysis: Proceedings of the American Academy of Forensic Sciences National Meeting, Atlanta, GA.
- Dutton, E., Taylor, S., Aldrich, P., Dutton B., 2011, Application of Geographic Information Systems and Spatial Statistics to Determine Probabilities for Latent Print Identifications: Proceedings of the International Association for Identification, Milwaukee.
- Dutton, E., Aldrich, P., Taylor, S.B., Dutton, B., 2010, NIJ Project Status Report - Application of Spatial Statistics to Latent Print Identifications: Proceedings of the Automated Fingerprint Identification Systems (AFIS) 24th Annual Users Conference, Portland, Oregon.
- Aldrich, P., Taylor, S.B., Dutton, E., and Dutton, B., 2010, Application of Spatial Statistics to Latent Print Identifications: Proceedings of the International Association for Identification, Spokane, Washington.
- Dutton, E., Taylor, S.B., Aldrich, P., and Dutton, B., 2010, Application of Spatial Statistics to Latent Print Identifications: Towards Improved Forensic Science Methodologies: General Forensics R&D Grantees Meeting, Proceedings of the American Academy of Forensic Sciences, v. 16, Seattle Washington.
- Taylor, S.B., Stanley, R., MacNab, I., and Dutton, B., 2009, Historic Land-Cover Analysis of the Luckiamute River Basin, Central Oregon Coast Range: Preliminary Results from the Earth Science Program for Undergraduate Research at Western Oregon University: Abstracts with Programs, Geological Society of America, v. 41, no. 7.
- Stanley, R., and Taylor, S.B., 2009, Land Cover Analysis Utilizing Geographic Information Systems and Historic Aerial Photography: A Case Study of Riparian Zones in the Luckiamute River Basin, Central Oregon Coast Range: Abstracts with Programs, Geological Society of America, v. 41, n7.
- Taylor, S.B. and Dutton, B.E., 2009, Invasive Plant Distribution in the Luckiamute River Basin, Central Oregon Coast Range: Preliminary Analysis of Geomorphic and Land-Use Variables: Association of American Geographers, Abstracts with Programs, National Meeting, Las Vegas, NV.
- Taylor, S.B., 2007, Watershed Assessment, River Restoration, and the Geoscience Profession in Oregon: Oregon Geology, v. 68, p. 26-30.
- Taylor, S.B., Dutton, B.E., Noll, K., and Pirot, R., 2007, Riparian Plant Distribution in the Luckiamute River Basin, Central Oregon Coast Range: Preliminary Analysis of Geomorphic and Anthropogenic Controls: Geological Society of America, Abstracts with Programs, v. 39, no. 6.
- Noll, K., Dutton, B.E., Taylor, S.B., Pirot, R., 2007, Distribution of Invasive Plant Species in The Luckiamute Watershed, Oregon Coast Range: Vegetative Response to Geomorphic Processes and Disturbance Regime in The Riparian Corridor: Geol. Soc. of America, Abstr. with Programs, v. 39, no. 6.

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- Taylor, S.B., Templeton, J.H., Budnick, J., Pirot, R., Drury, C., Fisher, J., Faletti, A., Giles, D.E., Hale, D., Horvath, D., Adams, R., and Runyan, S., 2007, Cinder Cone Analysis at Newberry Volcano, Oregon: A Synthesis of Results from the Earth Science Program for Undergraduate Research at Western Oregon University: Geological Society of America Abstracts with Programs, v. 39, no. 4.
- Taylor, S.B., 2007, Geomorphic Analysis of the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Proceedings of the Oregon Academy of Science, Volume 63, p. 30-31.
- Taylor, S.B., Dutton, B., Noll, K., and Cairns, M., 2007, Environmental Studies in the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Proceedings of the Oregon Academy of Science, Volume 63, p. 34-35.
- Taylor, S.B., Dutton B., Noll, K., 2007, Environmental Studies in the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Unpublished Field Trip Guide, Proceedings of the 63rd Annual Meeting of the Oregon Academy of Science, Western Oregon University, Monmouth, Oregon, 70 p.
- Taylor, S.B., 2006, Hydrogeomorphic Analysis of the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Final Technical Report, U.S. Geological Survey Small-Grants Program, Corvallis, OR, 12 p.
- Taylor, S.B., and Kite, J.S., 2006, Comparative Geomorphic Analysis of Surficial Deposits at Three Central Appalachian Watersheds: Implications for Controls on Sediment-Transport Efficiency: Geomorphology, v. 78, p. 22-43.
- Taylor, S.B., Templeton, J.H., Budnick, J., Drury, C., Fisher, J., and Runyan, S., 2005, Spatial Analysis of Cinder Cone Distribution at Newberry Volcano, Oregon: Implications for Structural Control on Eruptive Process (Abstracts with Programs): Geological Society of America, Vol. 37, Issue 7, p.431.
- Taylor, S.B., 2005, Lithologic Controls on Watershed Morphology in the Central Oregon Coast Range: Towards Extrapolation of Tyee-Based Models to Other Bedrock Types – Mountain Rivers Session: Assoc. of American Geographers, Abs. with Programs, v. 37, Annual Meeting, Denver, CO
- Taylor, S.B., Templeton, J.H., and Giles, D.E.L., 2003, Cinder Cone Morphometry and Volume Distribution at Newberry Volcano, Oregon: Implications for Age Relations and Structural Control on Eruptive Process (Abstracts with Programs): Geological Society of America, Vol. 35, Issue 6, p. 421.
- Giles, D.E.L., Taylor, S.B., and Templeton, J.H., 2003, Compilation of a Digital Geologic Map and Spatial Database for Newberry Volcano, Central Oregon: A Framework for Comparative Analysis (Abstracts with Programs): Geological Society of America, Vol. 35, Issue 6, p. 189.
- Taylor, S.B., 2002, Bedrock Control on Slope Gradients in the Luckiamute Watershed, Central Coast Range, Oregon: Implications for Sediment Transport and Storage: American Geophysical Union Abstracts with Programs, Fall Meeting 2002, San Francisco, California.
- Taylor S.B. and Copa, P.M., 2002, Integrating Technology Across the Curriculum: Forging Partnerships Between Education and Liberal Arts and Science (abstract): U.S. Dept. of Education, Preparing Tomorrow's Teachers to Use Technology (PT3) National Meeting, Abstracts with Programs, Washington, D.C.
- Taylor, S.B., Dutton, B.E., and Poston, P.E., 2002, Luckiamute River watershed, upper Willamette Basin, Oregon – An integrated environmental study for K-12 Educators, in Moore, G.W., ed., Field Guide to Geologic Processes in Cascadia: Oregon Dept. of Geol. and Min. Industries Spec. Paper 36, p. 167-186.

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- Taylor, S.B. and Swartzentruber, R.L., 2002, Year 2 Partners in Science Research Project - Case Study of Anderson Creek Debris Flow Site, Lincoln County, Oregon: Abstracts with Program, Partners in Science National Conference, San Diego, California.
- Taylor, S.B., Madarish, D., and Kite, J.S., 2001, Gravel distribution analysis of three channel systems in the central Appalachians: Comparative evaluation of sediment-transport efficiency and valley-erosion dynamics: Abstracts with Program, Binghamton Symposium, Mountain Geomorphology: Integrating Earth Systems, University of North Carolina, Chapel Hill, North Carolina, p. 49-50.
- Taylor, S.B. and Swartzentruber, R.L., 2001, Year 1 Partners in Science Research Project - Geomorphic Hazards Assessment in West-Central Oregon: Abstracts with Program, Partners in Science National Conference, San Diego, California.
- Taylor, S.B., 2000, Sediment-storage budgets for colluvium-dominated watersheds in the central Appalachians: Geological Society of America, Abstracts with Program, Fall 2000 National Meeting, v. 32, no. 7.
- Taylor, S.B., 2000, Geomorphic Controls on Debris Flow Hazards and Sediment-Transport Efficiency in the Central Appalachians - Final Technical Report to the NASA Earth System Science Program (Contract No. ESS/97-0080): Submitted to the ESS Program, NASA Headquarters, Washington, D.C.
- Taylor, S.B., Johnson, S.Y., Fraser, G.T., and Roberts, J.W., 1988, Sedimentation and tectonics of the lower and middle Eocene Swauk Formation in eastern Swauk Basin, central Cascades, central Washington: Canadian Journal of Earth Science, Vol. 25, No. 7, 22 p.

