May 13, 2010

Fr: **Connie Barlow, founder of Torreya Guardians**

To: Jessica Hellmann, Camille Parmesan, Patrick Shirey, Josh Donlan

cc: Vivian Negron-Ortiz (USF&WS person in charge of plan update for management of Torreya taxifolia)

cc: Estella Leopold (paleobotanist, emeritus Univ Wash)

cc: the 4 journalists/writers who have done long pieces on assisted migration: Janet Marinelli, Emma Marris, Michelle Nijuis, and Jim Robbins

Re: **Assisted Migration and the USF&WS management plans for endangered species**: A call for a new "Leopold Report" equivalent and for you folks to make it happen, plus news on the May 11, 2010 recovery plan meeting (USF&WS) for Torreya taxifolia

Dear Jessica, Camille, Patrick, and Josh -

As you know, I keep up on both the academic papers and the media reports on the issue of assisted migration, and I post an annotated list of these with links updated on my website: http://www.torreyaguardians.org/assisted-migration.html

My sense is that, despite the necessary objective and measured language that **Jessica, Camille, and Patrick** use in your pivotal and crucial professional papers and conferences, of all the USA participants in this issue, you three seem to have the most "fire in your belly" for moving ahead with assisted migration/colonization/ translocation in some responsible way — and that the fire is that you know in your bones that at least some species or genotypically distinct populations do, or will soon, absolutely require such unprecedented assistance for their continuation. (Else, we resign ourselves to giving them loving and costly care until they go extinct in the wild, not unlike our service to the extreme elderly in nursing homes. Torreya taxifolia is a poster-plant for that default path, as it is now being coddled in precisely that way in its historically native range in northern Florida.)

Josh Donlan is receiving this email because, while he is not directly involved in assisted migration, he is the lead author of 2 paradigm-breaking papers proposing Pleistocene Rewilding, based on, what I like to call, a "deep-time perspective." His papers:

http://rewilding.org/pdf/Pleistocene-Re-wildingNorthAmerica1.pdf
http://www.advancedconservation.org/library/donlan_etal_2006.pdf

CALL FOR A NEW "LEOPOLD REPORT" that sets a new benchmark for "native": In this email I will be suggesting that the **USF&WS** initiate a new **"Leopold Commission"**, to produce **a benchmark standard of "native habitat" and**

"native range", etc., for implementing the ESA responsibly, species by species, in this time of incontrovertible climate change. I am cc-ing **Estella Leopold**, botanist sister of Starker A. Leopold (both, children of Aldo), as she is still actively producing publications with a deep-time perspective, and she and I have recently been in email communication re a paper she is working on about **a new Tertiary (late Miocene) macrofossil of genus Torreya** in Washington state. Note: url for the **1963 Leopold Report** used ever since by National Park Service as the benchmark for native and natural is: http://en.wikipedia.org/wiki/Leopold_Report
Note that those who wrote/supported the 1973 Endangered Species Act would probably have been working from the Leopold Report default baseline, which reads: "As a primary goal, we would recommend that the biotic associations within each park be maintained, or where necessary recreated, as nearly as possible in the condition that prevailed when the area was first visited by the white man. A national park should represent a vignette of primitive America."

TORREYA MGMT PLAN UNDER REVIEW: The **impetus for this email is that 2 days ago I attended (by phone call-in) a day-long meeting of the official working group organized by USF&WS (Vivian Negron-Ortiz) for the ESA species Torreya taxifolia**. I felt welcomed by Vivian Negron-Ortiz, the FWS staff who led the meeting, and felt well listened to by the other participants (all professionals engaged in research or on the ground conservation of this species, plus several Florida landowners with Torreya onsite who are avocationally engaged in this issue, as I am.) I was shocked, however, that when Vivian popped the question (re: whether the existing mgmt plan should be altered to include assisted migration) and requested each party to make a 5-min or less statement, I was the only one who was not 100% opposed to it. The response was completely bi-polar — with me as the lone voice (sometimes histrionically) blending objective points with emotional appeals ("I love this tree!") or rhetorical outbursts ("Just where do you think this species was when Florida was under water?")

