Work Plan for TorreyaKeepers Project
September 14, 2018

TorreyaKeepers Description: Please see full description at end of this document.

TorreyaKeepers formed as an outgrowth of the Florida Torreya Tree of Life conference in March 2018 to aid in the recovery of *Torreya Taxifolia*, a critically endangered species. Dr. Jason Smith (University of Florida), conference organizer and researcher of Torreya's fungal pathogen, noted that trees appear to be perishing more quickly at present. With no known cure or treatment, time is of the essence to locate remaining trees. Since the March impetus, TorreyaKeepers has been undergoing program development. The group has begun mapping locations and collecting basic data on wild trees to support federal recovery plan tasks and the work of recovery partners. Citizen scientist volunteers have been conducting one survey each week covering approximately 20 acres. At this pace, the group will cover 1,000 acres each year.

TorreyaKeepers conducted an in-depth GIS analysis, with grant support from the Magnolia Chapter FNPS, to identify potential properties harboring Torreyas within the native range. Criteria: parcels within the watershed of the east side of the upper Apalachicola River with slope of 20 degrees or greater and 1 acre in size or larger. Parcels were consolidated by owner into properties. Results: 987 properties covering 29,052 acres. Current volunteer resources of the TorreyaKeepers are not adequate to the challenge in the little time remaining for the trees. Recovery partners have been consulted on the best strategies for property selection to meet data and tissue collection goals. Of utmost importance will be having a dedicated, funded position to continue TorreyaKeepers work and expand its reach.

This proposal is for FNPS to serve as TorreyaKeepers' fiscal sponsor to allow for a compatible non-profit platform for raising funds and making program disbursements.

Goals: The overarching goal of the TorreyaKeepers program is to address recovery plan tasks associated with private lands.

Task 1. Protect existing habitat outside of preserves
- Seek cooperation from landowners to protect trees and allow access for conservation purposes.
- Work with recovery partners to identify habitat protection and management protocols. Inform landowners of these measures and encourage implementation.
- Work with recovery partners to determine land needed to support reintroduced populations and develop a plan for habitat protection including cooperative agreements, easements or land acquisition.

Task 2. Field surveys - search for trees outside of preserves in order to
- Determine the extent of the native range.
- Enhance the genetic diversity of ex-situ populations through wild seeds and cuttings.
- Find disease-resistant trees that can be used in a breeding program.

Is the goal mission related or Strategic Plan related? Yes

Mission relations
1. The Florida Torreya is an iconic Florida native plant ranked by FNAI as G1/S1 and listed as state and federally endangered. The work of TorreyaKeepers will help allow for the perpetuation of Torreya populations into the future.
2. The bluffs and ravines in which the Florida Torreya grows is identified by FNAI as slope forest natural community and ranked G2?/S1. The Florida panhandle has been identified as one of the country's leading biodiversity hotspots, in part due to the species richness of the slope forest community. Protecting Torreya trees involves protecting its habitat and appropriately managing associated uplands. These measures will promote the conservation of this imperiled native plant community.

Objectives: *These are quantifiable as they relate to the goal*
1. Survey 6,000 acres per year with slope greater than 20 degrees. This is 20 percent of the suitable area that has been identified through GIS analysis.
2. Develop best practices document for managing Torreya trees with recovery partners and disseminate to 100 percent of participating landowners.
3. Receive tree data submitted by 2 percent, or 20, of the 987 identified potential landowners through the TreeSnap app.
4. Develop consolidated geospatial database of known Torreya trees.
5. Develop geospatial database of properties that have been surveyed (importance of negative data).

Strategies: *These address how to approach achieving each objective*
1.a. Develop and maintain TorreyaKeepers web site to provide public information on the program and to build volunteer, landowner, and donor support.
1.b. Consult GIS analysis to identify properties for survey that best meet the goals of field surveys.

