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THE INVADER

Official Newsletter of the Invasive Species Working Group

GREETINGS!

We are pleased to publish this issue of The Invader just before many upcoming events, including The Wildlife Society Annual Conference and our in-person Invasive Species Working Group Meeting (ISWG, see notices below). We are also excited to share a story on the development of the Lacey Act by our Chair-Elect Su Jewell. Check out the table of contents in the right side banner to learn about ISWG news and notes as well as contributions from members and more. We're hoping to see everyone at the invasive species meeting and symposium in a few weeks in Baltimore!

INVASIVE SPECIES WORKING GROUP MEETING

SUNDAY, OCT. 20 FROM 5-7 PM ET IN ROOM "KEY 2"

THE WILDLIFE SOCIETY CONFERENCE

OCTOBER 19-23, 2024 IN BALTIMORE MARYLAND

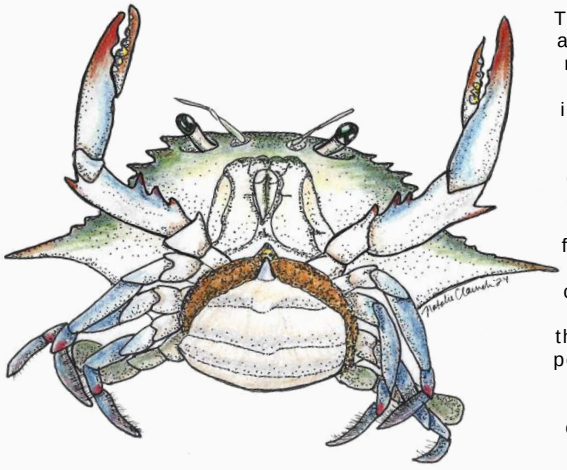


ILLUSTRATION BY NATALIE CLAUNCH

The blue crab (*Callinectes sapidus*), valued as a culinary delicacy throughout its native range in the U.S. Atlantic Ocean and Gulf of Mexico, has become a problematic invasive species elsewhere. Introduced as ship stowaways **throughout the Mediterranean region, invasive blue crabs are impacting native wildlife and disrupting ecological processes**. As an aggressive predator and opportunistic feeder, blue crabs prey on native species, including fish, mollusks, and other crustaceans. Blue crabs can alter habitat structure and impact nutrient cycling through their foraging behavior. Their rapid population growth, broad diet, and ability to thrive in various environments make the blue crab a significant threat to coastal ecosystems, fisheries, and biodiversity in invaded regions.

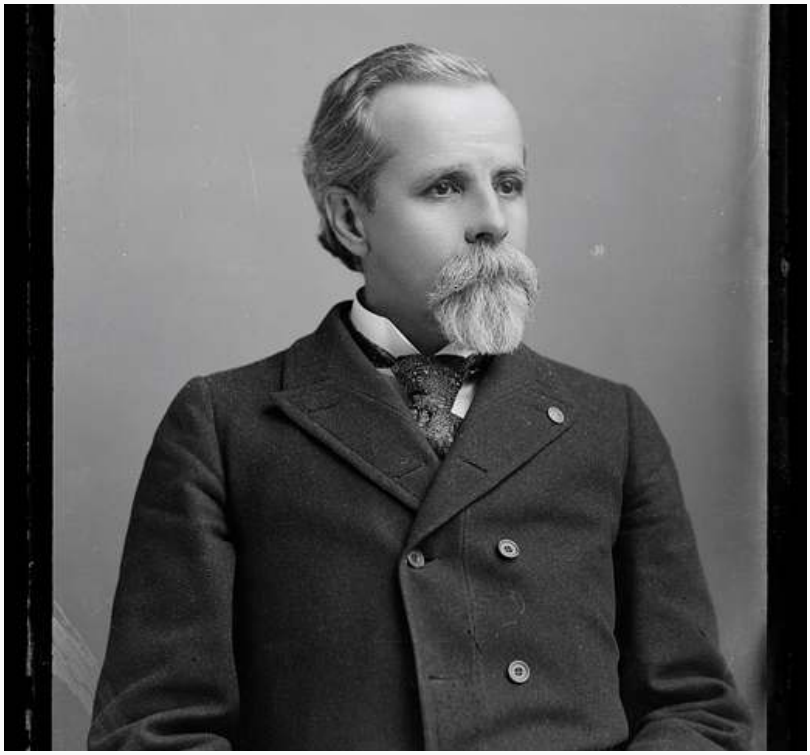
BY KODIAK HENGSTEBECK

This issue:

Who was the Man behind “the Lacey Act”?

