Virginia Chapter of The American Chestnut Foundation Strategic Plan 2013-2020

Contents

Mission:

The mission of THE AMERICAN CHESTNUT FOUNDATION (TACF) is to restore the American chestnut tree to our eastern woodlands to benefit our environment, our wildlife, and our society. The American Chestnut Foundation is restoring a species–and in the process, creating a template for restoration of other tree and plant species.

The VIRGINIA CHAPTER OF THE AMERICAN CHESTNUT FOUNDATION (VATACF) was formed in 2006 to implement the mission of TACF in Virginia.

Overview:

This strategy document is intended to identify critical VATACF actions required for chestnut restoration for the timeframe from 2013 to 2020. Key aspects of the current situation include:

- There are three phases of TACF's restoration effort: (1) Breeding (2) Testing and (3) Reintroduction.
- VATACF is in the Breeding Phase (Table: 2 Phases of VATACF Breeding Program). Breeding began in 2006 with controlled pollinations to populate backcross orchards. For each source of resistance assigned to VATACF by TACF, the goal is to establish 20 backcross lines. The second step of breeding is to establish a seed orchard or orchards for each set of 20 backcross lines from a given source of resistance.
- The Testing Phase is conducted with seed produced by seed orchards. During the current planning period, there will be overlap between the breeding and testing phases. Testing provides feedback to select the final set of seed orchard trees with high levels of blight resistance and desired form, reducing the 27,000 candidates to approximately 20 trees in each of nine one acre blocks. Testing during the planning period will use seed from and provide feedback for the seed orchards at TACF's Meadowview Research Farms.
- The Reintroduction Phase will use seed after testing is completed; reintroduction plantings are not anticipated during this planning period, although some test plantings may ultimately become reintroduction plantings.
- Each phase is characterized by distinct types of plantings required and by the resources such as planting sites, labor for maintenance and scientific expertise necessary to accomplish the goals of that phase.
- Backcross, Seed, and Mother Tree Orchards are critical to enabling the eventual production of blight resistant chestnut seeds for Virginia reintroduction plantings.
- Planning for education, orchard maintenance and recruitment of members and volunteers is needed to build and maintain the orchards that will produce seed for reintroduction plantings.
- Because the goal of species restoration will require sustained effort beyond the lives of current members and supporters, ongoing education and engagement of new members and volunteers is constantly needed to sustain VATACF efforts to accomplish VATACF's interim goals and to sustain the long term effort required to accomplish the Mission.

Backcross Breeding

VATACF seeks to drive the restoration of American chestnut trees within the Commonwealth by extending the backcross breeding model of the national organization. This model is a six generation process[1] to produce trees with the blight-resistant characteristics of Asian chestnuts while retaining sufficient American chestnut character to reestablish the chestnut to its former ecological and economic roles.

TACF is currently producing sixth generation backcross seed (Restoration American Chestnut 1.0)from two Asian sources of resistance at the national research facility in Meadowview, Virginia. This seed is being tested to determine suitability for use in reintroduction. VATACF has a unique connection to the Meadowview program. Many of the American chestnuts used for backcrossing and producing Restoration 1.0 seeds in the Meadowview program were located in SW Virginia. Therefore, these seed are adapted to this geographic region of the Commonwealth. Because of this overlap, VATACF will depend on the Meadowview program to provide seed for testing and reintroduction of Restoration Chestnuts in SW Virginia, defined generally as south and west of Roanoke.

VATACF is one of seventeen state chapters, most of which have backcross breeding programs. The function of the VATACF breeding program is to incorporate genetics of surviving Virginia trees into the TACF breeding program to increase regional adaptability and genetic diversity necessary for species reestablishment. TACF coordinates the state chapter breeding programs through its Regional Science Coordinators. Virginia is served by the Mid-Atlantic Regional Science Coordinator. VATACF also provides volunteer ad hoc assistance outside the VA breeding program necessities. Volunteers have assisted with TACF test plantings at Georgia Pacific, with the National Forest plantings, and at the Augusta Nursery. The Southwest Virginia Restoration Branch (see below) has assisted the Meadowview program and helps with various plantings in southwest Virginia.

Backcross Breeding Orchards: Current VATACF backcross orchards contain B3 (backcross three) trees from two sources of resistance, Graves and Nanking. Seed for these orchards is produced by controlled pollination of Virginia American “mother” trees with B2 pollen provided by TACF. These trees are 15/16 American and have, at best, intermediate blight resistance.

