

RE: Proposed Rule Docket (FWS-HQ-ES-2021-0033)

"Endangered and Threatened Species: Designation of Experimental Populations"

COMMENT by Connie Barlow, Torreya Guardians, submitted August 5, 2022 • 5 pages PDF

I, **Connie Barlow**, founded the citizen group **Torreya Guardians** in 2005, and I have been its webmaster and chief networker ever since. We have no formal organization, so I communicate here as an individual. I do not speak for the group. I draw upon my experience and what I have learned about best practices for assisting the northward migration of an ESA listed endangered tree: **Florida Torreya**. *Learn about this plant on its [Torreya taxifolia wikipedia page](#).*

COMMENT ON THE PROPOSED REGULATION:

I support the regulation exactly as proposed. Details on how and when to use this new and essential climate adaptation tool are best kept out of the formal regulation. Instead, policies and practices can be developed and adapted over time, region by region, with some details remaining species-specific. Moreover, it is crucial to develop implementation guidelines that are **distinctly different for plants than for animals**, as I outline below.

SUGGESTED IMPLEMENTATION POLICIES FOR PLANTS:

• **1. Create implementation frameworks and policies that are distinct for plants.**

Do not burden recovery of listed plants with the same kinds of decision frameworks, safeguards, research needs, and funding requirements that necessarily pertain to animals because:

(a) In contrast to animals, **plants do not require expensive capture, handling, transport, and release protocols** when they are authorized for experimental assisted migration projects.

(b) In contrast to animals, **rooted beings stay where they are put until they begin to produce seeds**. Therefore, so long as seeds of a listed species are not dispersed by wind (and to a lesser extent, not by birds), the entire experimental population can easily be monitored and, if necessary, removed if an ecological problem develops in the recipient ecosystem.

(c) In contrast to terrestrial vertebrate animals listed as endangered, **plants tend to produce great numbers of seeds upon maturation**. If those seeds are **recalcitrant** (such as they are for genus *Torreya*), whole seeds **cannot be stored by drying, freezing, or in liquid nitrogen (cryo)**. Ex situ plantings are thus the only modes of long-term "storage" for plants with recalcitrant seeds. Yet failure to recruit in advance northward partners with large acreages or to arrange donations of surplus seeds for unregulated distribution by commercial nurseries may result in a reprise of the embarrassing situation that has occurred with Florida torreya under the official recovery plan: For the past dozen years, **tens of thousands of *Torreya taxifolia* seeds have annually gone uncollected, and quietly undocumented**, at the two large ex situ reserves in northern Georgia. Fortunately, if utilized as **a case study**, this sad outcome for Florida torreya could help prevent massive seed losses of other listed plants that, likewise, thrive in their ex situ habitats. Point 2 below is a proven way to prevent this "problem" from afflicting other plant recovery efforts.

- 2. **Encourage nongovernmental entities to use the ESA "exception" for plants.**

BENEFITS FOR ENDANGERED PLANTS: The **"exception" for plants in the ESA law itself** will continue to allow citizens, botanical gardens, universities, conservation organizations, and others to move ahead *on their own* with northward experimental migrations of listed plant species — whether or not the new regulation is approved and no matter how slow or weak its implementation. This is because the ESA allows cuttings and seeds collected from **horticulturally grown specimens outside of the historical range** to be transported and used without limitation, so long as interstate transfer is not commercial. In this way, **the Endangered Species Act could devolve into a back-up approach, while incentivizing the conservation community to do-it-themselves.**

Accordingly, there would be **fewer petitions for plant species listings, fewer legal entanglements, fewer delays in achieving positive outcomes, and likely a heck of a lot more creativity and collegial sharing of best practices.** Full recovery — even rewilding — could be achieved by nongovernmental entities utilizing their own private lands for northward plantings. Ideally, **land trusts would play the leading role**, establishing migrated populations within conservation easements already in place.