BY SUSAN D. JEWELL

That would be the Honorable John Fletcher Lacey, who was responsible for so many natural resource protection laws that several are known as a “Lacey Act.”



"He was the first American Congress-man to become an avowed champion of wild life."

WILLIAM T. HORNADAY

Most resource conservation managers know about a law called the Lacey Act passed in 1900 that prohibits trade in wildlife and plants that have been illegally taken, possessed, transported, or sold, etc. and that also prohibits importation into the United States of injurious wildlife. But few know who was responsible for creating it and the enduring benefits it has provided.

John Lacey represented Iowa in the U.S. House of Representatives for eight terms from 1889 to 1907. He had a law degree and had worked as a lawyer for a railroad company. Until Representative Lacey came along, wildlife management in the individual States was generally recognized to be the jurisdiction of each of the States. But intense game hunting and subsequent marketing across State lines was causing drastic wildlife population declines, and increased importation of wildlife species from foreign countries was causing harmful invasions. How could these activities be controlled if the States could only regulate natural resources within their borders? It took a railroad lawyer to figure out how, because the railroads were the interstate transport system of the time.

John Lacey's background in railroad law and interest in national conservation combined in a convenient way to find the solution to getting Congress to support the first nationwide wildlife conservation law. Lacey's bill was passed in 1900 and has remained in effect, although with amendments and statute number changes. The purposes of the 1900 act included two provisions now split into two statutes. The bill that is now primarily referred to as "the Lacey Act" was passed in 1900 and was Lacey's brainchild, but the name "Lacey Act" was not on the statute then, nor is it now. Furthermore, the provisions for the trade in wildlife and plants is now under the statute 16 U.S.C. 3371-3378 and the provisions for injurious wildlife listing are under 18 U.S.C. 42. Both laws are implemented by the U.S. Fish and Wildlife Service.

Another confusing issue is that the name "Lacey Act" is just a convenient moniker for several laws that Lacey wrote. Lacey drafted and sponsored The Yellowstone Park Protection Act, also known as The Lacey Act of 1894, that finally gave meaningful protection to the wildlife and other natural resources of the national park that was established in 1872.

The two provisions of the original act of 1900 are now mainstays of Federal conservation laws. The injurious wildlife listing provision has prohibited the importation of nearly 800 species of wild mammals, wild birds, fishes, reptiles, amphibians, mollusks, and crustaceans that either are invasive or otherwise harmful or could become so if introduced into the United States (U.S. Fish and Wildlife Service's injurious wildlife list). The provision regulating trade in wildlife and plants provides assistance to States and other jurisdictions with intercepting illegal importation and interstate transport of fish and wildlife species and plants taken or possessed in violation of State, Federal, tribal, or foreign law.

Once Lacey showed how his law supported existing State laws, Federal conservation laws became more achievable. The renowned William Hornaday, former Director of the New York Zoological Society and Lacey's contemporary, noted that Lacey was the first person in Congress to take up the burden of making wildlife conservation laws particularly his own objective.

Read more about The Legacy of Lacey by Susan Jewell in the January/February 2024 issue of The Wildlife Society's The Wildlife Professional.

Human Dimensions of Invasive Species Management: Barriers to Success and Practical Paths Forward

DATE: MONDAY, OCTOBER 21 | TIME: 1:30 PM – 5:00 PM | ROOM "KEY 9"

Symposium Description:
Biological invasions are caused by humans and inherently reflect our values and behaviors. Effective bioinvasion management must therefore address human dimensions, including socio-political and cultural factors. This session will take a transdisciplinary approach to highlight how consideration of human dimensions can improve invasive species prevention and management.