Over the next three to seven years VATACF plans to expand the Nanking source of blight resistance to 20 lines[2] and make some marginal additions to the Graves lines. VATACF currently has eight orchards with Graves lines and three with Nanking lines. An additional three to five backcross orchards will be needed to complete our backcrossing goals. Breeding orchards typically contain between 250 and 540 trees and cover 1-2 acres. The level of maintenance skill and labor for backcross orchards is well defined based on past experience; however, the need to provide consistent and sustained care for existing orchards and the planned increase in number of orchards will require the VATACF to improve and grow its orchard maintenance capacity.

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[1] See TACF BACKCROSS BREEDING CHART

VATACF will continue to nurture backcross orchards through at least 2025. When they produce flowers, B3 trees in backcross orchards will be open-pollinated with other B3 trees to produce B3F2 intercross seed that is planted in a seed orchard.

Mother Tree Orchards: These are plantings of American chestnut seed from known trees to preserve native germplasm and to provide locations for potential future controlled pollination using new sources of resistance or to enhance the American character of Restoration 1.0 seed if testing indicates that additional crosses are necessary.

Seed Orchards: A seed orchard produces sixth generation B3F3 seed, also known as Restoration 1.0 seed. Minimum size of a seed orchard is one acre, the space required for one block. Each block of the seed orchard contains 20 plots, each one representing a different backcross line from Virginia. Within each plot, 150 trees are planted on tight spacing. With 20 of these plots, at least 3,000 nuts are planted in a block over the duration of the planting phase of the orchard. Each source of resistance requires nine replications or blocks, and thus a total of nine acres of seed orchard with 27,000 trees per source of resistance.

Once all the trees in a given plot are about five years old, they are inoculated with the blight fungus. Trees with highest levels of blight resistance and best form in each plot will be selected for breeding within the seed orchard, all others will be removed. The selection process also depends on the results from the progeny testing phase described below. Of the 3,000 nuts planted in a block, approximately 20 trees will remain after inoculation with the blight fungus and selection. Since there are nine replications, a total of roughly 180 seed producing trees will be selected from each source of resistance. This process takes at least 10 years and, once completed, the orchards will produce seed for reintroduction with a useful life of 30 to 50 years.

VATACF plans to establish its first seed orchards in approximately three to five years.

Testing

Initial seed harvested from seed orchards is used for test plantings to evaluate blight resistance, American character, and field performance to select the best trees to produce seed for reintroduction phase. Test planting of VATACF seed is expected in about 2025. Three test plantings of seed produced at the TACF Research Farms have been carried out by TACF in Virginia with assistance from Virginia volunteers. These progeny tests will guide further selections to improve seed from Legacy Trees at Meadowview.[2] Virginia expects to continue to provide volunteers and other resources for test plantings. The scope and extent of future test plantings in Virginia during the planning period will be determined at the national level in consultation with VATACF. Some existing plantings are much larger than backcross orchards and in relatively inaccessible locations with rough terrain, such as mine land reclamation sites and recently harvested areas of National Forests.

[2] See Testing Protocol

Preparation for Reintroduction

Although reintroduction plantings are not anticipated during the planning period, VATACF plans to improve its organizational capacity to anticipate those future plantings, and in particular, will work with TACF to develop partnerships with other organizations that may play roles in the reintroduction process. Because of the advanced status of Meadowview seed orchards, VATACF may participate in earlier reintroduction plantings in southwest Virginia.

Reintroduction Regions

The historical range of American chestnut in Virginia was the western region of the Commonwealth including the Central Appalachian, Southern Blue Ridge, and western edge of the Piedmont ecoregions, basically west of a line from Alexandria southwest to Danville. Based on USDA hardiness zones, the climate ranges from Zone 6a in the higher elevations to Zone 7a in the western piedmont. The soils are primarily derived from limestone, sandstone, and shale parent material. Therefore, growing conditions are relatively similar throughout the historical range. To accomplish the VATACF breeding program goal to develop trees best adapted to local geographic conditions, groupings of seed orchards will be established from the NE to SW. However, a practical aspect of maintaining seed orchards is a source of volunteers and commuting to orchards. In general, the concentration of seed orchards will align with Marshall, Charlottesville, Blacksburg/Roanoke, and Meadowview (TACF Research Farms). Each grouping of seed orchards can provide seed for reintroduction sites within a 50-60 mile radius.