UNPUBLISHED TECHNICAL REPORTS (Reverse Chronological Order)

- Taylor, S.B., Dutton, E.K., Aldrich, P.R., Dutton, B.E., 2012, Application of Spatial Statistics to Latent Print Identifications: Towards Improved Forensic Science Methodologies: Final Technical Report, Award No. 2009-DN-BX-K228, National Institute of Justice, Washington, DC, 107 p.
- Taylor, S.B., Dutton B., Noll, K., 2007, Environmental Studies in the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Unpublished Field Trip Guide, Proceedings of the 63rd Annual Meeting of the Oregon Academy of Science, Western Oregon University, Monmouth, Oregon, 70 p.
- Taylor, S.B., 2006, Hydrogeomorphic Analysis of the Luckiamute Watershed, Central Coast Range, Oregon: Integrating Applied Watershed Science with Undergraduate Research and Community Outreach: Final Technical Report, OSU Institute for Water and Watersheds, U.S. Geological Survey Small-Grants Program, Corvallis, Oregon, 12 p.
- Taylor, S.B., 2004, Geology of the Luckiamute River watershed, upper Willamette Basin, Polk and Benton Counties, Oregon: in Garono, R.J., Anderson, B.D., Harma, K., Buhl, C., and Adamus, P., Luckiamute / Ash Creek / American Bottom Watershed Assessment: Unpublished Technical Document, Luckiamute Watershed Council, Western Oregon University, Monmouth, Oregon, Appendix A – 19 p.
- Anderson, R.W. and Taylor, S.B., 1999, Proposed remediation strategy for groundwater contaminated with chlorinated hydrocarbons at the Trent Tube and Steel Plant, Wisconsin: Trent Tube and Steel, Inc.
- Taylor, S.B. 1999, Recommendation for abatement of coal-bed methane degassing at the Girty's Run Sewer Project Site, Allegheny County, Pennsylvania: Submitted to Pine Township.
- Taylor, S.B., 1999. Geomorphic controls on sediment transport efficiency in the Central Appalachians: A comparative analysis of three watersheds underlain by the Acadian Clastic Wedge. Ph.D. Dissertation, West Virginia University, Morgantown, WV, 463 p.

UNPUBLISHED TECHNICAL REPORTS (Cont.)

- Taylor, S.B. and Kite, J.S., 1998, Surficial and bedrock geology of the Little River basin, George Washington National Forest, Augusta County, Virginia: Submitted to the U.S. Geological Survey National Cooperative Mapping Program (EDMAP Contract 1434-HQ-97-AG-01782), Reston, VA.
- Taylor, S.B. and Kite, J.S., 1997, Surficial and bedrock geology of the upper North Fork drainage basin, Monongahela National Forest, Pocahontas County, West Virginia: Submitted to the U.S. Geological Survey National Cooperative Mapping Program (EDMAP Contract 1434-HQ-96-AG-01561), Reston, VA, multiple map sheets with report.
- Taylor, S.B., Kite, J.S., and Kuhn, K., 1996, Bedrock and surficial geology of the Fernow Experimental Forest, Tucker County, West Virginia: Submitted to the USDA Northeastern Forest Experiment Station, Timber and Watershed Laboratory, Parsons, WV, multiple map sheets with report.
- Anderson, R.W. and Taylor, S.B., 1993, Results of groundwater impact assessment at disposal cell 1, J & J Landfill, Fayette County, Pennsylvania: Submitted to PA Dept. of Environmental Resources.
- Anderson, R.W. and Taylor, S.B., 1993, Pump-testing and preliminary hydrogeologic impact assessment of the production well-field at Mystic Rocks Golf Course, Fayette County, Pennsylvania: Submitted to Nemaquin Woodlands, Inc.
- Anderson, R.W. and Taylor, S.B., 1993, Impact assessment of a small-flow sewage treatment facility at the Bosmyer property, Allegheny County, Pennsylvania: Submitted to Century 21 Real Estate Division.
- Anderson, R.W. and Taylor, S.B., 1993, Private water supply impact assessment at the Gould Mine permit area, Washington County, Pennsylvania: Submitted to PA Dept. of Environmental Resources.
- Anderson, R.W. and Taylor, S.B., 1992, Municipal waste permit application: geology and hydrogeology of an abandoned surface mine complex, southern coal district, Illinois: Submitted to Laidlaw Waste Systems.
- Anderson, R.W. and Taylor, S.B., 1992, Expert witness testimony: Angerman vs. Buskey, hydrogeologic impact assessment of gas well drilling in Westmoreland County, Pennsylvania: submitted for review to Westmoreland County Court.
- Anderson, R.W. and Taylor, S.B., 1992, Coal surface mining permit application: geology and hydrogeology of the Prep. II mine permit area, Washington County, Pennsylvania: submitted to PA Dept. of Environmental Resources.
- Anderson, R.W. and Taylor, S.B., 1992, Residual solid waste permit application: geology and hydrogeology of the White Pines permit area, Lycoming County, Pennsylvania: submitted to PA Dept. of Environmental Resources.
- Anderson, R.W. and Taylor, S.B., 1992, Installation of methane gas monitoring probes and groundwater monitoring wells at the M.C. Arnoni Landfill, South Park Township, Pennsylvania: submitted to J&L Engineering, Inc.
- Anderson, R.W. and Taylor, S.B., 1991, Small operators assistance program: geology and hydrogeology of the Maderia permit area, Washington County, Pennsylvania: submitted to PA Dept. of Environmental Resources.
- Anderson, R.W. and Taylor, S.B., 1990, Coal surface mining permit application: geology and hydrogeology of the Gould Mine permit area, Washington County, Pennsylvania: submitted to PA Dept. of Environmental Resources.
- Taylor, S. B., 1985, Stratigraphy, sedimentology, and paleogeography of the Swauk Formation in the Liberty area, central Cascades, Washington: Unpub. M. S. Thesis, Washington State University, Pullman, Washington, 199 p.

BIOGRAPHY STATEMENT

Dr. Stephen Taylor, RG/LG, holds a Ph.D. in Geology from West Virginia University with expertise in fluvial geomorphology, watershed analysis, environmental geology, and geographic information systems (GIS). In addition to over 22 years of teaching and research experience at Western Oregon University (WOU), Dr. Taylor has served in several leadership roles including six years as chair of the WOU Division of Natural Sciences and Mathematics, two years as interim chair of the WOU Music Department, one year as interim chair of the WOU Chemistry Department, and six years as board member/past chair of the Oregon State Board of Geologist Examiners. Dr. Taylor's professional experience spans a diverse array of topics including watershed analysis, fluvial geomorphology, sedimentology, terrain morphometry, rapid bio-assessment of *salmonid*, environmental restoration, invasive plant distribution, aquifer characterization and mine-land reclamation. In addition to his technical background, Dr. Taylor is a highly experienced educator.

LEADERSHIP PROFILE

Stephen B. Taylor, PhD, RG-LG, Professor of Geology
Earth and Environmental Science Department
Western Oregon University

Education

West Virginia University	Ph.D., Geology, 1999
Washington State University	M.S., Geology, 1985
Slippery Rock University	B.S., Geology, 1982 (Summa Cum Laude)

Appointments

Professor of Geology, Western Oregon University, 2010-present
Interim Chair, Chemistry Department, Western Oregon University, 2020-2021
Interim Chair, Music Department, Western Oregon University, 2017-2019
Chair, Division of Natural Sciences and Mathematics, Western Oregon University, 2008-2014
Chair/Member, Oregon State Board of Geologist Examiners, 2005-2011
Associate Professor of Geology, Western Oregon University, 2004-2010
Visiting Professor of Environmental Geology, Willamette University, 2005
Visiting Professor of Geography, University of Oregon, Eugene, 2001
Assistant Professor of Geology, Western Oregon University, 1999-2004
Project Geologist, U.S. Filter - Chester Engineers, Inc., Pittsburgh, PA, 1999
Research Assistant, Geology, West Virginia University, 1995-1999
Instructor, Earth Science, California University of Pennsylvania, 1993-1997
Instructor, Geology and Geography, Westmoreland County Community College, 1990-1995
Hydrogeologist, Anderson Geological Services, Washington, PA, 1990-1994
Hydrogeologist, Geraghty and Miller, Inc., Washington, PA, 1989-1990
Project Scientist, Agronomy and Soils, Washington State University, 1986-1987
Geophysics Technician, Practical Geophysics, Inc., Salt Lake City, UT, 1985

Milestones

Served as external Interim Chair (Administrative Coordinator) for the Music Department (2017-2019) and the Chemistry Department (2020-2021) at Western Oregon University; duties included managing the academic, facilities and business operations of the respective departments; scope of work included interactions with diverse groups of faculty, students and staff outside of primary area of geoscience expertise.