1.c. Obtain landowner permission for property survey, obtain insurance certificate with landowner as named insured when requested, and provide liability waiver for landowner when requested.

1.d. Develop trained volunteer cadre for field work.

1.e. Pre survey - Coordinate staff and volunteers for surveys. Create GeoPDF map for each site to be surveyed.

1.f. Field survey - Do field briefing. Have participants sign FNPS liability waiver. Conduct search, tag trees found and collect data. Do debrief.

1.g. Post survey - Update best practices for field work. Download data after each workday into GIS, update tree and property tracking geospatial databases.

1.h. Conduct further GIS analysis such as predictive model for finding trees.

2.a. Initiate development of BMPs for Torreya. Identify recovery partners to be involved and host teleconference or in-person meeting for kick off.

2.b. Format final BMPs into brochure, print copies of brochure, and post BMPs on TorreyaKeepers web site.

2.c. Provide BMP brochure and TorreyaKeepers business card to participating landowners.

3.a. Invite landowners to use the TreeSnap app to map their trees via direct mail, media releases, and web site. Provide training at workshops.

3.b. Direct mail 987 target landowners identified through GIS analysis, inviting their participation.

3.c. Issue media releases to publicize TorreyaKeepers and public workshops.

3.d. Hold five public workshops for landowners in various locations within the native range (Veterans Memorial Civic Center in Bristol, North Florida Research and Education Center in Quincy, West Gadsden Historical Society at Greensboro Depot Railroad Museum, Apalachicola Arsenal Museum and Conference Center in Chattahoochee, and Torreya State Park by Rock Bluff in Liberty County). Inform public of TorreyaKeepers, present BMPs, provide TreeSnap training, collect oral histories and photos, and solicit support.

3.e. Collect Torreya Stories, or oral histories, from local people with remembrances from childhood, family traditions or lore. Obtain photos of items made with Torreya. These will be posted to web site. This will help encourage involvement with the program and document important historical information.

4.a. Obtain permit from Florida Department of Environmental Protection (FDEP) Bureau of Natural and Cultural Resources to access to FDEP's full database of Torreya trees.

4.b. Work with FDEP District 1 staff to reformat the FDEP database into a more usable file structure.

4.c. Work with FDEP District 1 staff, Atlanta Botanical Garden, and other recovery partners to develop consolidated geospatial database of wild Torreya trees (and possibly cultivated trees within the native range) that captures records from a variety of datasets.

5.a. Develop master geospatial database of properties within Torreya's potential native range that meet criteria for slopes.

5.b. Maintain survey status fields of property database.

5.c. For large properties, draw polygons representing area surveyed after each work day to keep track of areas worked.

Resources Needed – Assessment of your capacity to achieve the goal

Financial (see budget sheet) – costs for staff, equipment and supplies, marketing/outreach. Most imperative is funding a program manager. The 1986 Recovery Plan tasks associated with private lands have not been accomplished to date due to lack of a local focal organization.

Human (time to give, appropriate skill set/reliability for task assigned) – Program manager has been providing driving leadership, has the skill set needed, and the time to dedicate provided funding becomes available for salary. Other advisors and volunteers have a mix of skills that together helped get the program off the ground. However, they have limited time to volunteer and limited physical capacity for intensive field work. Achieving Objective 1 will depend on funding to hire staff and expanding the volunteer pool.

Technological resources – Computer software being used includes ArcGIS Pro for mapping and geospatial data analysis, Excel for data management, Outlook for contacts and communication, Word for documents, Google Docs for document sharing, Dropbox for map sharing, and WordPress for web site. Mobile apps being used are Avenza Maps for field navigation, TreeSnap for data collection, Bad Elf for improved GPS accuracy. A computer with a quad-core processor would greatly speed up GIS work which uses large LiDAR, imagery files, and parcel files, and second monitor would facilitate multitasking. For field work, rechargeable walkie-talkies are needed for communication and safety, battery stick(s) for recharging mobile devices, and Bluetooth GPS receiver with 1-meter accuracy to improve location data of tree points.