Restoration Branches

The concept of local Restoration Branches within state chapters was initiated by TACF to help organize volunteers to assist with the restoration process. TACF established goals for Branches as described on the TACF Web site[3] which can be modified depending on state objectives:

The Southwest Virginia Restoration Branch was formed in 2009 to both assist VATACF with restoration activities in SW Virginia and to support the program at Meadowview. The Branch has organized four Restoration Celebrations, held two public talks, organized an A.T. MEGA-Transect Chestnut Project training, manned educational booths at numerous events, provided educational events for local schools, helped with four ceremonial plantings, helped with test plantings on four reclaimed strip mines in Virginia, and assembles and distributes American Chestnut Learning Boxes from the Meadowview facility. Additional Branches are planned.

Status Update Summary – 2006 VATACF Strategic Plan

Initial Goals of VATACF

1. Develop blight-resistant American chestnuts that are adapted to the geographical regions of Virginia

[3] Restoration Branch Brochure

2. Educate the public about the values of American chestnut and efforts to develop blight-resistance.

3. Prepare for reintroduction of American chestnut trees in Virginia.

Summary of Accomplishments to Date

Strategies for goal 1*:* (See also Breeding Program Overview)

a. Establish new orchards:

Target: *Establish 2 orchards in 2008 and one per year thereafter for a total of 10.*
Accomplished: *Completed 8 breeding orchards; established 2 others that will be completed as seed becomes available AND established a pure American (Mother Tree) orchard*

b. Increase the number of genetic lines.

Target: *Establish 20 unique lines, four each year.*
Accomplished: *Established 21 lines with Graves source of resistance and started 7 lines of Nanking source of resistance.*

c. Initiate testing.

Target: *First inoculations and selections anticipated in 2011-12.*
Accomplished: *First orchard will be inoculated in 2014.*

d. Locate mother trees.

Target: *Locate 12 additional VA American chestnut trees per year.*
Accomplished: *Data from 333 wild American chestnut trees has been entered in the trees database, but number suitable for breeding has fallen short of target. American mother tree orchard established to address shortage of wild Mother trees.*
The A.T. MEGA Transect efforts in Virginia have been the strongest out of any state, and in 2012 alone over 600 trees were counted along the Appalachian Trail in VA (16 were considered 'large trees').The majority of these trees were not appropriate for breeding due to their size and/or location.
In 2012, VATACF obtained permits from Blue Ridge Parkway and Shenandoah National Parks to collect pollen from American chestnut trees within their boundaries. This will increase the availability of different sources of chestnut genetics for the future.

Strategies for goal 2:

a. Lectures and Presentations

Target: *15 Lectures or workshops annually. Update exhibit materials.*
Accomplished: *More than 20 presentations each year 2010-2012. Actual numbers and earlier year numbers not known.*

b. *Conduct public Events*

   i. ***Target:*** *Ceremonial tree plantings at Monticello and Montpelier. Identify additional locations.*
   Accomplished: *27 ceremonial trees planted in VA and DC, including Monticello. Montpelier arrangements pending*

   ii. ***Target:*** *Conduct annual membership meeting. Hold public seminars twice per year. Co-sponsor chestnut festivals as opportunities arise.*
   Accomplished: *Membership meetings with educational presentations held at least annually and twice in most years. Meetings held in the following VA communities: Warrenton, Charlottesville, Roanoke, Fairfax, Staunton, Warm Springs, Richmond & Blacksburg.*

c. *Publications*

   i. ***Target:*** *Publish 2 articles yearly in regional publications.*
   Accomplished*: Work of VATACF has been widely publicized. THE BUR has been published twice yearly and several VA and regional publications have published articles based on interviews with VATACF volunteers.*

   ii. *No Target:*
   Accomplished: *web site and listserve established for outreach and communication with members: www.vachestnut.org is the new web site. Listserve at http://mrsgale.fates.org/mailman/listinfo/vatacf*

d. *Promotion in elementary schools*

   i. ***Target:*** *Promote Charlie Chestnut to VA school teachers*
   Accomplished*: Awareness of additional educational resources has replaced emphasis on Charlie Chestnut with more expanded approach to educator outreach*

   ii. ***Target:*** *None established*

   Accomplished: *VATACF volunteers have worked with teachers and engaged students in hands on chestnut restoration activities, including a Fairfax County middle school science team, at least 3 private schools and at least three public school teachers in Fauquier County. VATACF volunteers have also played key roles in development and distribution of The American*