Time	Presentation Title	Presenter
1:30 PM	*Understanding knowledge and perceptions of invasive species in the global context*	**Ross Shackleton** Swiss Federal Research Institute WSL
1:45 PM	*Effective wildlife trade regulation to manage risks from invasive species importation*	**Jonathan Kolby, Orion Goodman** Smithsonian Conservation Biology Institute
2:00 PM	*Challenges of Utilizing Historic Legislation to Modernize Invasive Wildlife Prevention*	**Susan Jewell** U.S. Fish & Wildlife Service (*Retired*)
2:15 PM	*Friend or Foe? Examining public perceptions of invasive species in Florida*	**Lameace Hussain** University of Florida
2:30 PM	*Creating a decision-making tool for aquatic herbicide use in lake ecosystems*	**Gavin Dehnert** University of Wisconsin - Madison
2:45 PM	*Strategies to Engage Recreationalists to Prevent Forest Pest Movement via Firewood*	**Angelica Solano** Clemson University
3:00 PM	---------- **Session Break** ----------	
3:30 PM	*No Trespassing: The Challenges of Invasive Species Management on Private Property*	**Diane J.E. Sturgeon** University of Florida
3:45 PM	*Implications for Management of Blue Catfish in the Chesapeake Bay*	**Heather Walsh** U.S. Geological Survey
4:00 PM	*Public Values and Beliefs as they Relate to Invasive Wild Pig Control in the US*	**Keith Carlisle** USDA, National Wildlife Research Center
4:15 PM	*Wild Pig Control: Key Milestones in Missouri's Progress Towards Elimination*	**Megan Cross** USDA, National Wildlife Research Center
4:30 PM	*Public Perceptions of Domestic Cat Management in California*	**Grant Sizemore** American Bird Conservancy
4:45 PM	*Challenges of Managing Charismatic Invasive Species: Lessons from the Field and Recommendations Moving Forward*	**C. Jane Anderson** Smithsonian Conservation Biology Institute

Session Chairs:
Organizer | C. Jane Anderson, Smithsonian Conservation Biology Institute
Organizer | Scott Goetz, USDA National Wildlife Research Center

Meet the Invasive Species Working Group Board Members!

JANE ANDERSON, CHAIR

Dr. Jane Anderson is a wildlife biologist working at the interface of One Health, invasive species, and the wildlife trade. She has held positions in the public, private, academic, and non-profit environmental sectors. Jane's specialty is charismatic invasive species and the unique social challenges of managing these populations. She previously studied and developed management plans for invasive monkeys in Florida and parakeets in Hawaii. She holds a Ph.D. in Interdisciplinary Ecology from University of Florida, as well as a B.S. in Fisheries and Wildlife Sciences and a M.S. in Fisheries, Wildlife, and Conservation Biology from North Carolina State University.
***Will be at TWS conference in Baltimore**

SUSAN JEWELL, CWB, CHAIR-ELECT

Susan (Su) Jewell retired in 2024 after 31 years with the U.S. Fish and Wildlife Service as a wildlife biologist. For the first 6 years, she was the Senior Biologist at the A.R.M. Loxahatchee National Wildlife Refuge in the Everglades where she oversaw the management of natural resources, including controlling invasives species. Then she spent 11 years working on endangered species for the same agency. From 2009-2024, she coordinated invasive species issues on a national scale to prevent the importation of high-risk wildlife designated as "injurious" for the USFWS. She is an authority on the history of injurious wildlife since 1900 and on John Lacey, author of "the Lacey Act of 1900" and known as "the father of conservation legislation."

Before the USFWS, Su spent 2 years at Everglades National Park doing fieldwork on alligators, wading birds, and fisheries. She also did wading bird research for the National Audubon Society in the Everglades. Other previous fieldwork species include wood storks, Atlantic puffins, bobcats, and gopher tortoises. Su is also a freelance writer of environmental subjects for newspaper and magazine articles and has published three books. She is focusing on writing in her retirement. She has a B.S. in Wildlife Biology from the University of Vermont and M.S. in Systematics and Evolutionary Biology from the University of Connecticut and is a Certified Wildlife Biologist®.
***Will be at TWS conference in Baltimore**

Meet the Invasive Species Working Group Board Members!

JENNY KETTERLIN, PAST CHAIR

Jenny Ketterlin is an invasive species biologist with a federal agency where she is responsible for coordinating regional invasive species management activities in California, Nevada, and part of Oregon. Prior to this position, she worked on invasive species issues in Florida for over 17 years with the National Park Service, University of Florida, the Miami-Dade County Environmentally Endangered Lands Program, and the Florida Fish and Wildlife Conservation Commission. Her experience is in wildlife and habitat management with a wide variety of species and ecosystems, especially nonnative plants and animals. Some significant projects she has been a part of include restoration of Brazilian pepper-infested tree islands in the Everglades to native trees and shrubs, control and assessment of Argentine black and white tegus in south and central Florida and the development and implementation of the 2013 and 2016 Python ChallengesTM. Jenny serves with TWS in her personal capacity, not as a representative of her agency.