Two-term elected chair of the Division of Natural Sciences and Mathematics at Western Oregon University (2008-2014); duties included managing the academic, facilities and business operations for the departments of Biology, Chemistry, Earth/Physical Science and Mathematics; scope of work included ~60 faculty and staff, ~500 majors/minors, ~6000 students/400 sections annually, 3 buildings, and 20 laboratories (2008-2014).

Two-term, governor-appointed member and chair of the Oregon State Board of Geologist Examiners (2004-2011), a semi-independent board administering professional geologist registration; served as chair for four years with supervisory duties including budget management, fee administration, staffing/human resources, public relations, strategic planning, audits, legislative outreach, and governance of administrative rules/statutes as related to the public practice of geology.

Principle Investigator or Co-PI on over 40 research grant proposals, with ~30 funded contracts totaling over \$1.1M; project topics included geologic mapping, watershed assessment, fluvial geomorphology, debris flow hazards, sediment transport, cinder cone analysis, invasive plant distribution, land cover analysis, GIS/spatial analysis of fingerprints, and undergraduate STEM education; funding agencies included the U.S. Geological Survey, Murdock Trust, Western Oregon University, Oregon Community Foundation, Institute for Water and Watersheds, National Science Foundation, NASA, U.S. Environmental Protection Agency, U.S. Department of Education, Oregon Watershed Enhancement Board, National Institutes of Justice, Ash Creek Water Control District, and Oregon Department of Agriculture (1997-2021).

Project Coordinator for three-year, \$1.2M U.S. Department of Education "PT3" technology grant, College of Liberal Arts and Sciences, Western Oregon University; designed and implemented a faculty incentive program for integration of technology across the campus curriculum (2000-2003).

Budget, Grants and Contracts

Division Chair Natural Sciences and Mathematics: directly managed supplies, services and maintenance budgets of ~\$450,000 per year; provided supervisory oversight on purchases and procurement, collaborated with faculty stakeholders and administrative partners to secure internal/external operations budgets, identified creative solutions to funding limitations, implemented cost efficiencies and maintained a sustainable resource base; facilitated payroll operations for ~60 faculty and staff, with annual personnel budgets of ~\$3.0M.

Chair Oregon State Board of Geologist Examiners: served as lead facilitator for six-member board to maintain supplies and operations budgets of ~\$250,000 per year; worked in collaboration with Board Administrator to manage funds, approve expenditures, review accounting statements/audits, and negotiate contracts.

Professor of Geology: actively secured, managed and executed deliverables on ~\$1.1M in grants and contracts over the course of 22 years; worked in collaboration with colleagues, business office and administrative program assistants to draft proposals, negotiate agreements, create reports and meet state/federal standards of grant management.

Human Resources and Team Building

Division Chair Natural Sciences and Mathematics: served as team leader and supervisor for ~60 faculty and staff distributed across four academic departments; worked in direct collaboration with department chairs and human resources personnel to conduct searches and fill vacancies; managed staffing of temporary employees and student workers; familiarized with HR regulations and policies related to U.S. Department of Labor and Equal Opportunity Employment Commission; served as primary point of contact for personnel and student conflicts, provided council to ameliorate complicated workplace issues between disparate academic cultures; facilitated scheduling logistics in a dynamic multivariate environment; completed annual reports and written evaluations related to employee performance; provided leadership to cultivate a sense of positive teamwork and common purpose, often under restrictive conditions related to funding infringements and/or limited access to institutional resources.

Chair Oregon State Board of Geologist Examiners: served as immediate supervisor of two administrative staff members; served as primary point of contact for personnel issues; worked in collaboration with Oregon Department of Administrative Services to conduct searches and fill vacancies; familiarized with HR regulations and policies related to U.S. Department of Labor and Equal Opportunity Employment Commission; completed annual reports and written evaluations related to employee performance.

Professor of Geology: served as faculty mentor and advisor for hundreds of Earth Science majors over the years; provided instructional services for thousands of general education students; highly experienced in promoting personal growth, providing professional council, cultivating academic teamwork and creating a supportive group environment in which individuals accomplish long term, multi-year goals; recipient of 2012 Outstanding Faculty Advising Merit Award, National Academic Advising Association.

Interim Chair (Administrative Coordinator), Music and Chemistry Departments: served as external interim department chair and team facilitator for both the Music Department and Chemistry Department at Western Oregon University; worked in direct collaboration with a diverse group of faculty, staff and students to administer departmental business operations during a transition period related to retirements and personnel departures; provided council to ameliorate complicated workplace issues between disparate academic cultures; facilitated scheduling logistics in a dynamic multivariate environment; provided leadership to cultivate a sense of positive teamwork and common purpose, budget oversight and management.

Facilities and Infrastructure

Division Chair Natural Sciences and Mathematics: facilitated over \$500,000 in classroom and laboratory renovations to the Natural Science Building at WOU; served as lead faculty facilitator for team design and construction of the new DeVolder Family Science Center (\$9.7M); infrastructure planning and implementation included physical facilities, laboratory instrumentation and computing/multi-media technology.

PT3 Project Coordinator: served as team leader for design and implementation of faculty incentive program to integrate classroom technology into the undergraduate curriculum across campus; PT3 mini-grant program resulted in \$220,000 awarded for 42 project proposals distributed across 35 courses in the colleges of Education and Liberal Arts/Sciences.

Professor of Geology: planned, funded and developed the Geographic Information Systems and Geodata Processing laboratories at WOU; lead faculty advocate for implementation of GIS/geospatial technology on campus with over \$150,000 of investments in the Earth and Physical Science Department.

Project Coordinator, Natural Sciences Building Remodel: served as lead faculty facilitator for team design and remodeling of the Natural Sciences Building at Western Oregon University; coordinated communications, planning and design between 25 faculty and staff, architects, engineers and facilities services personnel; the \$9.4M project included laboratory renovations, mechanical-electrical-plumbing upgrades, ADA access improvements, greenhouse upgrades, IT infrastructure and computing technology.

Strategic Planning, Program Development and Assessment

Western Oregon University: University-wide strategic planning committee member 2016-2017, Chair of the “WOU Vision” working group; systematically engaged in strategic planning and program evaluation at all levels of the institution; served as facilitator for compiling strategic plans, conducted SWOT analyses, developed institutional Mission-Values-Vision statements; provided committee representation for the WOU Board of Trustees and the accreditation process through the Northwest Commission on Colleges and Universities.

Division Chair Natural Sciences and Mathematics: systematically engaged in strategic planning and program evaluation at all levels of the institution; served as lead facilitator for compiling strategic plans and developing curriculum; engaged in annual technology/infrastructure planning sessions; conducted annual program evaluation, compiled annual assessment reports; provided division leadership for the accreditation process through the Northwest Commission on Colleges and Universities.

Chair Oregon State Board of Geologist Examiners: worked in collaboration with board and program administrator to develop biennial budget plans and review fee structures; developed strategic plans for legislative and outreach initiatives related to the public practice of geology.

Professor of Geology: worked in collaboration with faculty colleagues to develop and implement a multitude of curriculum initiatives related to the Earth Science major at Western Oregon University; engaged in ongoing program evaluation and assessment; prepared annual activity reports on program outcomes; served as lead facilitator in developing a new minor and certificate program in Geographic Information Science.