Other? – A 4 wheel drive passenger vehicle will give greater access to rural woodlands to facilitate surveys. Many woodland roads in our search area require vehicles with high clearance and/or 4WD. Some volunteers have graciously used their 4WD vehicles to transport volunteers and gear, but they will not be available every day. It would be ideal to have a program vehicle that can be depended on to store gear and transport people on a daily basis. Costs for acquiring, operating, and maintaining a vehicle are included in the budget.

Timeline

Tasks	Responsibility	Timeframe
1a Develop web site	Marcia Boothe, Leigh Brooks	In process, October 2018
1a Maintain web site	Leigh Brooks	Ongoing
1b Identify properties for survey	Leigh Brooks, with partner input	Ongoing
1c Obtain landowner permission	TorreyaKeepers advisors, friends and neighbors	Ongoing

Tasks	Responsibility	Timeframe
1c Obtain insurance certificate and liability waiver	Leigh Brooks	Ongoing
1d Develop trained volunteer cadre	Leigh Brooks and staff crew leader	Ongoing
1e Pre survey - Coordinate staff and volunteers	Leigh Brooks	Ongoing
1e Pre survey - Create GeoPDF map for each site	Leigh Brooks	Ongoing
1f Field survey - Do field briefing. Have participants sign FNPS liability waiver. Conduct search, tag trees found and collect data. Do debrief.	Leigh Brooks or staff crew leader	Ongoing
1g Post survey - Update best practices for field work.	Leigh Brooks	Ongoing
1g Post survey - Download data, update geospatial databases.	Leigh Brooks	Ongoing
1h Conduct further GIS analysis	Leigh Brooks	Ongoing
2a Initiate development of BMPs. Identify participating partners.	Leigh Brooks	Early November 2018
2a Host teleconference or in-person meeting for BMP kick off.	Leigh Brooks	Mid to late November 2018
2b Format final BMPs into brochure	Possibly partner or TorreyaKeepers volunteer with graphics experience	January - February 2019
2b Print copies of brochure	Partner with funding	February 2019
2b Post final BMPs on TorreyaKeepers web site	Leigh Brooks	February 2019
2c Provide BMP brochure and TorreyaKeepers business card to participating landowners.	TorreyaKeepers advisors	March 2019 and ongoing
3a Invite landowners to use TreeSnap via direct mail, media releases, web site, and workshops.	Leigh Brooks	March and April 2019
3b Direct mail target landowners	TorreyaKeepers advisors	March 2019
3c Issue media releases on public workshops	Leigh Brooks	March 2019
3d Conduct public workshops. Inform public of TorreyaKeepers, present BMPs, provide TreeSnap training, collect oral histories and photos, and solicit support.	Leigh Brooks, other TorreyaKeepers advisors, possibly recovery partners	April 2019
3e Collect Torreya Stories, post to web site	Leigh Brooks	March 2019 and Ongoing
4a Obtain FDEP permit for database access	Leigh Brooks	September 2018
4b Work with FDEP to reformat database	Leigh Brooks, Michael Maples (FDEP)	December 2018 – January 2019

Tasks	Responsibility	Timeframe
4c Develop consolidated Torreya database, with metadata	Leigh Brooks and partners	June 2019
5a Develop master property database, with metadata	Leigh Brooks	August 2018
5b Maintain survey status of property database	Leigh Brooks	Ongoing
5c Draw polygons of areas surveyed	Leigh Brooks	Ongoing

Evaluation Mechanism

Success metrics: *This is the evaluation component, or how you decide if the project/program is succeeding or needs to be adjusted*

