



2nd Annual RISCC Management Symposium Amherst, MA

July 12, 2018

Symposium Report

The Northeast Regional Invasive Species and Climate Change Management Network held its second annual symposium on July 12, 2018 at the University of Massachusetts in Amherst, MA. The objective of the meeting was *to bring together natural resource managers and scientists to discuss how climate change might affect invasion risk in the northeastern region and identify ways to translate research into management action*. Nearly 120 people representing more than 50 organization from 16 states attended either in person or online. The symposium consisted of 12 presentations with a combination of international, national, and regional foci coming from both research and management perspectives, as well as two facilitated discussions. As in 2017, the event received local media coverage and presentations were recorded and are available on the RISCC website at (people.umass.edu/riscc).

The opening speaker, Dr. Jeffrey Dukes (Professor of Forestry & Natural Resources & Biological Sciences and Director of Purdue Climate Change Research Center, Purdue University), gave a talk titled "[An overview of invasive species + climate change research & management](#)". The opening talk was followed by Session 1: *Invasive Species Impacts in a Changing Climate* with presentations by Dr. Montserrat Vilà (Professor of Research in the Department of Integrative Ecology, Estación Biológica de Doñana (EBD-CSIC)) on "[Why do we need impact assessment protocols of biological invasions?](#)". Dr Vila was followed by Dr. Bethany Bradley, Associate Professor of Biogeography and Spatial Ecology at UMass Amherst on "[Using impact assessments to prioritize range shifting invasive plants](#)". The session was concluded by Brendan Quirion (Coordinator of the Adirondack Park Invasive Plant Program/The Nature Conservancy) on "[The potential effects of pests and pathogens on carbon sequestration and storage by North America's forests](#)".

The second session focused on *Developing Proactive Invasive Species Regulation* and provided an international, national and state perspective. Dr. Regan Early (Senior Lecturer in Conservation Biology at the University of Exeter) spoke on her research on "Emerging global invasion threats and response capacities" at an international level. She was followed by Dr. Jenica Allen (Affiliate Assistant Professor at the University of New Hampshire) who spoke on "[Coordination opportunities and challenges for listing invasive plants in U.S. states](#)" and closed

with a talk by Dr. Julie Richburg (Regional Ecologist at The Trustees of Reservations in Massachusetts) on [“Exploring the state-level regulatory process in Massachusetts”](#).

The third and final session of talks provided insight on *Emerging Challenges for Invasive Species Management*. Jennifer Price Tack (Postdoctoral Associate at Cornell University) presented on the [“Effect of increasing water temperatures on aquatic invasions”](#), followed by Brittany Laginhas (PhD candidate at UMass Amherst) speaking on how [“Climate change could awaken some naturalized ‘sleeper’ species”](#). These two presentations summarized ‘management challenge’ summary documents created by RISCC team members at Cornell ([Warming Waters](#)) and UMASS ([Sleeper Species](#)). Next, Dr. Steven Frank (Associate Professor of Entomology at North Carolina State University) presented his research on [“Sleeper species case study: native herbivore abundance and range expansion in a warmer world”](#) and the session was concluded by an overview of [“Lessons learned from Tug Hill - managing for resiliency to climate & invasive species”](#) presented by Gregory Sargis, Director of Ecological Management, Central and Western NY Chapter of The Nature Conservancy.

The symposium was wrapped up by a big picture presentation given by Dr. Cascade Sorte (Assistant Professor, Ecology & Evolutionary Biology at University of California at Irvine) on [“Success and impacts of species invasions in a changing world”](#). In closing her presentation, Dr. Sorte provided the following one sentence summaries of each of the presentations throughout the day:

1. Climate is changing & invasive species benefit more than natives (J Duker)
2. EICAT is an accessible & objective impact assessment protocol (M Vila)
3. EICAT can be used to develop watch list for future invaders (B Bradley)
4. Pests killing forests (more area than fire), changing productivity, biomass and direction of carbon dynamics (sequestration and source) (B Quirion)
5. Prevention capacity lags behind threat, especially in developing areas (R Early)
6. Invasive species listing varies by state; often draw from IPC recommendations (J Allen)
7. Formalized & coordinated entities key for listing & regulation (J Richburg)
8. Climate change is favoring aquatic invasives, including rock snot (J Price Tack)
9. Climate change may “awaken” invasive species currently naturalized (B Laginhas)
10. “Sleeper” insect species increase during warm periods/locations (S Frank)
11. We can incorporate climate change predictions into restoration (G Sargis)

