

From: SMITH,JASON ANDREW jasons@ufl.edu

Subject: Re: ABG Torreya taxifolia policy

Date: February 20, 2018 at 4:11 PM

To: Connie Barlow conniebarlow52@gmail.com, Emily Coffey ecoffey@atlantabg.org

Cc: Jennifer Ceska - State Botanical Gard jceska@uga.edu, Carrie Radcliffe cradcliffe@atlantabg.org, Rebecca Byrd rbyrd@atlantabg.org, Ron Determann rdetermann@atlantabg.org, Negron-Ortiz, Vivian vivian_negronortiz@fws.gov, Nelson, Charles (Dana) -FS dananelson@fs.fed.us

JS

There is no doubt in my mind that the primary driver in the mortality of the trees is the pathogen. It is reasonable to assume that it is easily moved around. Furthermore, my M.S. Student, Aaron Trulock, completed a study that demonstrated that several conifer species native to the southern Appalachians are susceptible (<http://eds.a.ebscohost.com/eds/detail/detail?vid=1&sid=cf6e73e9-f3f7-4642-a162-c10aa1db5243%40sessionmgr4008&bdata=JnNpdGU9ZWRzLWxpdmU%3d#AN=ufl.031447728&db=cat04364a>), with a couple of species being highly susceptible (Fraser fir, hemlock)..... This raise a flag of caution that any planted material there should come from disease-free trees and every effort should go into not introducing it. We did confirm that the trees at Biltmore Estate in Asheville already are infected, for example...

Assisted migration is not a simple strategy for a species that has a healthy base population, but for one that is affected by a pathogen (and one that appears to be of foreign origin) it is far more complicated and risky. As I've always said, there are opportunities for the Guardians to collaborate with us to learn more about how best to cultivate the species etc., but it should be done carefully and in a way that allows for data collections and sharing of information.

Jason

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Jason A. Smith

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From: Connie Barlow <conniebarlow52@gmail.com>

Date: Tuesday, February 20, 2018 at 2:58 PM

To: Emily Coffey <ecoffey@atlantabg.org>

Cc: Jennifer Ceska - State Botanical Gard <jceska@uga.edu>, Carrie Radcliffe <cradcliffe@atlantabg.org>, Rebecca Byrd <rbyrd@atlantabg.org>, Ron Determann <rdetermann@atlantabg.org>, "Negron-Ortiz, Vivian" <vivian_negronortiz@fws.gov>, JASON SMITH <jasons@ufl.edu>

Subject: Re: ABG Torreya taxifolia policy

Dear Dr. Coffey,

Thank you for your quick response to my February 14 query (at bottom), and especially for attaching the May 2016 multi-agency memo, "Torreya caution statement to GPCA". The memo helps me understand why my attempts to communicate with ABG in recent years have gone unanswered. I now see that of course you were led to be "cautious" in communicating with us, as Torreya Guardians was regarded by GPCA institutions as the likely suspect for an apparent theft of seeds from the Smithgall Woods ex situ orchard.

Please know that seeds donated to us within Georgia have entirely come from the Experiment Station in Blairsville (not from Smithgall Woods) on a year-by-year basis always subject to

Station in Blairsville (not from Chiriquian Woods), on a year by year basis, always subject to whether a bona fide institutional project would have a use for the seeds. Allowing Torreya Guardians access was regarded as a step up from just leaving unharvested seeds to the local squirrels, and we are grateful for that. My records show that we gained from the fall 2014 seed production at Blairsville about 4,000 seeds and from the fall 2015 production almost more seeds than we could responsibly distribute: 7,000. In July 2016, an email from the new superintendent at the Blairsville station informed us that our access to seeds had ended, which was not unexpected. I am heartened to know that ex situ safeguarding of this species by GPCA institutions (and affiliated botanical gardens) has finally reached the point that good homes/projects/experiments are now assured for the full production of seeds each year. None will be left behind.