JEFF HEROD, SECRETARY-TREASURER

Jeffrey (Jeff) Herod was recently selected to be a Program Coordinator with Kentucky Department of Fish and Wildlife Resources, Fisheries Division. He has extensive experience on natural resources issues at all levels of the Federal Government across the contiguous U.S. and Pacific Islands. Jeff was a biologist with U.S. Geological Survey, U.S. Fish and Wildlife Service (USFWS), U.S. Navy, and Bureau of Land Management. In his career he has served on over 30 technical committees. Jeff served as Secretary in 2004 for the American Fisheries Society Southern Division Non-game Aquatics Technical Committee, and served in 2018 on the AFWA Invasive Species Subcommittee, as well as the Department of Interior Invasive Species Task Force. Jeff's work is summarized in agency documents, technical reports and peer-reviewed journal articles. In his various roles, Jeff has served as program and regional coordinator for teams to prevent and suppress invasive species populations, and reduce the negative impacts to native species. He holds an Associates of Science from Hocking College (Nelsonville, OH), a Bachelor of Science from Arkansas Tech University (Russellville, AR), and graduate work toward a Master of Science from Murray State University (Murray, KY). Jeff has been a CWB® since February 2022.

Meet the Invasive Species Working Group Board Members!

MJ MAZUREK, AT-LARGE BOARD MEMBER

Mary Jo (MJ) Mazurek is a wildlife biologist currently employed as the Brown Treesnake (BTS) Program Coordinator for the Pacific Islands Fish and Wildlife Office in Honolulu, Hawaii. Previously MJ worked for five years in Guam on BTS management for USGS and the Department of the Navy and for two years in Hawaii developing invasive vertebrate eradication plans for Island Conservation. Prior to her time in the Pacific, MJ worked for a variety of federal agencies and private firms in northern California on wildlife management projects related to wildlife habitat selections in managed forests for Spotted Owls, Marbled Murrelets, bats, amphibians, and small mammals. MJ received a B.S. in Biology at the University of Central Florida and a M.S. in Natural Resources Management from Humboldt State University.

PETE CALDWELL, AT-LARGE BOARD MEMBER

Pete Caldwell is a Biosecurity Consultant and Project Manager for a leading environmental planning and design firm in New Zealand. His work involves managing various landscape-scale projects controlling invasive plant and animal species. Pete works closely with national and regional agencies and councils, and has previously worked for the New Zealand Department of Conservation; the Invasive Species Branch of Department of Primary Industries, Parks, Water and Environment in Tasmania, Australia, among others. Pete has experience managing numerous invasive mammalian species, including mustelids, wild pigs, rabbits, possums and wallabies and also frequently carries out recreational management activities on several ungulate species, including feral goats, red and fallow deer and Himalayan tahr. Pete has a Postgraduate Diploma in Wildlife Management, a BSc in Zoology/Ecology and is a Certified Environmental Practitioner (CEnvP).

KODIAK HENGSTEBECK, AT-LARGE BOARD MEMBER

Kodiak Hengstebeck is a PhD student in the School of Natural Resources and Environment at the University of Florida, where he works in the Florida invasion ecology lab. His research interests lie within the fields of invasion ecology and evolutionary ecology, with particular focus on reptiles and amphibians. Currently, his research centers around the evolutionary and ecological impacts of snake invasions, focusing specifically on adaptive morphological changes and zoogeochemical impacts of invasive Burmese pythons. He also obtained his M.S. from the University of Florida, during which he researched Burmese pythons in southwestern Florida and their interactions with gopher tortoises and gopher tortoise burrows. When he's not working, Kodiak enjoys kayaking, scuba diving, or taking his dog, Gus, hiking on some of the many trails around Gainesville.

Meet the Invasive Species Working Group Board Members!

SCOTT GOETZ, AT-LARGE BOARD MEMBER

Dr. Scott Goetz is a biologist with the USDA National Wildlife Research Center conducting studies on wildlife pathogens. Throughout most of his career, Scott has conducted research on invasive reptile and amphibian species, primarily bioinvasions in Florida and on the Marianas archipelago in the Pacific. His work takes an applied approach – attempting to better understand the natural history and ecology of invasive species in service of improving methods to contain and minimize the impacts of already established non-natives. Scott is also interested in refining early detection and rapid response networks, in particular, applying decision science principles to help determine the best use of limited response resources.