Government and Legal

Division Chair Natural Sciences and Mathematics: engaged in semi-annual review and update of Administrative Rules related to student course fees and class policies; worked in collaboration with Human Resources Director to resolve sensitive personnel issues under the guidance of state and federal labor law; served as management liaison between WOU administration and two collective bargaining units: Service Employees International Union and American Federation of Teachers; supervisor of record for personnel grievances; familiarized with implementation of collective bargaining agreements; experienced with negotiating inter-institutional agreements; experienced with state legislative funding process for higher education.

Chair Oregon State Board of Geologist Examiners: extensive knowledge of processes related to promulgating state administrative rules and statutes; experienced with legislative process for revising Oregon statutes, initiating legislative concepts, and lobbying; provided public testimony in legislative committee; worked directly with Oregon Attorney General Office on rules/laws related to the public practice of geology; direct experience with legal defense of free speech, public meetings laws, and appellate procedures; collaborated with board members and administrator to develop cooperative agreements with the Board of Examiners for Engineering and Land Surveyors and Oregon Landscape Architect Board; highly familiar with overlap issues related to the practice of geology and engineering.

Consulting Geologist: significant industry experience as practicing geologist working in the areas of groundwater protection, environmental remediation (RCRA/CERCLA), mine permitting, solid waste permitting and surface water quality; work history includes field work, data collection, analysis, writing compliance reports, completing permit applications, and designing action plans for state and federal regulatory agencies.

Communication and Public Relations

Division Chair Natural Sciences and Mathematics: served as division leader representing the departments of Biology, Chemistry, Mathematics and Earth/Physical Science to the campus and regional community; actively engaged in public relations campaigns related to fund raising, student recruiting and outreach to underrepresented communities; collaborated with the Admissions and Public Relations offices to produce media reports; highly knowledgeable in the areas of web design, program advertising, graphic art, video production, and public speaking.

Chair Oregon State Board of Geologist Examiners: served as lead facilitator on the outreach committee, engaged in production of promotional materials and oral presentations regarding Board operations; assisted with the development of public guidance documents on the professional practice of geology; participated in Board outreach to the eastern Oregon mining community.

Professor of Geology: highly experienced with scientific presentations, public speaking, journal publication, grant writing, editing, cartography, map production, graphic design; excellent written and oral communication skills.

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shields engineering

December 23, 2021

Chadwin Smith, Ph.D.
Independent Science Coordinator
4111 4th Avenue, Suite 6
Kearney, NE 68845

Sent via email to: smithc@headwaterscorp.com


Dear Dr. Smith:

I am writing to express interest in serving on the Independent Science Advisory Committee of the Platte River Recovery Implementation Program. The seat I wish to fill is River Restoration with an engineering focus.

I have been involved in river restoration research, consulting and practice for about 35 years. My work has spanned a wide range of topics: sedimentation, erosion, large wood, plant materials, interactions between plants and bank stability, effects of woody plants on flood control levees and other structures, fish habitat restoration and others. I have worked in some capacity in public and private ventures in most major ecoregions of the continental U.S. I have served as a reviewer for PRRIP projects twice: Monitoring Protocol for Channel Geomorphology and In-Channel Vegetation (2009), Whooping Crane Synthesis Chapters and Correlates of Whooping Crane Habitat Selection and Trends in Use in the Central Platte River, Nebraska ("West Report") (2016).


I enclose my current c.v. as directed in your external solicitation. Please do not hesitate to contact me if you have any questions or concerns.

sincerely,



F. Douglas Shields, Jr.

Enclosures attached to email



F. Douglas Shields, Jr., Ph.D., P.E., D.WRE
CONSULTING HYDRAULIC ENGINEER
SHIELDS ENGINEERING, LLC



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Dr. Doug Shields has 44 years of experience in water resources and environmental engineering, including 12 years working for the U.S. Army Corps of Engineers (Corps) and 22 years as a Research Hydraulic Engineer at the National Sedimentation Laboratory (NSL) in Oxford, Mississippi. Dr. Shields' research focuses on the response of fluvial systems to human influences and development of environmental design criteria for all types of channel stabilization and modification projects, including streambank erosion controls and management of riverine backwaters. He is a leading authority on stream and river restoration. Doug has authored or co-authored more than 300 technical publications and has completed consulting projects dealing with stream restoration, erosion protection of riparian cultural resources sites, streambank erosion, geomorphic assessment, and local flooding.

Current Position

Principal and Hydraulic Engineer, Shields Engineering, LLC

Hydraulic Engineer, cbec eco engineering, West Sacramento, California (part time)

Education

1983–87 Colorado State University; Hydraulics; Ph.D. 1987, 4.0/4.0

1975–77 Vanderbilt University; Environmental and Water Resources Engineering; M.S., 1977, 4.0/4.0

1971–75 Harding University; major in Mathematics, minor in Physics; B.S., summa cum laude,
1975 3.9/4.0

Certification

Registered professional engineer in the State of Mississippi since 1981, number 08360

Registered professional engineer (P.E.) in the State of South Carolina since 2018, number 35468

Registered professional engineer(P.E.) in the State of North Carolina since 2020, number 050441

Certified professional hydrologist, Surface Water of the American Institute of Hydrology,
certification number 18-H-9001

Membership in Professional Societies

- Fellow, American Society of Civil Engineers (ASCE)
- Fellow, Environmental and Water Resources Institute
- Diplomate, American Academy of Water Resources Engineers
- Order of the Engineer
- American Geophysical Union

Career

1977–78	Instructor and Research Associate, Department of Civil Engineering, Tennessee State University, Nashville
1978–80	Hydraulic Engineer, Nashville District, U.S. Army Corps of Engineers
1980–90	Research Civil Engineer, U.S. Army Corps of Engineers Waterways Experiment Station (WES), Vicksburg, Mississippi
1986–87	Supervisory Research Civil Engineer, Acting Chief, Water Resources Engineering Group, WES, Vicksburg, Mississippi
1990–2012	Research Hydraulic Engineer, U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS), NSL, Oxford, Mississippi
1994–pres.	Adjunct Professor, Department of Civil Engineering, University of Mississippi, Oxford, Mississippi
2012–pres.	Principal, Shields Engineering, LLC, Oxford, Mississippi
2012–pres.	Hydraulic Engineer, cbec eco engineering (part time), West Sacramento, California

Direction of Graduate Research

- 1997 Martin W. Doyle. Bed material size trends in incised channels. M.S. thesis, University of Mississippi.
- 2001 Nathalie Morin. Specific gravity of naturally occurring large woody debris in the river environment. Internship report, L'INRS-Eau, Terre et Environment (in French).
- 2005 John M. Stofleth. Hyporheic and total storage exchange in small sand-bed streams. M.S. thesis, University of Mississippi.
- 2012 Mary A. McCaskill. Bacterial and sediment transport in an artificial sand bed stream during unsteady flow. M.S. thesis, University of Mississippi.

Awards

2008	Diplomate, American Academy of Water Resources Engineers
1999	Bronze Award, U.S. Environmental Protection Agency Office of Water
1997	ASCE Hydraulic Engineering Achievement Award, Mississippi Section
1984	ASCE Zone II Young Government Civil Engineer of the Year
1983–84	U.S. Army Corps of Engineers Civil Works Fellowship
1975–76	Energy Research and Development Agency trainee fellowship, Vanderbilt University

Offices and Committee Assignments Held in Professional and Honorary Societies

1986–90	Control member of ASCE Task Committee on Aquatic Habitat and Sedimentation
1991–95	Corresponding member of ASCE Task Committee to update Sedimentation Engineering Manual and Report on Engineering Practice No. 54
1994–2005	Board of Governors, Order of the Engineer, University of Mississippi, Link No. 149
1996–07	Control member of ASCE Task Committee on Sedimentation Engineering for River Restoration
2007–09	Chair of ASCE Hydraulics and Waterways Committee
2012–13	Vice Chair, ASCE River Restoration Technical Committee
2013	Chair, ASCE River Restoration Technical Committee
2016	Chair, ASCE Task Committee on Representation of Vegetation in Two-Dimensional Hydrodynamic Models

Selected Invitations

Invited to present, “Evaluating Impacts of Channel Stabilization Structures on Riverine Habitats,” to the meeting of the Environmental Advisory Board of the Chief of Engineers, U.S. Army Corps of Engineers, Denver, Colorado, October 7, 1987.