I personally know how difficult it can be to find a sufficient number of good homes when the seeds we are responsible for number in the thousands. It is also a stretch for volunteers to maintain full documentation such that monitoring of results (especially those that can help ascertain habitat preferences, species interactions, and climate tolerances) can follow for many years to come. I know, too, how crucial it is to get seeds into the soil (natural or potted) in a timely fashion, as moisture conditions that are too dry or too wet will spell their demise. GPCA's own research confirms that long-term seed storage is not feasible for this species. Finally, our experience with planting potted seedlings in 2008 at Waynesville NC confirms that seedlings of this taprooted species that are left too long in the pot (hence, root-bound) will require either ideal conditions (planting near a waterfall) or will need to revert to regrowth from basals. Overall, serving well this unusual species requires a great deal of attention and openness to learnings.

We have been grateful not only to private landowners who accept seeds for planting and monitoring but also to local nurseries who are willing to accept seeds from us that we simply cannot find homes for. Thanks to [Shirey et al. 2013](#) "Commercial Trade of Federally Listed Threatened and Endangered Plants in the United States," the terms are very clear by which nurseries can also participate, commercially and openly, in striving for all seeds to find a home, although they cannot document and monitor results in the fullness that our own group strives to achieve. My (albeit limited) understanding is that the nurseries we have donated seeds to have been complying well with the law. As you know, our historic assisted migration plantings of *T. taxifolia* in the area of Waynesville NC in 2008 were only possible because of the mutualistic role for nurseries established by the Endangered Species Act. We purchased potted seedlings from a nursery; their business benefited from that sale. Then we transported and donated the seedlings to private landowners.

Everything we do is by donation of our time and effort. We are dedicated volunteers. The result is that, however the science eventually unfolds in determining whether *T. taxifolia*'s ultimate threat is an exotic pathogen or that it was merely left behind in its peak glacial refuge and needs some human assistance in moving north, my sense is that the ex-situ plantings we ourselves have made possible through the years are (a) clearly not endangering native plants in the recipient ecosystems, (b) will continue to offer observational and possibly empirical insights into the species' preferred habitats and cold-adaptation limits, and (c) extend the documented ex-situ plantings that offer security, genetic preservation, and possibly ideal new habitat in this century of anthropogenic climate warming.

Finally, the Torreya Guardians website is not meant to tie ourselves to the official recovery program (nor imply that official agencies approve of our actions and experiments). Rather, the site is largely a clearinghouse of Torreya information taken from public/government resources and open-source internet articles. We know that this knowledge is appreciated by our volunteer planters, and we hope that someday our documentation of results and learnings will also assist those working to fulfill the promise of the official recovery plan.

For *Torreya* and its future,
Connie Barlow, founder and volunteer with *Torreya* Guardians

On Feb 15, 2018, at 12:21 PM, Emily Coffey <ecoffey@atlantabg.org> wrote:

Dear Connie,

I was forwarded your message by Carrie Radcliffe. I would like to take the opportunity to introduce myself and explain our work with *Torreya*. I am the new Vice President of Conservation and Research at ABG and took over the position in August. My team currently works with USFWS, Florida Park Service, University of Florida, and GPCA to conduct research and provide safeguarding for *Torreya taxifolia*.

We feel we need to clarify our stance and the work related to *Torreya taxifolia*. ABG and all of our GPCA partners work within strict scientifically driven conservation parameters. I am attaching a statement released by GPCA and the Botanical Guardians of Georgia from 2016 on *Torreya* as well as the GPCA *in situ* and *ex situ* policy. These documents summarize the collective viewpoint and policy of the GPCA, which resolutely opposes assisted migration of *Torreya*.

Regarding the paleoecological argument, as a conservation paleontologist by training (I went to University of Oxford, UK where I studied long-term ecology under Professor Kathy Willis), I have found no scientifically sound evidence that can support *Torreya taxifolia* as a northern species during the Pleistocene - no sedimentary evidence has been shown and based on the plants biology/physiology/habitat requirement it is not suited for northern climates including the Appalachia Mountains. Non-sanctioned introduction of this species into a novel ecosystem, outside of its natural range, could have catastrophic consequences and is staunchly opposed by the USFWS.