USF&WS emphasizes in the official agenda for the meeting that they need not reach consensus on any of the issues raised, and since this was the last item on the agenda for a very long day, our opening statements were about all that happened. So Vivian got the data that she needed in order to in-house make a decision on that issue. **My hope is that some of you may choose to add your own voices to the mgmt considerations for the official plan update.** Though you do not "know" this particular species in the way that all of us on the call do, you can still speak to the big-picture issue. My sense is that, even if USF&WS does want to open up a bit in the direction of assisted migration, they will have a hard time justifying it if nobody but "eco-vigilante" Connie Barlow recommends it. Hence my plea to you all. Please participate in that management plan, if by nothing more than by writing a one-para cover suggestion and submitting one of your papers as support for whatever you might wish to recommend. I mean, why not just a teensy little official "pilot" project of assisted migration of this plant, in which the biological and sociological responses could all begin to be studied?

STATUS OF THE ASSISTED MIGRATION ISSUE: Last thing I knew via the Google alert I have for "assisted migration" and its cognates is that that **Camille Parmesan** is quoted in the media of planning to go ahead with **a proposal to the**

USF&WS for assisted migration of the endangered species she works with in coastal Calif: checkerspot butterfly of some species. That will be a far easier sell, as (a) she is one of the official researchers already and thus the advocacy for A.M. comes from the inside, and (b) the geographic transit is far less audacious than the only translocation that makes any sense for T. taxifolia (about 400 miles). So maybe the "poster insect" for A.M. will be where the policy shift occurs, rather than with the "poster plant" for A.M.

THE ROLE OF JOURNALISTS: Now the **journalist/writers** I have cc-d here play a very important role. It is they who ramp up lone voices, like mine, into a "public" response that cannot be ignored by government officials who must be responsive to public sentiment as well as professional recommendations when working on conservation plans. I suspect you are all familiar with their key works (all accessible via my links page on my assisted migration webpage), but here is the quick list:

• **Janet Marinelli**, *Audubon Magazine*, May/June 2010 issue, "Guardian Angels" (re: us Torreya Guardians doing our assisted migration of Florida Torreya into NC in July 2008). She told me she will have a longer version of that article (editors had to cut it back a lot) eventually up on her personal website, but here is the url for the Audubon piece:

http://www.audubonmagazine.org/features1005/activism.html

• **Michelle Nijhuis**, *Orion Magazine*, May/June 2008 issue, "Taking Wildness in Hand: Rescuing Species" (Torreya controversy as core example):

http://www.orionmagazine.org/index.php/articles/article/2966/

• **Emma Marris**, "Moving on Assisted Migration" news report, ***Nature***, online 28 August 2008. She has a chapter entirely on A.M. in a forthcoming book on the hot new issues in conservation biology. Here is the Nature report:

http://www.nature.com/climate/2008/0809/full/climate.2008.86.html

• **Jim Robbins**, *Conservation* (popular/professional magazine), Apr-Jun 2009, "Between the Devil and the Deep-Blue Sea." The implications of this particular article are hugely important for Vivian to know about, so I quote by summary of it in full beneath the url:

http://www.conservationmagazine.org/articles/volume-10-number-2/between-the-devil-and-the-deep-blue-sea/all/1/

Arresting article on the extent and speed of the paradigm shift in conservation away from traditional "preservation" modes of intervention in behalf of biodiversity to "adaptationist" modes, including the growing acceptance of "assisted migration" as a management tool to cope with globally and regionally shifting climates. Superb coverage of the wrenching change of heart (and financial focus) for conservation programs rooted in "restoration" to practically address the irreversible shifts in

climate now inarguably underway. **"Managed retreat"** (term used by conservation biologist Reed Noss, who argues for an overhaul of Everglades restoration policy) now joins "assisted migration" in the growing panoply of conservation terms and tools.