Chestnut Learning Box at the national level, with assembly and shipment now taken on by volunteers of the Southwest VA Restoration Branch in Meadowview. These volunteers also organized a teacher in-service training for local teachers.

e. *Increase membership 20%*

   i. ***Target:*** *558 + 20% = 669*
   Accomplished: *639 members (15% increase)*

   ii. *No Target set for volunteer participation.*
   Accomplished: *In 2012 thirty-three volunteers documented a total of 3111 hours. Not all volunteer hours were documented.*

f. *Open a chapter office*

   i. ***Target:*** *Open office staffed by up to 3 people (part-time biologist, public relations director and administrative assistant)*
   Accomplished: *Marshall office opened December 2006 with part-time administrative assistant. Part-time biologist office established in Charlottesville in 2010.*

g. *Internships (addition)*

   No Target set

   Accomplished: *Eight student interns have assisted with VATACF work while advancing their learning goals*

h. *Gala/ Restoration Branch Events (addition)*

   No Target set, but Restoration Branch initiative from national staff
   Accomplished: *Three successful fundraiser events in northern VA, three Restoration Branch events*

Strategy for goal 3:

Experiment with different methods of planting and nurturing to determine which are the most cost-effective.

No Target specified.
Accomplished: *Bull Run Mountain Research Project, SNP Fire Study and VA volunteer participation in AT MEGA-Transect Chestnut Project*

Context of TACF Restoration Plan

TACF is a partnership of professional scientists and committed volunteers, inspired by the insight that a backcross breeding strategy might be a way to develop blight-resistant American chestnut trees. Backcross breeding has proven effective in annual crops as a way to transfer genetic resistance to disease from one population to another, while retaining the desirable traits of the target population. The American chestnut population was virtually wiped out during the 20th Century by a blight fungus of Asian origin to which the Asian chestnut species had developed genetic resistance.

The backcross breeding program is a six generation process, and after twenty-five years of effort primarily focused on that process, TACF began to produce sixth generation backcross seed (Restoration Chestnut 1.0) in 2008 that could be tested for suitability for use in re-introduction efforts. In addition, efforts outside the backcross breeding program, including genetic technologies and hypovirulence work, were perceived as increasingly significant to the future success of the restoration process. Scientists and volunteers began to envision how future aspects of restoring the American chestnut to the Appalachian forest might happen.

The current TACF Restoration Plan[4] is the first iteration of a document that is intended to the chart the course for TACF in carrying out a process that will require sustained effort extending beyond the lifetimes of those currently engaged in restoration work. The TACF Restoration Plan begins to look ahead to future times when greater availability of seed and new challenges and opportunities, both foreseen and unforeseeable, will require the organization to follow a process of adaptive management in order to maintain an effective restoration effort.

Impact of the Restoration Plan on Work of the Virginia Chapter

The TACF Restoration Plan reflects changing realities at the national level and articulates goals and action items for state chapters that may shape strategies for VATACF as we look ahead to the next 6 – 10 years. Availability of Restoration 1.0 seed has created opportunities for large plantings with national level partners like the U.S. Forest Service and the Appalachian Regional Restoration Initiative (mine land reclamation sites). These large plantings, coordinated by national staff, and beyond previous understandings of state chapter responsibilities, raise the need for better organizational communication and coordination between TACF and its state chapter network.

Corresponding growth in program and partnership opportunities at the state level require chapter organizations to increase organizational capacity or face burnout of the relatively small number of active volunteers.

[4] TACF Restoration Plan

The Planning Process

VATACF extended invitations to members, volunteers and partners to participate in a planning process on May 9, 2013 in Charlottesville. Six key questions were posed to address issues considered important to strengthening VATACF. The 39 participants each selected two of the questions for in depth discussion, participated in a general session and identified priorities with dot "votes". Follow-up conference call discussions of priority items fleshed out key ideas.

The following mutually supporting areas were identified to accomplish the VATACF Mission: (1) orchard maintenance, (2) education and outreach (3) membership engagement and volunteer motivation (4) science resources (5) material and financial resources (6) communication and coordination.