The argument that outplanting action should be taken prior to rigorous scientific experimentation and conformation is truly shocking and reckless. We do not under any circumstances condone the assisted migration of *Torreya taxifolia* or the outplanting of a Federally listed species on public or private lands without proper permitting and approval from the USFWS. Furthermore if we find evidence of any individual removing propagules or any plant material from local, state, or federal lands in GA or elsewhere, without appropriate state and federal approvals we will involve the authorities. This includes you and your affiliates, additionally, the transportation of seed or seedlings across state lines without proper permissions would also involve the authorities.

GPCA is aware of previous trespassing to illegal harvest seed followed by illegal transporting and selling of *Torreya* across state lines. Further actions of this nature will not be ignored. ABG strongly opposes the sale of Federally Listed Endangered Species - this kind of activity can only hurt the native populations and careful work we and our collaborators are conducting. We encourage that these un-permitted activities cease, as they are harmful and undermine official research and safeguarding efforts. Please review the attached documents for additional information.

We take the conservation and long-term survival of this species very seriously as well as the health of all other conifers in the eastern US. ABG has spent over 17 years actively working on *in situ* and *ex situ* conservation of this species and we work within a stringent scientifically driven methodology taking into account the most recent and up to date research.

We hope you will seriously take into account the current scientific findings for this species and reconsider your position on assisted migration or 'free-planting' of *Torreya taxifolia*. Please feel free to read the most recent article published by Dr. Jason Smith. We all wish to save this important species however we must do so within the appropriate legal parameters and with the full weight of current scientific knowledge.

Sincerely,

Sincerely,
Emily

Emily E.D. Coffey, Ph.D.
Vice President of Conservation and Research

Atlanta Botanical Garden
1345 Piedmont Ave NE
Atlanta, GA 30309

From: Connie Barlow <conniebarlow52@gmail.com>
Subject: prep for ABG at Torreyia Symposium March 1
Date: February 14, 2018 at 9:05:57 AM EST
To: CRadcliffe@AtlantaBG.org

Carrie -

Hello! I am the founder of Torreyia Guardians and also the webmaster. Great to hear you are now fully working with ABG. (My records show that Jack Johnston donated 3 Torreyia seedlings to you in 2015).

Two things:

1. TORREYA SYMPOSIUM - I see that ABG's new director of conservation is on the speaker list. I imagine that you and Ron Determann will be the staff members getting her up to speed on Torreyia. Torreyia Guardians is not on the speaker list, but one of our volunteer planters (Clint Bancroft, TN) will attend — if his mother is not dying at that moment.

Know that I have been updating the top-level pages on our Torreyia Guardians website. Especially, see that I have made major changes in the "Efforts to Save" page, where I try to list/link all the major urls for the official ESA program and plan — and I feature your new Smithgall Woods video: <http://www.torreyaguardsians.org/save.html> Feel free to suggest edits and additions to the ABG part.

I am working behind the scenes contacting in advance some of the symposium speakers (or their staff), trying to ensure that they are aware of some basic information about Torreyia Guardians. I have had several contacts with Jason Smith (and in years past, too). I had a phone conversation with the director of research at American Chestnut Foundation, Jared Westbroeck. I have had several emails with Gregory Payton at Morton Arboretum (I met him in November when I passed thru Chicago and personally donated a Florida Torreyia potted seedling to them).

I plan to contact E. O. Wilson soon via email today and I hope to speak with him via phone. He knew me back in the 90s before I retired from science writing.