Now on to the substance of my proposal:

"The Torreya taxifolia USF&WS Recovery Plan Process: An Opportunity to Shift to a Deep-Time Perspective of Native Habitat"

This is the title of the recommendation/paper I submitted yesterday to Vivian as my contribution to the planning process for the update of the ESA plan for Torreya taxifolia. It is 8-pages and contains most of the arguments, and with citations, that I will make here in brief. Here is the url for you to see or download it, as I uploaded its pdf onto my website already:

http://www.torreyaguardians.org/barlow-2010.pdf

The ABSTRACT includes, in part, these two main (heretical) suggestions:

The conclusion is that the "native range" for this species during this stage of an interglacial (and increasingly so as climate continues to warm) is not to be confused with "historic" native range. **Torreya taxifolia is no more native to the Apalachicola region during this peak stage of an interglacial episode than the Arctic Tern is native to the Arctic in January** (the tern migrates annually from pole to pole). Assisted migration for this endangered conifer tree is an ecologically responsible action, in that the window of opportunity has closed for the species to make that 400 mile migration on its own (that is, with the help of squirrels).
More broadly, **I propose that the USF&WS use this particular endangered species management plan revision as an opportunity to rethink how the word "native" can most responsibly and scientifically be defined and interpreted in accordance with the Endangered Species Act** for compliance with the Act's mandate in this time of rapid climate change, and especially for slow-moving (non-wind-dispersed) species, with long generational times, and whose northward migratory corridors have been prohibitively altered by logging, agriculture, fire, urban development, or the drowning of riverine forest habitats by dams.

Notice that this is a **fundamental paradigm shift** I am advocating. Today I understand my advocacy in this way (it keeps evolving!): I want conservation biologists and ESA researchers and managers to **shift their default position on what is "native range/habitat"**. Right now, in order for the management plan for any species to allow for translocation, we have to advocate it under the banner of "assisted migration" and thus we appear to be in direct (and frightening) abrogation of the core biodiversity dictum to guard against the careless or intentionally benign introduction of any exotic species (which may then go kudzu on the environment). This is as much a P.R. concern as a professional concern, because it has taken decades to educate the public to stop moving alien stuff into

their gardens and ponds. A.M. could seriously harm that conservation gain. So, my new proposal today that I would love to hear your reactions to:

NEW PROPOSAL: Let us stop advocating "assisted migration" from the standard paradigm and begin advocating it from the new, deep-time paradigm. I suggest that a deep-time perspective is a LESS RADICAL way of promoting it! **Only a deep-time perspective allows us to absolutely hold to the "native-range" standard of conservation**, maintaining complete opposition to introduction of exotic species. We simply redefine what is "native" from a broader benchmark that does not blind us to the fact that species did not just miraculously appear in North America in 1491. They have a long, long pre-history that we must take into account now that we have shifted to accommodating future climate change into our conservation planning. Only a knowledge of the past can help us manage for the future. Hence the need for a new Leopold Report, but for this era of rapid climate change and expressly for the management of ESA species by the USF&WS.

For example, the Apalachicola region of the Florida panhandle is, of course, "native range" for Torreya taxifolia — but so are the southern Appalachians. Apalachicola is native range during peak glacials; southern Appalachians is native range during peak interglacials — and what part of the glacial/interglacial cycle are we in now? (Duh!) Maybe Camille's checkerspot speciated post Wisonsinan glaciation (I don't know anything about that insect), but Torreya taxifolia assuredly did not! The geographic distribution of this genus all suggests an instance of the botanical classic **"Arcto-Tertiary Disjunction"** -- which logs the speciation events back to at least the Pliocene from a once more smoothly circumpolar genus distribution. Once one wakes up to this deep-time perspective, there is no going back. It is like choosing the "red pill" in the "Matrix" movie. And then when one starts seeing through that lens, one can no longer tolerate the myopic professionals who just assume that the default position must be 1491 distribution. (Note: in the case of Torreya, its pollen is indistinguishable from Taxodium, Taxus, and Cupressus, so all the great pollen analysis work cannot tell us where it lived during the post-glacial migrations or before. Only macrofossils can. And you know what? Not only are there no macrofossils of Torreya in North Carolina for any time in the Cenozoic (the only macrofossils of genus Torreya in eastern NA are Cretaceous), there are no macrofossils of Torreya in Florida at any time! 1491 must be booted out the door.