In addition to the 12 presentations, there were two discussion sessions facilitated by Dr. Toni Lyn Morelli (USGS Research Ecologist, Northeast Climate Adaptation Science Center at UMass) and Carrie Brown-Lima (Director, NY Invasive Species Research Institute at Cornell University). The first discussion session focused on the *Interaction of climate change and invasive species*. Facilitators asked the questions: “What invasive impacts are most relevant to you?” and “How will a changing climate influence these impacts?” Participants were asked first to reflect individually, then hold small group discussions, and finally share with the whole group both through the use of the *Menti* communication application and reporting back from small group discussion. The results of the questions were:

How will a changing climate influence these impacts?

Attendees described the following as being complications related to the effects of climate change on the impacts of invasive species (in order of frequency of response):

1. **Impacts get worse**
2. **New invasions**
3. **Negative impacts on rare species and unique/high risk habitats, vulnerable communities, biodiversity**
4. Reduced ecosystem services
5. Shifting interactions
6. Complicates management goals and timing
7. More uncertainty
8. Reduced ecosystem resilience
9. Changing human use of natural resources
10. Ecological composition shifts
11. Cross thresholds
12. Deforestation
13. Land conversion
14. More habitat loss
15. More resources needed

The second discussion focused on “Policy and regulations related to climate change and invasive species”. In this discussion session, facilitators asked the questions “How effective are current policies at reducing invasive species?” and “How might these policies need to be adjusted given a changing climate?” The results were as follows:

How effective are current policies at reducing invasive species?

Out of 54 responses, the average response was 3.7 out of 10 where 0 = Not at all effective and 10 = Extremely effective.

How might these policies need to be adjusted given a changing climate?

Attendees recommended that policies should be adjusted given the current and impending effects of climate change in the following ways (starting with the most commonly recommended):

1. Be more proactive. For example, "preparing for what is happening in other regions to come here" and "more aggressive treatment on range edges". Another suggestion was to replace black lists with white lists, where species would be opted-in instead of opted-out.
2. Identify new threats. "Lists will need to be updated for potential invasives species." "Forecasting models need to be promoted by researchers and accepted by regulators to enact positive change.
3. Better coordination, including outreach to nursery professionals. As one respondent put it, we need "greater international collaboration - we know what plants are aggressive in each of our own native habitats that could be invasive elsewhere."
4. Better accountability, with increased enforcement, follow-up monitoring, and clean construction certification.
5. Be more adaptable/flexible. For example, they recommended more frequent adjustments to regulatory lists", and that "we will need to be more nimble to respond to disturbance."

6. Think holistically, plan strategically. Use adaptive management, focus on solutions and goals, ultimately "need council with staff in each state & authority to draft regulations and policies".

7. Better outreach and education with nursery professionals as well as the public, including evaluating messaging re. not moving firewood.

Additional questions and challenges

1. Incorporating management priorities into impact assessment protocols

2. Can we predict and prevent invasions – or should we just focus on increasing native system resilience?

3. Coordinating and funding efforts for IAS research & management

4. How to get the word out to the public & affect behavior

5. Time and funding for proactive measures: early detection & rapid response

6. Thinking ahead about restoration strategies post-IAS control

7. Funding & coordinating management across geo-political and public/private boundaries

8. Identifying "sleeper species" that are present at low abundance but could undergo population booms under climate change

9. To what degree should we incorporate assisted colonization into restoration (e.g. replanting with southern species or genotypes)

Post Symposium Survey Results

A post-symposium survey revealed that 100% of the participants would attend next year or recommend the symposium to a colleague, with 88% of participants identifying the symposium as "very useful" to their professional development. Moving forward we hope to include a broader range of both participants and presenters, in particular recruiting more policy makers to participate in discussions and managers to present on their projects and experiences.



Cornell University