1. # of new trees found
2. # of new trees found with seeds
3. # of trees found appearing disease-resistant
4. # of new trees found used for cuttings for ex-situ safeguarding collections of Atlanta Botanical Garden
5. # of acres surveyed
6. # of properties surveyed
7. # of WBIDs (small watersheds) with no existing tree records that have had at least one new survey
8. # of attendees at workshops
9. # of people that download TreeSnap app
10. # of people that record observations in TreeSnap
11. # of volunteers in cadre
12. # of volunteer hours reported
13. # of new FNPS members

Torreya Keepers

About Us

Background

The Florida Torreya (*Torreya Taxifolia*) is one of the rarest and most imperiled trees in the world. It is an ice-age relic found in a 20-mile finely dissected region of the central Florida panhandle. Once common in the mid story, only scattered trees remain in the form of stunted root sprouts. A fungal blight has decimated the trees and will soon wipe them out of existence in the wild. While efforts are underway by scientists across the globe to find ways to fight the pathogen and breed disease resistance, basic research is needed in the tree's home range. The geographic extent of the wild population must be determined, efforts to find naturally occurring disease-free trees must be made, and genetic diversity of the off-site population must be enhanced by seeds and cuttings of newly found trees.

Who We Are

TorreyaKeepers is a locally-based effort of the Florida Native Plant Society Magnolia Chapter, the Friends of Torreya State Park, local landowners, and citizens. Our close proximity to the native range of the Florida Torreya makes us uniquely qualified to coordinate with landowners and conduct field activities.

Mission

The purpose of TorreyaKeepers is to assist in recovery of the Florida Torreya tree in its native habitat by conducting citizen science and outreach to private landowners in support of the federal recovery plan and to provide local support to efforts of recovery partners.

Vision

Our hope is that one day resistant trees can be re-introduced into the native habitat, restoring the uniqueness of the Apalachicola bluffs and ravines and the tree's namesake park, Torreya State Park.

How We Work

TorreyaKeepers conducts field surveys and collects data; performs geospatial mapping, analysis, and database management; reaches out to volunteers and landowners; coordinates with partners and provides partner support; and, develops programming that underpins our work.

Framework

Survey and Data Collection – TorreyaKeepers will survey private property, with landowner permission, for Florida Torreya trees and collect basic data on found trees. Trees will be given a permanent tag provided by Atlanta Botanical Garden following the existing numbering system. The TreeSnap app will be used to record observation data. Effort will be made to obtain high locational accuracy GPS readings via hardware upgrade. Initial surveys will focus on land owned by TorreyaKeepers members and their neighbors while the program is developed and field practices honed. When the program is sufficiently developed, surveys will focus on extending the known range eastward in the watersheds of major streams.

Geospatial Mapping, Analysis, and Database Management - To facilitate surveys, TorreyaKeepers will create maps for navigating in the field using the Avenza Maps app. GIS analysis will be conducted to identify additional landowners with appropriate bluff or ravine habitat and to identify spatial patterns of tree occurrence. LiDAR data will be key to GIS maps and analysis in this region of dissected topography. TorreyaKeepers will consolidate, manage, and protect geospatial data it collects. Data will be reviewed for quality assurance. Data will be shared with partners provided that data privacy can be assured.

Outreach – TorreyaKeepers will reach out to target landowners and the community at large to inform them of the project and garner support and participation. Landowners may collect tree data themselves using the TreeSnap app or other means. TorreyaKeepers will provide advice on management of Torreya trees and habitat to landowners. This will involve development by recovery partners of a protocol for managing the trees.

Partner Support – TorreyaKeepers will assist recovery plan partners with conservation and re-establishment efforts in the field. This includes activities at Torreya State Park as well as private lands. Examples of potential activities are tagging, fencing, cuttings, sampling, and planting.

Program Management – A program manager ensures continuing development of the program and progress toward recovery plan tasks. TorreyaKeepers maintains a list of volunteers for field surveys and other support work and coordinates volunteers as needed. Web site development and maintenance is an important part of the TorreyaKeepers public face as well as a platform for hosting documents. Best practices are continually refined to emphasize safety and efficiency in field work.