

Reflections on Assisted Migration from a Conservation Scientist

An interview with Dr. Mark W. Schwartz

Has your thinking or direction of research regarding assisted migration changed in the last decade, and if so, how?

I have been impressed by a few experiences on assisted migration over the past decade. First and foremost, how people differ in their opinions on the acceptability of assisted migration as a management action given their connection to natural ecosystems. For example, those in the forestry industry appear very comfortable with the notion of shifting planting regimes to new species so that we may have a healthy, harvestable forest in 30-50 years, when those trees mature. In contrast, conservationists considering the same kinds of actions in forests that do not necessarily have harvest plans worry a great deal about the ecosystem. Will planting with a few new tree species create all the envisioned changes to the ecosystem? Or will this be some sort of Frankenstein ecosystem, sewing parts

of different ecosystems together, with unknown effects. These differences in opinion drive different management actions, and responses to management. The consequence is that I suspect that there may be instances where there is a public uproar about the possibility of a public agency taking some action on public lands in the midst of the forestry industry taking those actions, without social pushback, on adjacent private lands. Thus, my direction has shifted toward better understanding people's reactions to suggestions of assisted migration and thinking through what parts of these opinions are well supported by some consistent ethos or supported by ecological evidence.

Similarly, people's attitudes appear malleable based on the sense of urgency. I recently spent time talking to conservation groups from Hawaii. Given the imminent extinction threats they face for many of their birds and tree

snails, they want to make sure that a decision process is not so onerous that they can get moving on action. Over much of the continent, there seems to be much more circumspection as there is a sense of time to make deliberative decisions. My concern is that we actually use that time wisely and not wait until we, similarly, are in crisis management.

Can you speak to the nature of any collaborative efforts to set guidelines or best practices for assisted migration that you've been involved in or are aware of?

This past summer the Department of the Interior Issue draft guidelines for assisted migration on behalf of the federally listed endangered species. This rule would open the door to assisted migration. One consequence of this kind of thinking is that the Department of the Interior is working



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on defining conditions for taking such actions. The Fish and Wildlife Service (FWS) in the Pacific Islands and Pacific Northwest are actively working on decision guidance for conservation introductions. This follows the National Park Service publishing protocols for assessing risks associated with assisted migration. There are likely to be other on-going efforts. However, this suite of actions by our Federal agencies is indicative of a shift toward a readiness to consider assisted migration as a viable management option.

Do you have any thoughts on the right scale of coordination?

I have been involved in the FWS efforts to develop decision guidance. One of the efforts that we engaged in was a workshop listening session to better understand what interested people from state and local agencies, indigenous groups, NGO's and university researchers would like to see in this guidance. The clear message that emerged from this workshop is that people want to be a meaningful part of the discussion and decision. The federal agencies have been moving in the direction of engaging people in their decision-making more directly. We should expect that the draft decision guidance that the Pacific Northwest Region emerges with in 2023 reflects an interest in collaborative decision-making and collaborative project management.

In this and related publications folks have identified concerns with pest and pathogen transfer, inappropriate applications of things like the seedlot selection tool, ethics, and questions around what guidelines should look like. What else should we be thinking about?

This is, of course, one of the great challenges with non-traditional conservation actions. There are so many things that we not only should, but need to consider. This includes a careful assessment of the risk of adverse outcomes from things such as accidentally transferring pests and pathogens with plant and

animal material but also the social risks associated with taking these actions. Public resistance can thwart management efforts very easily. There is understandable resistance to the notion of moving species, and some of this relates to the ethics of our relationships to nature. The challenge that faces managers is that we would like to use due diligence in considering all of the possible pitfalls of assisted migration (and there are many), but we also do not want to fall into something often called analysis paralysis: deferring any decision indefinitely because we don't think we have answered all of our outstanding questions. We need to construct decision processes that make decisions efficiently, yet in a way that includes very serious ecological and sociological concerns.

What other strategies should we be considering when it comes to landscape based climate adaptation?

I often refer to the movie *Argo* when talking about assisted migration. There is a notable scene where the protagonists are describing their hostage rescue plan to their supervisors, who respond that it is a terrible idea. The protagonists respond with a statement that goes something like: "Yes sir, it is a terrible idea. But it is the best bad idea that we have." This is assisted migration in a nutshell. I think that we all wish we lived in a world where we did not have to consider this as a management option. That would be a simpler world to live in. However, we live in this world. Assisted migration is a terrible idea. It is full of risk. It might, however, be our best bad idea. That isn't to say, however, that there aren't other potentially useful, even necessary, "bad ideas" out there. Genetic manipulation of species to increase their tolerance to climates; geoengineering to make habitats more suitable to climatically stressed species have also been suggested for particular conservation challenges in particular cases. They have their own challenges and we won't address them here. However, the thought that I would like to share here is this. How many species are there for which we are likely to plan and execute assisted migration? If we do this carefully, then not very many. Certainly, it is not a solution that is on scale with the size of the problem. It may

be a solution for species of forestry or fisheries concern. It may be a solution for notable endangered species. But, probably not much beyond that. Thus, we need to maintain our investments in helping ecosystems adapt to the future change that we expect to see.

Ecosystem composition is projected to shift as the climate changes. What role do you think land managers have in deciding when and where to move species as these changes manifest?

Scaling up from species to ecosystems, as I just alluded to, increases the complexity of the problem by orders of magnitude. It also increases the complexity of the proposed actions. How do we move ecosystems? Do we simply bring in truckloads of seed, soils, microbes and hope that the base of the ecosystem sorts itself out and the upper trophic levels can migrate to follow suit? Probably, but that sounds to me like an awful management strategy. I do not envy land managers that are now having to make these decisions. There are a few places where I see this as early warning signs of change where this is happening sooner rather than later. Western wildfires are driving ecosystem change. Managers are faced with the notion of resisting change in ecosystems, accepting changes that come along, or actively directing change. Our public agencies have spent decades in a mode where the primary belief was that a 'light touch' was needed; that nature can manage itself if we simply remove the anthropogenic forces degrading systems. With climate change, and the results of fire suppression, managers aren't really able to exercise this 'light touch' management approach any longer. A secondary challenge is really one of human capacity. A friend from a large National Park once said to me, "well, at the end of the day we are going to have to simply accept most change that nature brings along because we simply do not have the workforce to broadly direct change, even if we wanted to." I think that this is a common challenge: managers will need to carefully pick their battles and engage in managing change where it will have the most benefit. These will be hard decisions.