Here is a url for Arcto-Tertiary Flora: http://en.wikipedia.org/wiki/Arcto-Tertiary_Geoflora

PUBLISHED PAPERS THAT CAN SUPPORT THIS PARADIGM SHIFT:

1. **"An Assessment of Invasion Risk from Assisted Migration"** by Jillian M. Mueller and Jessica J. Hellmann, *Conservation Biology*, 28 June 2007.
Content: Distinguishes history of inter- v. intra-continental invasive species in assessing the risks. Concludes that fish and crustaceans may pose a high risk. "We conclude that the risk of AM to create novel invasive species is small, but assisted species that do become invasive could have large effects." NOTE TO JESSICA: The old url I had linked to this no longer works. Give me the new url. Also, I sense that this article is essential for convincing conservationists that N-S movements in

eastern North America are not dangerous. In fact, can anybody show me an example of an invasive species in among plants in the eastern USA that is, in fact, owes to translocation N-S in eastern North America? I bet there are no examples.

2. **"Bring Torreya taxifolia Back — Now"** by Connie Barlow and Paul S. Martin, Wild Earth, Fall/Winter 2004/2005 (gray literature)
Content: This is the paper that launched Torreya Guardians, and it proposes a deep-time definition of "native" as the rationale for moving the species. Note: Paul S. Martin is a highly regarded palynologist /paleoecologist, initiator of the "Overkill theory" in 1966, and who readily accepted Hazel Delcourt's overturning of the paradigm he worked within initially: that species migrated northward as intact communities while the interglacial proceeded. url: http://www.torreyaguardians.org/barlow-martin.pdf

3. ***Forests in Peril: Tracking Deciduous Trees from Ice-Age Refuges into the Greenhouse World*** by Hazel Delcourt, 2002 (book).
Content: Hazel is the premier palynologist whose 30 years of work in the eastern USA conclusively overturned the assumption that species repopulated northern regions by migrating northward as intact communities. Species moved independently, opportunistically, and thus they cohabited for centuries/millennia at a time with very strange bedfellows. (Hence the idea that moving Torreya up to N.C. may play out negatively on the resident species is just plain absurd.) In my recommendations to USF&WS I strongly advocate for all members of the recovery team to read this book. In fact, this is the book that launched Torreya Guardians because it launched into the email communications with Hazel, Paul, and others that eventually resulted in Paul's and my paper. I wrote two reviews of this book: One for *Wild Earth* magazine in the same issue in which Paul's and my advocacy piece appeared. url: http://www.torreyaguardians.org/hazel-delcourt.html
The other review is on the book's Amazon.com page: http://www.amazon.com/Forests-Peril-Tracking-Deciduous-Greenhouse/dp/0939923890/ref=sr_1_1?ie=UTF8&s=books&qid=1273752937&sr=1-1

A NOTE TO THE SCIENTISTS: If any of you discover that you have swallowed the red pill and have opened your ecological eyes to a deep-time way of seeing your focal species and the conservation issues at hand, please feel free to just run with this perspective on your own. I am out of the loop in that regard, and I absolutely depend on you professionals to do the work with your colleagues. I just want to take care of my tree, and ultimately I need your help.

Together for Torreya,
Connie Barlow