Invited by the Southern Division, American Fisheries Society, to co-author chapter, “Dikes and Levees,” for book, *Impacts on Warmwater Streams: Guidelines for Evaluation*, with C. H. Pennington, 1989.

Invited to present, “Engineering Constraints on Riverine Habitat Restoration,” Missouri River Mitigation Workshop, Desoto National Wildlife Refuge, Iowa, June 27–28, 1990, U.S. Fish and Wildlife Service. Interagency workshop laid foundation for major mitigation project.

Invited by the Korean Institute of Construction Technology to visit South Korea and present seminar, “Instream Flow Methods to Meet Recreational and Aesthetic Objectives,” and discuss current research activities. In concert with this invitation, also invited to deliver keynote address, “Rehabilitation of Watersheds with Incising Channels in Mississippi, USA,” to the annual meeting of the Korean Society of Civil Engineers, October 17–23, 1994.

Invited by USDA Natural Resources Conservation Service (NRCS) to chair interagency team of experts requested to visit North River Watershed in Missouri and to provide transfer of technology developed by the Demonstration Erosion Control Program to landowners, U.S. Fish and Wildlife Service, and state agencies, October 23–25, 1995.

Invited by a consortium of the Environmental Defense Fund, the Bay Institute, and Philip Williams and Associates, all of San Francisco, to serve on an expert review panel for a study preparing a framework Restoration of the San Francisco Bay–Delta River ecosystem, October 30, 1995—October 1997.

Invited by Ontario Ministry of Natural Resources (Canada) to participate in the Temperate Wetland Restoration Workshop in Barrie, Ontario, and present, “Physical Perturbations on Temperate Riverine Wetlands.” The workshop was sponsored by Environment Canada, Ontario Ministry of Natural Resources, Ontario Ministry of Environment and Energy, Trent University, and Ducks Unlimited Canada, November 27–December 1, 1995.

By invitation of the USDA NRCS International Conservation Division, worked as part of an interdisciplinary, interagency team to review forested riparian buffer strip research and management practices in Taiwan. The assignment included presenting a lecture on the state of science and ongoing research, touring field research sites in Taiwan with Taiwanese scientists and officials, and co-authoring a memorandum detailing recommendations, June 14–21, 1996.

Invited by the Comité Intergubernamental de la Hidrovia Parana-Paraguay (CIH), Buenos Aires, Argentina, to serve on a five-person expert panel to review hydrologic studies conducted to assess technical and economic feasibility and environmental impacts of construction of the Hidrovia project—a collaborative effort among five South American countries to improve navigation conditions along 3442 kilometers of river using dredging and other channel modifications. The project could impact the Patanal, the world’s largest freshwater wetland. Thanks to recommendations of the incumbent and other panelists, governments of the countries involved initiated reconsideration of the project’s impacts, November 19–21, 1996.

Invited to serve as a convener for five technical sessions on stream habitat restoration for the XXVII Congress of the International Association of Hydraulic Research, August 10–15, 1997.

Invited to present keynote address in May 1998 at the International Symposium on River Restoration, Technology Research Center for Riverfront Development, Tokyo, Japan, July 15, 1997.

Invited to serve as examiner for Ph.D. dissertation, “On the role of woody vegetation in riverbank stability,” by Bruce Abernethy. Dissertation submitted to Department of Civil Engineering, Monash University, Clayton, Victoria, Australia, March 1999.

Invited to present lecture, “Ecological Engineering in Research and Practice,” to annual meeting of the American Ecological Engineering Society, University of Georgia, Athens, May 1, 2001.

Invited to make presentation “Interactions of Riparian Zones with Aquatic Restoration,” to American Water Resources Association Summer Specialty Conference on Riparian Ecosystems, June 2004.

Invited to make presentation on river restoration monitoring to meeting of National River Restoration Synthesis Project, Santa Barbara, California, August 20, 2005 (declined).

Invited to join the National Center for Earth Dynamics (NCED) Stream Restoration Partners Group, University of Minnesota, February 9, 2005. Later invited to participate in expert panel workshop on training for stream restoration practitioners sponsored by the NCED, April 2–4, 2006.

Invited to chair session and make presentation on large wood in streams at the Sixth Annual Stream Restoration Design Symposium, Skamania Lodge, Washington, February 7, 2007.

Invited to make presentation, “Stream Restoration Design,” and serve on panel for discussion of new ASCE Manual of Practice: Manual 110 Sedimentation Engineering, at the Environmental and Water Resources Institute World Water Congress 2007, Tampa, Florida, May 17, 2007.

Invited to make presentation, “Role of Vegetation in Bank Stability & Revetments” and participate in a panel discussion, “Applying the Engineering and Science to Solutions,” as part of the Levee Vegetation Symposium organized by Sacramento Area Flood Control Agency. This symposium was sponsored by the Corps, State of California Reclamation Board, California Department of Water Resources, and the Sacramento Area Flood Control Agency to explore science, real-world experience, challenges, and policy solutions related to levee vegetation. The Corps proposed tighter vegetation regulations for earthen levees in the wake of the Katrina disaster, triggering a crisis for local sponsors of levee projects. Registration numbers revealed over 511 people from 21 states nationwide registered for the symposium, representing over 151 agencies from federal, state, and local flood management, resource agencies, academic institutions, and consulting engineering and environmental firms. August 28–29, 2007.

Invited by the National Oceanic and Atmospheric Administration, National Marine Fisheries Service, to serve on an expert panel on setting up a process for reviewing proposed stream habitat restoration projects, December 11–12, 2007.

Invited by National Marine Fisheries Service to serve as expert reviewer for River Restoration Analysis Tool, <http://www.restorationreview.com/>, 2010.

Interviewed by the U.S. Government Accountability Office to provide input to a comprehensive review of the hydrologic and environmental effects of river training structures on the Mississippi River, <http://www.gao.gov/products/GAO-12-41>, 2011.

Invited by the Bureau of Reclamation to participate in a technical workshop on large wood applications and research needs in river restoration, 2012.

Invited to present a series of lectures on river restoration research and challenges, Bureau of Reclamation, Denver, Colorado, 2014.

Short Courses and Webinars

- 1982-1993. Regular lecturer on environmental design considerations for the following annual short courses conducted at the U.S. Army Engineer Waterways Experiment Station: Streambank Protection, Hydraulic Design of Flood Control Channels, Environmental Aspects of Local Flood Protection Projects, Hydraulic Design for Project Engineers and Planners
2014. Rapid assessment of channel stability at highway stream crossings. For California Department of Transportation, Roseville, CA.
- 2014 - 2020. Stream Restoration: What Works and What Doesn't Work, ASCE online webinar.
- 2015 and 2016. Planning and Design for Stream Rehabilitation with Large Wood, ASCE online webinar.
2015. Restoring Rivers with Wood. Short course for Yurok tribe. Weaverville, CA.
2015. Planning and Design of Rivers Using Large Wood, University of Engineering, Lima, Peru.
- 2017 and 2018. Designing Channels for Stream Restoration: Alluvial Channel Design, ASCE Webinar.
- 2017 and 2018. Designing Channels for Stream Restoration: Threshold Channel Design, ASCE Webinar.
2017. Reach Scale Design for River Rehabilitation with Large Wood, ASCE Webinar.
- 2017 and 2020. Sediment Characteristics, Sources, and Movement, ASCE Webinar.
2018. River Restoration with Large Wood: Detailed Design and Construction, ASCE Webinar.
2020. Beaver Dam Analogue Design: Using the Tool, ASCE Webinar.
- 2020-21. Rapid Geomorphic Assessment. (online short course) California State Water Resources Board.
- 2020-21. Sediment and Erosion Control 101. (online short course) California State Water Resources Control Board.