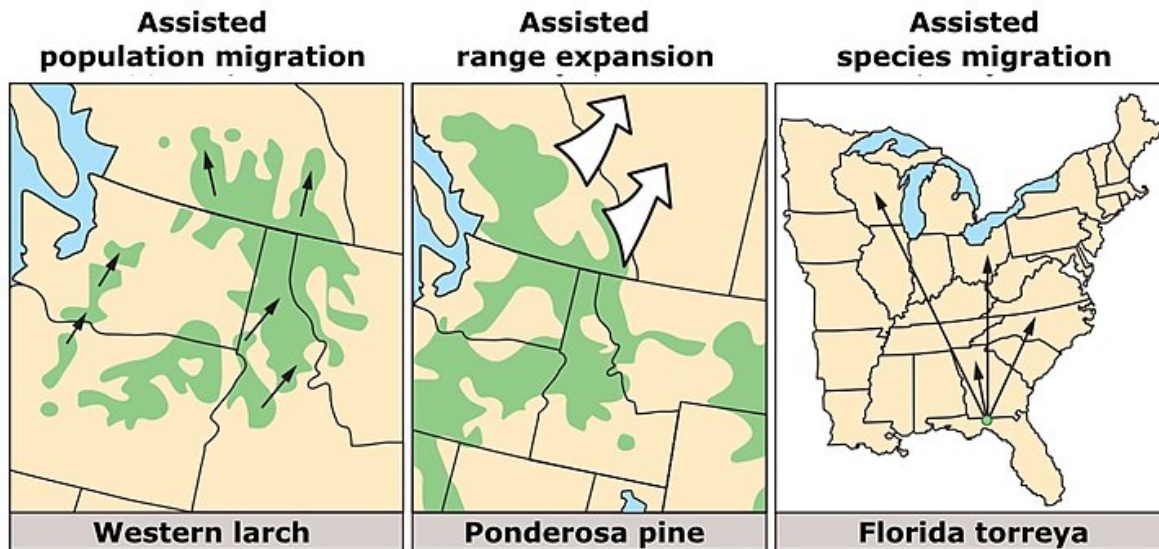
BENEFITS FOR ENDANGERED ANIMALS: The USFWS is going to have immense demands and difficulties in applying the new regulation to listed animals. By encouraging nongovernmental entities to take leadership in recovery of listed plants, a far greater share of limited taxpayer money could be used for the complex tasks involved in recovery of listed animals.

- 3. **Follow the lead of the USDA Forest Service.**

Research scientists within the **U.S. Forest Service** have been publishing papers since the 1990s, while conferring internationally with colleagues (especially Canadian foresters) on climate adaptation practices. In 2011, USFS research staff in northern Michigan began collaborating with university researchers in a new regional organization: **The Northern Institute for Applied Climate Science**. In addition to a standard USFS agency page, this group has a distinct website whose homepage currently features three USFS researchers awarded by outside organizations for their leadership in interdisciplinary climate science and adaptive management achievements. Notably, NIACCS (and now **all USDA regions**) have been able to incorporate climate-responsive shifts in communications and practices with no changes in its grounding laws and regulations.

USDA can therefore offer practical guidance in bringing climate adaptation understandings, tools, and stakeholder involvement into how the new USFWS climate adaptation regulation can be smoothly integrated into existing ESA protocols and agency practices for **plants**.

ADOPT USDA TERMINOLOGY. Beginning nearly a dozen years ago, the forestry profession initiated **terminology that defused controversy** about implementing "assisted migration" as a climate adaptation tool. Instead of one term, **there are now three that make the practice gradational**, as shown in the image below. Notice that **Florida torreya** is the type species for the most extreme form of climate adaptive assisted migration: "Assisted species migration." In context, the two grades of assisted migration foresters consider (and already implement to a degree) are moderated and thus less controversial.



RETIRE LANGUAGE OFFENSIVE TO WILDERNESS ADVOCATES. While forestry scientists and managers have rarely used terms other than variants of *assisted migration* (as in the image above), conservation biologists began using alternatives that imply less assistance and more control: *assisted colonization* and *managed relocation*. As a science writer who contributed essays in the 1990s to *Wild Earth* journal (including "[Rewilding for Evolution](#)"), I was on board with the original term, *assisted migration*. But the replacements that became dominant in conservation biology papers carried connotations that I found offputting — and so did my colleagues. Hence, I request that the agency use the original term, and in this way also follow the lead of USFS.

RETIRE LANGUAGE OFFENSIVE TO INDIGENOUS PEOPLES. Both *assisted colonization* and *managed relocation* entail terms offensive to peoples in the USA who have suffered from the colonization of their homelands and, later, via the "[Indian Relocation Act of 1956](#)." As I report (and link) in a lengthy webpage I created on this topic, Australian conservation biologists have recently jettisoned the former term for the same reason that those in the USA should. Please visit the section titled "[Decolonizing Scientific Language](#)", within my lengthy webpage, "[Assisted Migration or Assisted Colonization: What's In a Name?](#)"

- 4. **Facilitate respectful dialogue and understandings of worldview differences.**

EXPLORE AND VALIDATE WORLDVIEW DISTINCTIONS: The last thing we biodiversity champions need at this time is to foment within-group antagonisms and to proffer hostile judgments of opposing camps in our publications — and especially when queried by journalists. This is not something agency staff are positioned to deal with. But one or more **national conservation organizations could initiate and carry this conversation as an early element in taking agency for climate adaptation of endangered plants.**

Prior to discussing the pros and cons of new tools and methods, sincere discussion about worldview distinctions that will inevitably affect professional judgments should be explored and understood. What are the rational and scientifically grounded bases of each perspective? What are the emotions — and emotionally driven action imperatives — that derive from each?

SHIFTS IN STAKEHOLDER PERSPECTIVES. Again, utilizing the history of *Torreya taxifolia* as a case study, one learns that conservationists in recipient ecosystems are now eager to help endangered North American plants from outside home regions. In practice, and at this

stage of the climate emergency, fears of invasiveness have evaporated. Indeed, **Corneille Bryan Native Plant Garden**, near Waynesville NC, welcomed *Torreya* Guardians to introduce potted seedlings as the return of a once-native. In contrast, it was the home-region conservationists (professional and amateur alike) who regarded this endemic of northern Florida as theirs to keep — even forming a subset of the Florida Native Plant Society in 2018 called "**TorreyaKeepers**".