Focal Areas and Strategies for 2013-2020

Each of the key questions developed to structure the planning process reflects an area of need to address challenges that have been encountered or are anticipated in order to effectuate the mission of VATACF.

Orchard Maintenance: How can we organize to maintain existing and new orchards

Needs:

Maintenance and monitoring of existing orchards has been uneven. Burn-out is a concern for active volunteers who have responded ad hoc to adverse orchard situations. Orchard owners and volunteers have expressed a need for additional guidance and improved communication. Existing orchard maintenance issues will increase with additional planned orchards. Success requires sustaining consistent orchard care for the life of an orchard, which may be 10 or more years for backcross orchards, and far longer for seed orchards.

Strategies:

- Develop organizational model to monitor and manage orchards that is flexible and scalable
    - Define roles and responsibilities
    - Establish communication paths
    - Define accountability for roles and training
- Create an orchard maintenance handbook to enable orchard owners, orchard stewards, and volunteers to have a clear understanding of when and how to accomplish the necessary tasks to insure orchard health and production
    - Include a checklist and calendar to assist orchard stewards in identifying maintenance and monitoring tasks
    - Include modules for all phases of the breeding program, including pollination, inoculation, and rogueing
- Identify a steward/manager for each orchard with the necessary resources and skills
    - Provide handbook and specialized training

    - Provide temporary assistance from interns and other highly skilled people
    - Consider developing highly trained teams for pollinations and critical maintenance projects at multiple orchards.
- Develop training resources as identified above
    - Design modules to have broad scope and use existing resources where available
    - Include models covering the need for consistency, precision, and controls in orchard data collection
    - Incorporate multiple media via links into written material, particularly video, where available to provide self-service learning
    - Post documents on the web and provided hardcopy to key volunteers
    - Use web resources for orchards stewards (listserve, social media, web resources) as needed
- Develop policies to deal with possible change in orchard ownership due to illness, death, or land sale over the anticipate 30-50 year orchard span
    - Define contract or deed mechanism to have perpetual access (easement) over the life span of each type of orchard
    - Coordinate VATACF policies with TACF national policies
    - Consider policies that promote orchard owner incentives such as research grants, tax and government incentives
    - Monitor orchards to identify ownership issues as they may develop

Education and Outreach: How can we energize future generations to continue the work we have begun?

Needs:

The generations of Americans who knew the American chestnut as a timber tree and keystone of the Appalachian forest are dwindling, and their stories will be lost if not re-told. Public support for restoration efforts will decline as awareness of the potential benefit of American chestnut restoration is lost. Education by telling the story of the American chestnut has been the primary means for recruiting both volunteers and donors. Most volunteers and donors are retirement age, which limits the potential for continuing support over the long time-frame necessary to accomplish the VATACF mission. Resources currently available for education and outreach are limited. Efforts to promote American chestnut in school curricula have encountered systemic obstacles.

Strategies:

- Research existing videos and other educational resources about the American chestnut
    - Develop educational materials to offer to PBS for use in programs such as “Virginia Currents” or to NPR.
    - Use interns to develop public relations resources such as video documentaries
- Expand the VATACF’s cadre of speakers to give presentations to a variety of types of groups

- Partner with Master Naturalists and similar groups to provide training and resources for such groups to give talks on American chestnut and restoration.
    - Promote use of TACF American Chestnut Learning Box
    - Create lending libraries with DVDs, the Learning Box and other presentation resources that could be borrowed by presenters or for use in event displays.
    - Incorporate mandated age-appropriate standards of learning for public schools in areas such as history, science and technology
- Develop chestnut growing kits for both schools and the public
    - Kits for use in schools or as gifts would include seed and other materials for planting with instructions
    - Consider offering pure American seed with the kits until advanced hybrid seed becomes more plentiful
    - Plan for timing if used as a classroom projects because seed harvested in fall should be stratified in cold storage and planting in early spring is a possibility, but survival on transfer to an outdoor location is problematic.

Member Recruitment and Volunteer Engagement and Motivation: How can we prepare to have volunteers when and where they are needed, and make theirs a rewarding experience?

Member Recruitment Needs:

Successful orchard maintenance requires local resources. Anticipated resource needs for restoration may be beyond the potential capacity of VATACF. Mission to support TACF requires adaptation to TACF initiatives. Factors influencing recruitment and retention of members are unknown.