***Will be at TWS conference in Baltimore**

NATALIE CLAUNCH, AT-LARGE BOARD MEMBER

Dr. Natalie Claunch is a Wildlife Biologist at the USDA APHIS Wildlife Services National Wildlife Research Center Florida Field Station, where she conducts research on human-wildlife conflict management focused on invasive reptiles and birds. Additional research interests are the intersections between invasion ecology, herpetology, and eco-physiology, such as how the physiological responses to novel or stressful environments or exposure to diseases influence success of invasion or resistance to novel pathogens. She has worked with invasive pathogens (Bd and Bsal) in amphibians, stress and immune physiology of invasive Burmese pythons, brown tree snakes, curly-tailed lizards, Peters' rock agamas, and native rattlesnakes, and thermal physiology in panther chameleons, curly-tailed lizards, and native Sceloporus lizards. Natalie received a B.S. in Zoology from NC State University, M.S. in Biology from Cal Poly SLO, and Ph.D. from University of Florida.

GRANT SIZEMORE, AT-LARGE BOARD MEMBER

Grant Sizemore has earned B.S. degrees in Zoology and Environmental Science from Miami University and an M.S. in Wildlife Ecology and Conservation from the University of Florida. He is a Certified Wildlife Biologist and has worked in wildlife conservation for approximately 15 years, including roles in field research, education, and policy. Grant is currently the Director of Invasive Species Programs at American Bird Conservancy, where he has worked for over 10 years on invasive species policy, education, and outreach, particularly in relation to the organization's Cats Indoors program. Grant has published peer-reviewed articles, technical reports, and popular articles associated with invasive species management and is a former secretary of the Virginia Chapter.

***Will be at TWS conference in Baltimore**

Invasive Species Working Group: TWS Meeting Travel Scholarship Award Winners

UNDERGRADUATE WINNER

Kaylee Halfmann, Wildlife Sustainability and Ecosystem Science, Tarleton State University

Kaylee will be assisting with the Human Dimensions of Invasive Species Management: Barriers to Success and Practical Paths Forward Symposium. Monday, October 21st from 1:00 - 5:00 pm, room “Key 9”.

GRADUATE WINNER

Angelica Solano Delgado, Wildlife and Fish Biology, Clemson University

Angelica will be presenting in the Human Dimensions of Invasive Species Management: Barriers to Success and Practical Paths Forward Symposium Monday, October 21 2:45 pm in room “Key 9”.

Strategies to Engage Recreationalists to Prevent Forest Pest Movement via Firewood

Invasive forest pests are damaging North American forests, and their intracontinental spread can be accelerated through the movement of infested firewood. We assessed the general public’s awareness, attitudes, and perceptions of forest health issues and identified potential strategies for more effective delivery of information about invasive forest pests and firewood transport. We analyzed data obtained from five surveys conducted between 2005 and 2016 (n = 4,840). Awareness, choice of mode of information, and trusted messenger were predicted using linear regression models based on selected independent variables including age, race, gender, education level, and the participant’s type of residential area. Overall, awareness regarding invasive forest pests was low among participants. Participants stated they would be most likely to pay attention to a flyer handed out when entering a state or national park or receiving an email after making a campsite reservation. State forestry agencies were the most believable source of information regarding forest health issues. For the modes of information listed on the survey, older participants and those with higher education levels were more likely to have greater awareness levels and to pay attention, while female and younger participants were more likely to indicate they believed the messengers. We conclude that awareness is key for modifying behavior related to firewood transport; as such, educational campaigns with effective messaging strategies could be a successful approach to reducing the movement of firewood by members of the public.

INSIGHTS INTO GREAT PLAINS INVASIVES

SANTEE SIOUX NATION INVASIVE PROGRAM

The Santee Sioux Tribe of Nebraska conducted an invasive species survey titled: A Baseline Inventory of Invasive Floral and Aquatic Species with Management Control Recommendations of the Santee Sioux Tribe of Nebraska funded by the Bureau of Indian Affairs. Surveys were conducted from 2019 through 2021. This effort revealed numerous new state flora species distribution records during the process. Eight state listed flora species (reed grass, purple loosestrife, musk thistle, Canada thistle, plume less thistle, curly leaf pondweed and leafy spurge) were documented on the reservation in what appears to be in growing abundance. No invasive clams or fish were documented in this effort; however, future monitoring should continue to ascertain their invasion as state documentation reveals they are close with formal documentations just down river in the Missouri, below Gavins Point Dam. Recommendations are offered with insights into how the tribe can manage this challenge going forward for the reservation and other parts of the country.