Stream and River Restoration Experience

- 1991–93 Responsible for site selection, real estate, planning, design, and direction of construction for three stream restoration projects in incised channels in northwestern Mississippi. Treatments included instream weirs, riprap toe protection, spur (wing) dikes, and willow planting on a total 10,000 linear feet of channels. Monitoring continued for up to 11 years, including collections from degraded and pristine reference sites. All research findings have been published in refereed literature.
- 1998–2006 Responsible for site selection, real estate, planning, design, and direction of construction for a 6000-foot stream restoration project in central Mississippi. Channel treatments were limited to plant materials (large wood, willow cuttings, switchgrass plantings). Monitoring continued through 2004. Research was interdisciplinary and involved scientists from several universities and government agencies. Research findings have been published in refereed literature.
- 2000–01 Identified environmental enhancement opportunities for an urban river corridor, for the Menominee River Watershed Assessment, Milwaukee, Wisconsin. Subconsultant to Interfluve, Inc.
- 2001–03 Developed software to advise users on selecting appropriate environmentally sensitive channel and bank protection measures for a given site. Subconsultant to Salix Applied Earthcare on contract with National Cooperative Highway Research Program.
- 2004–05 Developed channel stabilization plan for Kinishba Wash at Kinishba Ruins, Arizona. Subconsultant to Nickens & Associates.
- 2006 Assessed performance of biotechnical stabilization of a Hasotino cultural resources site, Snake River, Washington. Subconsultant to Nickens & Associates.
- 2006 Designed Miller Creek restoration project, Mobile, Alabama. Subconsultant to Volkert and Associates. Project intended to rehabilitate stream from damages produced by illegal modifications, and featured extensive use of large wood.
- 2007–08 Performed geomorphic analysis to support planning for Amite River restoration project, Louisiana. Subconsultant to Taylor Engineering. Lead author on literature review and field assessment of geomorphic status of major river system.
- 2008–2017 Served on expert review panel for the Sacramento Area Flood Control Agency and California Levee Vegetation Science Team. Provided technical review for comprehensive research program to assess effects of trees and tree removal on earthen flood control levees.

- 2009 Provided expert review of Platte River Recovery Implementation Program Monitoring Protocol for Channel Geomorphology and In-Channel Vegetation, Headwaters Corporation, Kearney, Nebraska.

- 2011–12 As subconsultant to cbec eco engineering, West Sacramento, California, analyzed Swift Slough restoration feasibility and assisted team in developing design alternatives to enhance the hydrologic connectivity of Swift Slough, a major backwater on the Apalachicola River, Florida.

- 2012–15 As subconsultant to ICF International, helped prepare national guidelines for placement of large wood in streams. Team project resulting in major federal interagency handbook.

- 2012–16 As member of Russian River Independent Science Review Panel (California Land Stewardship Institute), holistically assessed water use and ecological impacts in the Russian River watershed of northern California.

- 2013–2015 As subconsultant to Ayres and Associates, Fort Collins, Colorado, evaluated and assessed environmentally sensitive stream bank protection measures. Project funded by Transportation Research Board, National Cooperative Highway Research Program (NCHRP Project 24-39). Worked with interdisciplinary team to develop quantitative design guidance for biotechnical bank protection measures.

- 2012–pres. As a part-time hydraulic engineer for cbec eco engineering, West Sacramento, provide senior-level review and advisory services on the Southport Early Implementation Project levee setback, develop guidance for Rapid Stream Stability Assessment for use by Caltrans, provide technical support for the California Department of Water Resources with regard to levee vegetation policy, effects of riparian vegetation on flow resistance, and matters under regulatory review or in litigation. Serve as short course instructor and conduct other projects.

Advisory Activities

Between 1985 and 1990, served as in-house expert for U.S. Army Corps of Engineers field offices for environmental issues related to stream channel modifications, dredging, and dredged material disposal (nationwide). Consultations (three to six per year) sometimes were limited to telephone conversations, but usually involved face-to-face meetings, seminar presentations, site visits, literature review, and preparation of letter reports. Typical examples include preparation of a monitoring plan for sediment deposition in cutoff meander bends along the Tombigbee River portion of the Tennessee-Tombigbee Waterway (Mobile District, 1985); field consultation with the New England Division (1986) regarding impacts of gravel mining in Naugatuck River, Connecticut; seminar for interagency group at Memphis District (1987) regarding application of stream obstruction removal guidelines to the Cache River, Arkansas; and field and office consultations regarding habitat restoration within Anacostia River Basin, Maryland (Baltimore District, 1990).

Similar short-term consultations were also provided to personnel of other government agencies one to three times per year. Examples include work with the George D. Aiken Resource, Conservation, and Development Area of Randolph, Vermont, regarding engineering design criteria for aquatic habitat improvement structures for the Ottauquechee River, Vermont (1984); the Minnesota Department of Natural Resources, regarding selective removal of large woody debris from streams for flood stage reduction (1984); U.S. Fish and Wildlife Service, Bloomington, Indiana, regarding incorporation of artificial wetlands in an enlarged channel (1987); and staff of the New Jersey Legislature regarding construction of dredged material containment islands (1988).

Participated in periodic coordination meetings for the Demonstration Erosion Control Project with technical experts from the Corps, NRCS, the U.S. Geological Survey (USGS), and universities. Presented stream restoration research plans and results. Contributed to discussions regarding morphologic evolution of incised channels and attendant impacts on habitat and downstream sediment yield. Meetings included stream restoration sites (October 28–29, 1991); Greenwood, Mississippi (August 20, 1992); Hotophia Creek restoration site (January 14, 1992); WES Hydraulics Laboratory (September 8, 1992, January 12–13, 1993, February 25, 1993); National Sedimentation Laboratory (October 21, 1993, April 22, 1993).

Organized briefings and field trips for interagency groups and foreign visitors to incumbent's stream restoration and stabilization research sites for technology transfer. Audiences included fellows of the Food and Agriculture Organization of the United Nations (1991); 12 engineers and scientists from the Corps, NRCS, U.S. Fish and Wildlife Service, ARS, and the State of Mississippi (1992); eight engineers and scientists from the Corps Mobile District (1993); two engineers from the Korean Institute of Construction Technology (1993); five engineers and biologists from Baltimore Corps District working on Passaic River, New Jersey, flood control project (1994); the Options Appraisal Manager, National Centre for Risk Analysis and Options Appraisal, the Environment Agency, England and Wales (1997); and six engineers and scientists from the Missouri Department of Conservation (1999).

Provided consultation and literature to Executive Director, Golden State Wildlife Federation, Sacramento, California, regarding effects of levees on riverine and floodplain ecosystems (October 21, 1993).

At the request of the St. Louis District of the Corps, worked as part of an interdisciplinary team to provide recommendations regarding aquatic and wetland habitat restoration opportunities associated with repair of levees damaged by the 1993 Midwest flood. Concepts were used by Corps personnel in a report to district managers (November 30–December 2, 1993).

Provided technology transfer to Stream Program Coordinator, Missouri Department of Conservation, including through in-depth discussions, inspection of field research sites, and provision of literature to support programs demonstrating stream rehabilitation technology to riparian landowners (April 4–5, 1995, January 21–23, 2003).

Provided field consultation to hydraulic engineer of the Corps' Mobile District and research hydraulic engineer of the WES regarding stream restoration design for a 2.5-mile-long, \$1 million project on Twentymile Creek, Mississippi (May 22, 1995). Summarized observations in a letter report. Provided additional consultation to hydraulic engineers and biologists of the Mobile District regarding planning and design of restoration structures and plantings for this project (August 31, 1995, May 14, 1996).

Informed the Chief of River Engineering Division, Coastal and Hydraulic Engineering Laboratory, WES, of the status and probable environmental impacts of Hidrovia Parana-Paraguay Waterway Project (September 3, 1997).

At the invitation of the U.S. Forest Service, provided on-site consultation and a letter report regarding stabilization and restoration of stream corridors threatened with incision in the Homochitto National Forest (November 2001).

At the invitation of the Corps, provided on-site advice and consultation regarding planning and designing restoration of the Salmon River near Challis, Idaho (July 30–August 1, 2002).

Assisted in hosting delegations from Korean Institute of Construction Technology and National Center for Computational Hydrosience and Engineering, University of Mississippi, for briefings on river restoration research and tours of the NSL (May 29, 2002, October 15, 2002).

At the invitation of the Michigan Sea Grant Program, delivered a lecture and participated in a panel discussion for a workshop on environmentally sensitive streambank and shoreline erosion control (~100 participants) (October 29, 2003).

Provided invited review of research plans for Center for Bottomland Hardwoods Research, Southern Research Station, U.S. Forest Service (May 26, 2004).