Stragegies:

- Establish up to six new Restoration Branches in areas targeted to meet breeding program or other strategic needs
    - Identify one or more core volunteers in each target area who are willing to help establish a Restoration Branch, especially to organize an initial event.
    - Promote using personal contacts to get participation
    - Utilize resources, guidelines, and mentors provided by TACF and VATACF
- Identify and develop potential partnerships with groups with similar interests as VATACF
    - Designate a person with primary responsibility for managing contacts with each potential partner, coordinate information flow where there are multiple partnership relationships or contacts, and coordinate sharing of responsibilities with TACF staff.
- Participate in the new TACF membership initiative and coordinate with national plans for membership contacts and member data.
- Survey members to identify motivation for being members or reasons for dropouts.
    - Gathering this information using phone, VATACF Burr newsletter, or online surveys.
    - Use this information to better engage and maintain members.

Volunteer Engagement and Motivation Needs:

Matching volunteers with tasks requires skill and effort, and will become more complex with additional planned plantings. Potential volunteers may not know how they can help. Existing volunteers may not know of needs. Many volunteer tasks require training and preparation. Volunteers may lack awareness of how their work contributes to accomplishing the VATACF mission. Volunteers need to know that their work is appreciated by others.

Strategies:

- Adopt proven best practices for working with volunteers.
    - Evaluate and adopt best available toolkits and software tools for use in communicating VATACF needs, defining volunteer roles and tasks, providing training to volunteers, scheduling volunteer work, tracking volunteer hours and contact data, minimizing risks to volunteers, and providing appropriate volunteer recognition.
    - Inform volunteers of both successes and threats at the specific locations where they contribute their time
    - Provide control to volunteers over the type and frequency of communications received from VATACF
    - To the extent feasible, offer opportunities for hands on experiences for a wide range of skill levels to encourage engagement in the work of the VATACF.
- Establish a process for annual awards to recognize volunteers and partners based on their hours and/or years of service.
    - Designate responsibility for determining award criteria, establishing a system to document volunteer service, planning award events, publicizing awards and selecting appropriate award tokens.
    - Coordinating the award process statewide with Restoration Branches and at national level with partner organizations.

Science Resources: How can we target Virginia science resources for chestnut restoration?

Needs:

VATACF depends on labor of “citizen scientists”. Successful citizen science requires professional support, trained volunteers, and research projects with apparent potential significance to sustain intrinsic motivation of both lay and scientist volunteers.

Strategies:

- Promote citizen science as a way to engage, mobilize and motivate volunteers, engage students in hands on science such as data collection, providing data from previous year so that students can see their activity as part of a scientific process.
- Develop procedure for defining roles, providing training and matching volunteers with tasks, ideally managed online.

- Research the unique community of organisms connected to American chestnut in both orchard and forest settings, observing changes in lichen, fungi, insects, birds etc. to understand potential impact on forest of reintroduction/ecosystem restoration. Interface with other groups as a result of chestnut connection to other organisms.
    - Address science issues as they arise. For example: identifying insects caught in Asian ambrosia beetle traps to control orchard damage or identifying insects on flowers when bagging and pollinating.
    - Insure that data collections include control measurements. 40+ year old hybrid plantings at Lesesne State Forest and surrounding "native forest" may be an opportune location
- Bring biology and botany into STEM (Science, Technology, Engineering and Mathematics) Education Coalition funding through a systems approach and integration of STEM techniques/technologies
- Create a list of VA professionals in fields related to American chestnut history and restoration to promote collaboration and to develop cross-disciplinary connections for silviculture and ecosystem research.
- Adapt FOREST Training to engage non-academic professionals as well as potential volunteers, targeting it to specific audiences and VATACF needs and looking at ways to make it more field based

Resources: How Can we inspire others to contribute resources needed to carry out our work?

Needs:

Increased resources will be required to support a growing volunteer program and meet increasing program costs. Memberships provide minimal support. Most donations are small. Relatively few supporters have contributed a majority of funding. Fundraising events consume substantial volunteer and staff resources. Donors frequently prefer to support specific programs rather than administrative needs. Volunteers often lack inclination and/or skills for soliciting donations.