IOWA TRIBE OF KANSAS AND NEBRASKA

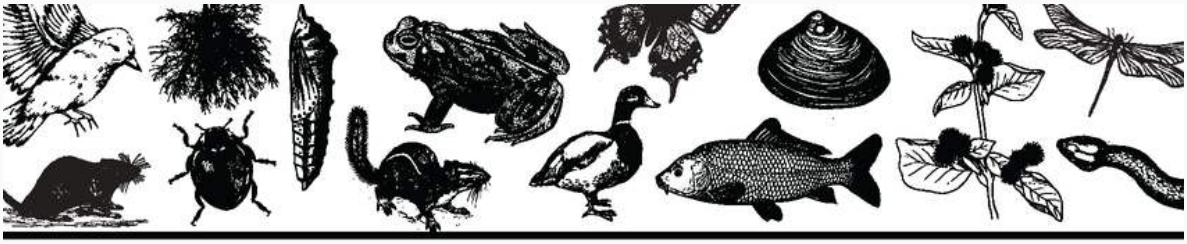
Fish and other invasive species of concern in Nebraska and Kansas include zebra mussel, quagga mussels (*Dreissena rostiformis*), New Zealand mud snail (*Potamopyrgus antipodarum*), Asian clam, and Chinese mysterysnail (*Cipangopaludina chinensis*). Active monitoring has become necessary in preventing the spread of these species and minimizing damage to aquatic resources in many areas. Waters adjacent to tribal parcels are no different in containing certain invasive fish species and previous pelycepod presence. Sampling continued for invasive fish presence in the Lost and Roy's creek stream reaches in the 2021 to 2023 time frame and representative fish communities were assessed in these historically sampled reaches for any potential invasive species documentation. Fish assemblage samples were similar to previous years with Red (*Cyprinella lutrensis*) and Sand shiners (*Notropis stramineus*) comprising the majority of the catch.

Silver Carp, *Hypophthalmichthys molitrix*, an invasive fish species, were frequently observed in the Missouri and the lower Nemaha River from 2018-22 during this and other studies. During seining surveys, Silver Carp were observed in nets, but their musculature and morphology allowed them to be evasive enough to escape capture. Grass Carp (*Ctenopharyngodon Idella*) are known to be in the Missouri River system, however our observations did reveal presence in stranded areas (NCE 2023).Also worth mentioning was the presence of Bighead Carp (*H. nobilis*), which is also present in the nearby waters of the Missouri.

Almost 140 flora species have been compiled and observed on the reservation. Eleven new listed invasive flora were added in our observations during the study. Lespedeza, *Carduus nutans* and Johnson grass are problematic on the reservation.

SUBMITTED BY ISWG MEMBER, MICHAEL P. GUTZMER

ISWG - Member Announcement



WE ARE HIRING

The **Invasive Species Collaborative (ISC) at Virginia Tech** integrates invasion science with the policy, management, and social demands associated with confronting the global challenge of invasive species. We bring together biologists and resource managers, social scientists, policy experts, and other stakeholders to facilitate new regional, national, and international partnerships.

Virginia Tech is seeking applicants for **five tenure track positions** associated with the ISC. These new faculty positions will be housed within several colleges and academic units as part of a large interdisciplinary investment to make the University a center of excellence in the science, policy, and management of invasive species. Individuals who bridge disciplinary divides, drive innovative solutions, and engage in team science are encouraged to apply! Positions will be announced separately throughout 2024.

Positions:
Invasive Species Economist - Fall 2024
Invasive Species Geneticist - Fall 2024
Global Change Ecologist - Fall 2024
Environmental Data Scientist - Fall 2024
Invasive Plant Genomics - Forthcoming

Interested in learning more? Follow the QR code to view our website and open positions (www.invasivespeciesvt.org).

Invasive Species COLLABORATIVE AT VIRGINIA TECH

FRALIN LIFE SCIENCES INSTITUTE GLOBAL CHANGE CENTER VIRGINIA TECH

SUBMITTED BY ISWG MEMBER, GRACE O'MALLEY