Organized workshop on stream restoration research for 25 participants from three states (October 24–25, 2006). Eight NSL scientists gave presentations and toured restoration research field sites.

Participated in National Center for Earth Dynamics Stream Restoration Partners Group, University of Minnesota, panel and workshop on stream restoration research (2005). Trained stream restoration practitioners (2006).

Presented and participated in panel discussion, Levee Vegetation Symposium, Sacramento, California (500 participants) (August 28–29, 2007).

Served as reviewer for North Carolina Water Resources Research Institute, Environmental Fluid Mechanics, Journal of Environmental Quality, AI Applications in Natural Resource Management, Environmental Management, Soil Science Society of America Journal, Journal of Environmental Engineering, Transactions of the American Society of Agricultural Engineers, River Research and Applications, Geomorphology, Journal of Hydraulic Engineering, North American Journal of Fisheries Management, Fisheries, Aquatic Conservation, Water Resources Bulletin, Journal of the American Water Resources Association, and Journal of Hydrologic Engineering, and Journal of Hydraulic Research, Journal of Flood Risk Management. Served on editorial board of Environmental Management (1999-2003).

Special Assignments

- 1982–87 Participated in Environmental Manual Advisory Group (Corps WES). Responsible for producing a series of manuals to incorporate environmental criteria into standard procedures for design, operation, and maintenance of reservoir, waterway, and flood control channel projects.
- 1985 Served as member of Environmental Water Quality and Operational Studies overview briefing team (Corps). Team visited Corps field offices and presented seminars summarizing findings of 5-year, \$30 million research program. These presentations laid groundwork for ensuing transfer of technology to field offices.
- 1982–93 Regularly lectured on environmental design considerations for the following annual short courses conducted at the WES:
- Streambank Protection
 - Hydraulic Design of Flood Control Channels
 - Environmental Aspects of Local Flood Protection Projects
 - Hydraulic Design for Project Engineers and Planners
- 1996 Chaired meeting involving scientists from University of Middlesex, U.K., who were engaged in studying engineering uses of willows, as well as USDA NRCS plant materials center personnel, active and retired NSL scientists, and visiting scientists. Meeting included briefing on findings of current and recently completed research and visits to field sites. Data and findings were used by visitors in their study.
- 1996 Co-hosted tour of Demonstration Erosion Control Project watersheds for a group of NRCS state conservationists from 10 southeastern states, Soil and Water Conservation Commissioners, and other officials.
- 1997 Served as technical program co-chair and co-editor of proceedings of the international conference, “Management of Landscapes Disturbed by Channel Incision”. Conference drew 250 participants from 25 states and 26 foreign countries.
- 1999–2004 Served as director of the Little Topashaw Creek Stream Corridor Rehabilitation Project, coordinating work among NSL scientists, cooperators, and landowners. This project provided a setting for interdisciplinary research involving three universities and three federal agencies in areas relating to erosion control, ecosystem rehabilitation, and water quality in an agricultural watershed. To date, this project has provided a basis for 18 proceedings papers, three poster presentations, two technical sessions at a national conference, and 11 refereed journal papers. The project has hosted field tours for the Corps’ Advanced Streambank Protection short course (twice), scientists and engineers from USDA NRCS, Mississippi offices, students and professor from Oklahoma State University, and eight scientists from Northeast Forest University, China. Developed website to facilitate technology transfer.
(<http://ars.usda.gov/Research/docs.htm?docid=5526>)
- 1999 Directed the technical watershed tour for about 35 participants in the US–China Bilateral Workshop: Sediment Management in Agricultural Watersheds.

- 2004 Directed the technical watershed tour for the Third International Conference on Gully Erosion (GEC III).
- 2004–10 Served as coordinator of Coldwater River Watershed Rehabilitation project. This project is an investigation of riverine backwater management to yield ecological services in the agricultural landscape. Developed website to transfer initial findings.
(<http://www.ars.usda.gov/Research/docs.htm?docid=12773>)
- 2007–08 Served as the technical publications co-chair for the conference, “The National Sedimentation Laboratory: 50 Years of Soil and Water Research in a Changing Agricultural Environment.”

Peer-Reviewed Publications

- Shields, F. D., Jr. 1982. Environmental features for flood control channels. *Water Resources Bulletin* 18(5):779–784.
- Schroeder, P. R., and Shields, F. D., Jr. 1983. Chemical clarification of dredged material. *Journal of Environmental Engineering* 109(2):414–427.
- Shields, F. D., Jr. 1983. Design of habitat structures for open channels. *Journal of Water Resources Planning and Management* 109(4):331–344.
- Shields, F. D., Jr., and Nunnally, N. R. 1984. Environmental aspects of clearing and snagging. *Journal of Environmental Engineering* 110(1):152–165.
- Shields, F. D., Jr., and Sanders, T. G. 1986. Water quality effects of excavation and diversion. *Journal of Environmental Engineering* 112(2):211–228.
- Nunnally, N. R., Hynson, J. R., and Shields, F. D., Jr. 1987. Environmental considerations for levees and floodwalls. *Environmental Management* 11(2):183–191.
- Thackston, E. L., Shields, F. D., Jr., and Schroeder, P. R. 1987. Residence time distributions of shallow basins. *Journal of Environmental Engineering* 113(6):1319–1332.
- Shields, F. D., Jr., and Abt, S. R. 1989. Sediment deposition in cutoff meander bends and implications for effective management. *Regulated Rivers: Research and Management* 4:381–396.
- Shields, F. D., Jr. 1990. ENDOW—Selecting environmental features for stream alteration projects. *AI Applications in Natural Resource Management* 4(3):62–63.
- Shields, F. D., Jr. 1991. Woody vegetation and riprap stability along the Sacramento River mile 84.5 to 119. *Water Resources Bulletin* 27(3):527–536.
- Shields, F. D., Jr., and Hoover, J. J. 1991. Effects of channel restabilization on habitat diversity, Twentymile Creek, Mississippi. *Regulated Rivers: Research and Management* 6(3):163–181.
- Shields, F. D., Jr., and Thackston, E. L. 1991. Designing treatment basin dimensions to reduce cost. *Journal of Environmental Engineering* 117(3):381–386.
- Shields, F. D., Jr., and Aziz, N. 1992. Knowledge-based system for environmental design of stream modifications. *Applied Engineering in Agriculture* 8(4):553–562.
- Shields, F. D., Jr., and Gray, D. H. 1992. Effects of woody vegetation on sandy levee integrity. *Water Resources Bulletin* 28(5):917–931.
- Shields, F. D., Jr., and Milhous, R. T. 1992. Sediment and aquatic habitat in river systems. Final Report, American Society of Civil Engineers Task Committee on Sediment Transport and Aquatic Habitat. *Journal of Hydraulic Engineering* 118(5):669–687.

Shields, F. D., Jr., and Smith, R. H. 1992. Effects of large woody debris removal on physical characteristics of a sand-bed river. *Aquatic Conservation: Marine and Freshwater Systems* 2:145–163.

Shields, F. D., Jr., Cooper, C. M., and Knight, S. S. 1993. Initial habitat response to incised channel rehabilitation. *Aquatic Conservation: Marine and Freshwater Systems* 3:93–103.

Shields, F. D., Jr., Knight, S. S., and Cooper, C. M. 1994. Effects of channel incision on base flow stream habitats and fishes. *Environmental Management* 18(1):43–57.

Shields, F. D., Jr., Cooper, C. M., and Knight, S. S. 1995. Experiment in stream restoration. *Journal of Hydraulic Engineering* 121(6):494–502.

Shields, F. D., Jr., and Gippel, C. J. 1995. Prediction of effects of woody debris removal on flow resistance. *Journal of Hydraulic Engineering* 121(4):341–354.