DEEP-TIME UNDERSTANDING OF WHAT IS NATIVE AND HOW PLANTS GOT WHERE THEY ARE. In my experience with **Torreya Guardians**, beginning with participating in an "**Assisted Migration for an Endangered Species**" forum debate published in the Winter 2004/2005 issue of *Wild Earth* magazine, it was clear that the **paleoecological foundation** that myself and my coauthor (Pleistocene ecologist, **Prof. Paul S. Martin**) drew upon put us in marked disagreement with the author of the opposing opinion, **Prof. Mark W. Schwartz**, conservation biologist at U.C. Davis. Paul Martin died in 2010, but Schwartz and I continued putting forth opposing positions in subsequent years. I still regard the set of oppositional statements published 18 years ago in *Wild Earth* as the most direct expressions of the incommensurable worldviews that drive disagreements about what and where is native. Both papers are available in several places online. The *Torreya* Guardians website is where **both together** and each separately can be accessed in pdf (**for assisted migration** and **against assisted migration**). As well, Paul Martin took the lead in creating an appendix to our paper; but there was no room in *Wild Earth* to include it. Titled "**Standards for Assisted Migration of Plants**", Paul suggested using a scalar set of terms to replace the entrenched "native v. non-native" binary. Paul suggested (and offered definitions for): "current range, historic range, near-time range, deep-time range, and target range." (Excerpts of the forum arguments can be found in the assisted migration section of the *Torreya taxifolia* wikipedia page.)

NATURAL HISTORY IN PRACTICE. Another worldview distinction shapes my sense of how decisions should be made in **choosing northward sites** for plant migration and experimentation in the current decade of too-rapid climate change. (I grant that my worldview is rare among professional conservation biologists.) My personal priorities for geographically allocating *torreya* seeds for planting by volunteers have been broad. I do hold firmly to "**east of the Mississippi River**." Other than that, I have prioritized topographically rich terrain and moist deciduous forests. Also, *torreya* is a vulnerable species until its new leaves harden into very sharp points. Thus, landscapes with overpopulated deer are exceedingly dangerous for unprotected, rewilded, *Torreya* seedlings.

As well, instead of opting for soil chemistry data, details on aspects and canopy conditions (and, thus, the kinds of habitat data likely to be required by professionals implementing the new regulations), **I opted for the simplicity of a natural history approach for assessing habitat suitability**. To begin, always a deciduous canopy. Next, does the site contain plants that indicate well-drained, mesophytic habitat? Or does the plant community indicate too dry or periodically flooded conditions?

Given the necessity of doing away with pots and fencing when **needing to find good homes for annual seed harvests numbering in the thousands**, I began to suggest **planting seeds directly beneath the fronds of *Polystichum acrostichoides***. These native ferns not only signal ideal habitat for *torreya*; they provide camouflage against winter-hungry deer. I also learned how to **avoid planting seeds in habitats of ground-burrowing rodents** by staying away from patches of fallen branches and logs, and testing for hidden tunnels elsewhere by plunging a table knife into the ground here and there.

Again, a **paleoecological worldview** underlies these choices. In the eastern USA we know that **native plant populations have migrated repeatedly hundreds of miles as the glaciers waxed and waned**. The pollen record in bog sediments suggests starkly

novel communities of wind-pollinated trees migrating at different speeds, and apparently able to accomplish their migrations with few plant extinctions. And whether seed dispersal was accomplished by **wind, birds, squirrels, or hindgut mammals**, migration was accomplished by random natural processes. Scientific scrutiny and leadership can certainly make human-assisted plant migrations more efficient and in greater leaps than historically the norm. But our assistance need not be complicated, nor costly. I emphasized this conclusion in my choice of title for one of the episodes in my "**Climate, Trees, and Legacy**" video series on youtube: **Episode 6: "Becoming Passenger Pigeon"**.

ACCOMMODATING DIVERSITY ON THE DOOM SCALE. Given climate, societal, and economic trends today, it is no longer reasonable to assume that a solid majority of professional conservationists (much less stakeholders) still support a business-as-usual, and thus necessarily slow, approach for endangered species recovery. Some (including me) sense that **the world is already in a climate emergency** — especially for plant species regarded as glacial relicts. Some (including me) have **rapidly declining confidence that federal governance** will maintain the levels of budgets, professional staffing, and political will as we have grown accustomed to relying upon in past decades.

Thus for biodiversity advocates, like me, who have slipped a long way down the scales of climate "doom" and societal "collapse," it is an imperative that **conservation-minded citizens and our organizations voluntarily step into leadership and forge new traditions that will carry forward no matter what**. We resolve to carry forward biodiversity conservation — endangered plant recovery — whether or not institutions carry forward that have hitherto done it for us.

END OF COMMENT BY CONNIE BARLOW