

# MEETINGS

## Managed Relocation of Species: Noah's Ark or Pandora's Box?

*Assisted Migration: Evaluating a New Strategy for Species Conservation; Milwaukee, Wisconsin, 1–3 August 2008*

The world's human population is growing rapidly, annually we may now move more earth than natural geological processes, and our dependence on fossil fuels is causing wholesale changes in climate and many ecosystem processes. Although human impacts on the globe have long had major consequences for the Earth's other inhabitants, the current combination of massive habitat change and rapid climate change poses an especially daunting challenge for many species. Rates of anthropogenic global change, from habitat alteration to modifications of the atmosphere, are so high that many species do not possess the capacity to "track" these changes through natural dispersal. In addition, "humanized" landscapes are now so pervasive in some parts of the globe that natural dispersal corridors have all but completely disappeared.

"Managed relocation" (MR; also called "assisted migration" or "assisted colonization") is the human-aided movement of species adversely affected by global change where these species cannot move themselves. Goals of MR include, but are not limited to, conservation of biodiversity, reduction of extinction risk, enhancement of evolutionary potential, and maintenance or augmentation of ecosystem services. Recently there has been much talk, in the scientific literature as well as in the press, about the costs and benefits of MR. As a conservation strategy, MR has promise, but it could also have serious collateral costs. For example, MR may succeed in rescuing a given species from extinction, but it may also introduce a species into habitat where it becomes invasive, causing ecosystem disruptions or extinctions of other taxa.

A working group met in August 2008, in conjunction with the annual meeting of the Ecological Society of America, to develop a framework for understanding the degree to which MR could achieve its objectives, the risks that it might incur, and strategies that could be used to implement it. Participants

in the workshop represented academic institutions, federal land management agencies, and nongovernmental organizations involved in conservation. Themes treated at the workshop included (1) basic goals of MR; (2) identification of trigger conditions for the implementation of MR; (3) genetic considerations; (4) legal, policy, and ethical questions; (6) reconciling MR with existing conservation strategies; and (7) how to deal with community- and ecosystem-level interactions.

The key outcome of the meeting was the development of four broad criteria for comparing strategies for conservation of a target species: (1) the risk of negative impact of climate change (or other anthropogenic disturbance) for the target species, (2) the risk of collateral effects of the strategy in consideration, (3) the feasibility of the strategy in question ("could we do this?"), and (4) the acceptability of the strategy ("should we do this?").

Current emphasis is on developing a set of filters using these four criteria that can be used to objectively rank potential conservation strategies, including MR. The group then plans to use a set of model plant and animal taxa to pilot test the process. Focused working groups continue to work on all of the identified themes, and a follow-up meeting is planned for early 2009. Further information is available at the Managed Relocation Web site ([http://www.nd.edu/~hellmann/MRWorkingGroup/Managed\\_relocation.html](http://www.nd.edu/~hellmann/MRWorkingGroup/Managed_relocation.html)) or from the second author, at [hellmann.3@nd.edu](mailto:hellmann.3@nd.edu). Funding is provided by the National Science Foundation and the Cedar Tree Foundation.

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