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Litigation Support

1993	Retained as expert witness by Mr. Dana Swan, partner, Chapman, Lewis & Swan, Clarksdale, Mississippi. Case involved erosion of a stream channel bank and attendant damage to client's property following work on the channel by a real estate developer. Following my deposition, developer settled outside of court.
2006	Consultant to Village of Taylor, Mississippi. Provided an examination of runoff, storm drainage, and erosion and sedimentation issues surrounding design of the Main Street Taylor Development. Acted as consulting expert at request of Freeland & Freeland law firm, Oxford, Mississippi.
2008	Retained as an expert consultant and potential expert witness by Orrick, Herrington & Sutcliffe, LLP, Sacramento, California, counsel to Robert Mori and Robert Mori II, in the case of Mori II v. Baroni, et al. I was never called upon to serve.
2010	Retained as an expert witness by Daniel, Coker, Horton & Bell, Oxford, Mississippi. Case (Crockett et al. v. City of Saltillo, MS) involved flooding of a subdivision. I prepared a preliminary report and a work plan for more detailed analysis. Case was settled out of court.
2013	Retained as an expert witness by Daniel, Coker, Horton & Bell, Oxford, Mississippi. Case (Kmart Corporation v. City of Corinth, MS et al.) involved flooding of a retail shopping center. I assessed the evidence in the case and critiqued analysis and report by plaintiff's expert. Case was settled out of court.
2014	Retained as an expert by Wheeler and Howorth, landowners adjacent to Shaw Place, an antebellum home surrounded by 5 acres inside the City of Oxford, Mississippi. Provided a written report and testimony before the City Planning Commission regarding effects of development on runoff and erosion. Case settled prior to litigation.
2015	Retained as an expert by Lafayette Civic Center in prelitigation examination of erosion and sedimentation impacts on a small lake related to adjacent earthmoving activities. Matter is pending.
2015	Retained as an expert by Willoughby and Hoefer, P.A., Columbia, South Carolina in numerous cases involving allegations of responsibility for extensive flooding of residential areas during high-flow events associated with Hurricane Joaquin in October 2015.
2017	Retained as an expert by Baker Hostetler, LLP, Los Angeles, California. Addressed concerns raised by the U.S. Environmental Protection Agency regarding a riparian Superfund site by performing a qualitative geomorphic assessment of lateral channel stability of San Jacinto River, Texas. Matter settled by regulatory ruling.

2018	Retained as an expert by Randall Tinsley of Brooks Pierce, Greensboro, North Carolina. Investigated accelerated sedimentation in privately-owned impoundment on a stream draining part of a national park. Matter is pending.
2018	Retained as an expert by Mr. and Mrs. Ronnie Moses, Brandon, MS. Plaintiffs contended that improper maintenance of stream channel adjacent to their property caused flooding of their home in April 2018. Evaluated evidence regarding channel hydraulics and flooding. Dismissed on procedural grounds.
2018-2021	Serving as senior technical advisor on a team of engineers with cbec eco-engineering providing litigation support for the California Department of Water Resources in multiple cases stemming from spillway erosion at Oroville Dam in 2017. In October 2021, the court rendered a tentative decision favoring our client on all counts.
2020	Served as a consultant to Ortale Kelley law firm, Nashville, TN, regarding flooding in Kenton, TN in March 2016. Ortale Kelley represents a landowner that owns a levee crossing the floodplain. Upstream plaintiffs are suing the landowner alleging that the levee caused flooding of their property, a manufacturing plant. My involvement is inactive.
2021	Retained as an expert by The Gori Law Firm, Edwardsville, IL, representing plaintiffs in a suit regarding August 12, 2019 flooding in Granite City, IL, a suburb of St. Louis. Matter is pending.

Clients

Ayres Associates

ICF International

Sacramento Area Flood Control Agency

cbec eco engineering

Salix Applied Earthcare

Nebraska Community Foundation, Inc., Platte River Recovery Implementation Program

Village of Taylor, Mississippi

Daniel, Coker, Horton & Bell

Nickens & Associates

Interfluve, Inc.

Chapman, Lewis & Swan

Taylor Engineering/Mobile Boundary Hydraulics/The Shaw Group

Volkert & Associates, Inc.
URS Corporation
Philip Williams & Associates
Freeland & Freeland
California Land Stewardship Institute
Lafayette Civic Center
Willoughby & Hoefer, P.A.
Baker Hostetler, LLP, P.A.
Ortale Kelley Law Firm
ERM
The Gori Law Firm



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2

Appendix C

ISAC Candidate Signed No-Conflict-Of-Interest Forms



NO CONFLICT-OF-INTEREST FORM

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (Program -or- PRRIP)

Independent Scientific Advisory Committee (ISAC)

The PRRIP developed guidance regarding the avoidance of conflicts-of-interest in accordance with the ISAC Charter (Attachment 6, Appendix I) and the Peer Review Guidelines (Adaptive Management Plan, Appendix A) contained in the PRRIP Final Program Document.

Conflicts-of-interest include but are not limited to:

- Financial interest in the restoration and management activities associated with the PRRIP.
- Familial relationship with any of the scientists conducting research and/or monitoring associated with the PRRIP.
- Bias, for personal reason for or against the scientists mentioned above and/or the entities involved in the implementation of the PRRIP.
- Professional connection with any entities involved with PRRIP implementation.
- Impacts of lobbying or political pressure exerted by person(s) looking for a particular result or more work with the PRRIP.

As a candidate proposed for participation on the ISAC, I hereby state that I do not have any conflicts-of-interest with the Platte River Recovery Implementation Program as outlined above and (if necessary) explained on the following page. I can serve effectively on the ISAC without any financial, familial, personal, or professional bias in order to further the goals and objectives of the PRRIP and the implementation and evaluation of the Extension Science Plan and associated scientific and technical activities, analyses, and syntheses.

JEB BARZEW

Proposed ISAC Candidate – printed name

JEB Barzew

Proposed ISAC Candidate – signature

February 21, 2022

Date



NO CONFLICT-OF-INTEREST FORM

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (Program -or- PRRIP)

Independent Scientific Advisory Committee (ISAC)

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David Koons

Proposed ISAC Candidate – printed name

2/21/2022

Proposed ISAC Candidate – signature

Date



NO CONFLICT-OF-INTEREST FORM

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (Program -or- PRRIP)

Independent Scientific Advisory Committee (ISAC)

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- Professional connection with any entities involved with PRRIP implementation.
- Impacts of lobbying or political pressure exerted by person(s) looking for a particular result or more work with the PRRIP.

As a candidate proposed for participation on the ISAC, I hereby state that I do not have any conflicts-of-interest with the Platte River Recovery Implementation Program as outlined above and (if necessary) explained on the following page. I can serve effectively on the ISAC without any financial, familial, personal, or professional bias in order to further the goals and objectives of the PRRIP and the implementation and evaluation of the Extension Science Plan and associated scientific and technical activities, analyses, and syntheses.

Aaron Pearse

Proposed ISAC Candidate – printed name

Aaron Pearse

Proposed ISAC Candidate – signature

02/21/2022

Date



NO CONFLICT-OF-INTEREST FORM

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (Program -or- PRRIP)

Independent Scientific Advisory Committee (ISAC)

The PRRIP developed guidance regarding the avoidance of conflicts-of-interest in accordance with the ISAC Charter (Attachment 6, Appendix I) and the Peer Review Guidelines (Adaptive Management Plan, Appendix A) contained in the PRRIP Final Program Document.

Conflicts-of-interest include but are not limited to:

- Financial interest in the restoration and management activities associated with the PRRIP.
- Familial relationship with any of the scientists conducting research and/or monitoring associated with the PRRIP.
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Jason Alexander
Proposed ISAC Candidate – printed name

[Signature]
Proposed ISAC Candidate – signature

February 21, 2022
Date



NO CONFLICT-OF-INTEREST FORM

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Sharon Bywater-Reyer
Proposed ISAC Candidate – printed name

[Signature]
Proposed ISAC Candidate – signature

2/21/2022
Date



NO CONFLICT-OF-INTEREST FORM

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (Program -or- PRRIP)

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Michal Tal

Proposed ISAC Candidate – printed name

Proposed ISAC Candidate – signature

February 26, 2022

Date



NO CONFLICT-OF-INTEREST FORM

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (Program -or- PRRIP)

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Steve Taylor, PhD

Proposed ISAC Candidate – printed name

Proposed ISAC Candidate – signature

February 21, 2022

Date



NO CONFLICT-OF-INTEREST FORM

PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (Program -or- PRRIP)

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F. Douglas Shields Jr.

Proposed ISAC Candidate – printed name

F. Douglas Shields Jr.

Proposed ISAC Candidate – signature

2/21/2022

Date