I have been thinking a lot about the distinctions in what we can do as volunteers and what the official team may be leaning toward doing re Florida Torreyia. My thoughts keep growing, but these seem to be the main ones I'd like to convey to you, and encourage you to convey to Emily Coffey as you see fit:

- **Paleoecology v. Pathology Paradigm.** Although Florida Torreyia has been recognized officially as a glacial relict ever since its designation as an endangered species in 1984, as I look carefully through the documents, I see no evidence that any document considered

moving it northward until Barlow and Martin 2004 paper in Wild Earth. I, of course, have been advocating and acting on this "paleoecological" perspective ever since. This contrasts with Mark Schwartz's (and now Jason Smith's) focus on "pathology" as the cause to confront. I agree that disease is the proximate cause, but unlike the plant pathologists in charge, I see proximate cause as embedded within the ultimate cause of climate change: peak interglacial as the problem in the 50s and now exacerbated by anthropogenic climate change.

- **Analogue species.** Until evidence can be shown that *Fusarium torreyana* is indeed an exotic (or that, whether exotic or not, it is capable of spreading northward into the old *Torreya* groves at the Biltmore (Asheville) and Harbison House (Highlands) in North Carolina, I suggest that American Chestnut is not the best analogue for judging how to help Florida *Torreya* recover. Rather, any of the Rocky Mountain conifers (pines, spruces) suffering largescale deaths by native bark beetles (carrying native fungi) should be the analogues. There is no doubt among USFS researchers out west that, while native beetles/fungi are the proximate cause it is a changing climate that is the ultimate cause — and they are therefore reconciled to having to replant with seed populations or species drawn substantially from the south.

- **Importance of Natural History Observations:** When I learned that E. O. Wilson will be a speaker (his autobiography is called *Naturalist*), I determined to produce something that I could draw his attention to that would be a convincing demonstration of the value of natural history observations in recovery team deliberations. Already I knew that the video I made of Jack Johnston and me documenting the health and seed shadow of the 90 year old grove in Highlands NC is very helpful in that regard. But I knew the most convincing observations are those that I made in 2005 on site visits to *Torreya californica* in the wild. Therefore I spent the last week, many hours, converting the photos I took in 2005 into a 2-part narrated video. I am going to recommend to Wilson that he watch that video. You can access both parts via the first entry on this page: <http://www.torreyaguardsians.org/comments.html>

2. POSSIBILITY FOR ABG + TORREYA GUARDIANS COLLABORATION. I imagine that one commitment we all share is to not let any precious seeds go to waste. As they cannot be stored long-term, that means they must be grown *ex situ* on an official site or somehow distributed to volunteer planters. For a variety of reasons, I am the most strenuous proponent for "free-planting" *Torreya* seeds directly into regrowth forests, skipping the potted stage. Obviously, that can only happen when seeds are abundant — which they used to be for us until 2016. Do know that we now have a big circuit of volunteers in northward states who would be happy to plant as many seeds as we give them. Obviously, some will be predated by rodents if free-planted, but we have recent evidence that planting seeds 6 inches deep may be even better protection than placing flat rocks over them. My experience at our 2008 Waynesville site, in contrast, is that the trees really struggle if they are rootbound, so I would encourage ABG to never let your seedlings stay too long in the pot before getting them, somehow, into the ground.

- **OPPORTUNITY** - I am staying at a friend's home in **Big Canoe GA** till March 10. This gated community has vast community forest lands, the coolest portions of which contain hemlock being treated against adelgids. These ravines would provide terrific slopes for exploring right here in north Georgia habitat differences based entirely on slope aspect and height above creek depth. The community already controls the deer population, so that would be another reason that *torreya* experiments — free planting seeds or outplanting potted seedlings right into forest plots — here could be ideal, and fully within the bounds of the existing recovery plan. **Would you like to come out here and explore the grounds** — and meet folks who could advocate for community agreement of an ABG experiment here?

Finally, I'll be speaking about Torreya Guardians to a biology class at Georgia College

Finally, I'll be speaking about Torreya Guardians to a biology class at Georgia College tomorrow and then returning to Big Canoe on Friday. Where do you live now?

Connie Barlow 850-420-8002