Strategies:

- Document needs for additional administrative and science support to carry out planned program
- Improve communication of needs to community of supporters
- Solicit ideas from major supporters
- Strengthen donor stewardship process in coordination with TACF
- Tap cost-free resources.
    - Partner with active volunteer groups, city/town arborists, retirement communities, Master Naturalists, Master Gardeners
    - Explore corporate sponsorships, including corporate sponsored seed orchards
    - Tap into K-12 science resources – science camps in summertime
    - Partner with Higher Ed Centers

    - Connect with nature camps and other informal education programs
- Entrepreneurial approaches.
    - Sell wood or mulch that is a byproduct of orchards
    - Market chestnut beer
    - Make trees more available, prioritize, leverage, and incentivize
    - Make backcross material more public, sooner. This may involve moving away from the germplasm agreement.
        - Prioritize, leverage, & incentivize seed distribution.
        - At the point of mass production, revisit mission and non-profit vs. profit model
        - Certify the product
- Improve interaction with target market. Increasing membership interaction to better leverage support
    - Tap into existing lines of communication to our target market
    - Increase/collect understanding of membership motivations/incentives
- Increase exposure and spread vision.
    - Social media, including crowd sourcing (ex. kick-starter)
    - Outreach events at orchards
    - Outreach to schools to build future support.
- Use various fundraising approaches
    - Private donors – engage them on the ground, show our work and get them excited
    - Small events – smaller, local scale fundraisers (dinner parties – neighborhood level

Communication: How can we communicate effectively to coordinate diverse efforts within VATACF and with national TACF staff?

Needs:

VATACF work is carried out by volunteers in geographically diverse areas and with diverse areas of focus and priority. Coordination and communication is needed to avoid duplication of effort, insure that all essential tasks are covered, standardize and monitor quality of scientific work and maintain credibility with volunteers, partner organizations and potential supporters.

Strategies:

- Develop a communication infrastructure with structured and defined roles to clarify lines of communication and adapt to the increased complexity of communication
    - Include responsibility for regular connections between the VATACF and Restoration Branches
    - Include a process to meet communication needs of volunteers
    - Develop a volunteer database that enables volunteers to update their own information and control the number and types of communication they receive. This system should track skills, locations of availability and interests of active volunteers, and should provide a system for tracking volunteer hours and work history.

- Develop a communication toolbox
    - Include access to online webinars and frequently asked questions and a contact point for referrals to subject matter experts and designated press contacts
    - Include a process to update the Google calendar to include input from all volunteers involved in event planning
    - Utilize Website resources for knowledge and document management and sharing, publications, press releases and surveys
    - Utilize social media, growing the current use through the link with TACF as opportunities arise
- See Action Plan for Communications Infrastructure

Assumptions

This document is based on the assumption that carrying out the backcross breeding program in Virginia will continue to be the primary task assigned to VATACF by TACF, and that much of the labor required for this task will be provided by volunteers. Based on experience of the first seven years of this effort, it is assumed that additional organizational capacity will be required to sustain current levels of activity and to carry out additional work required by the next steps of the TACF breeding program in Virginia. It is assumed that VATACF will continue to be a functionally separate entity from TACF and that improved coordination of efforts with TACF will be required.

Risk management

Each stage of orchard development is likely to have breakdowns. A list developed in strategy discussions is below with proposed approach to minimize the impact to long-term goals of chestnut restoration in Virginia.

Table 1 Risk Management Mitigation

Potential Risk	Risk mitigation approach
Unknown pest or pathogen destroys individual trees or impacts entire orchards	• Start with enough individual trees to accommodate significant and unforeseen losses, • Consider options that gain geographic diversity for initial production and final seed orchards, • Maintain a high number of genetic lines to provide genetic diversity.
Testing of Restoration 1.0 seed indicates need for additional breeding steps to produce desired seed quality	• Establish pure American mother tree orchards from known trees to streamline future breeding efforts requiring American parentage
Current mature forest ecosystem may not give a toe-hold to introduced chestnuts – acts as a barrier to restoration of chestnuts in stands	• Develop and test multiple approaches to introducing trees into areas with established forests,

sufficient to enable spreading	• Look for reforestation opportunities other than into mature forests (e.g. coal land restoration).
Working with orchard steward over the lifetime of the orchard, may encounter health issues, exceed the lifetimes or ownership changes of the current owners, causing succession problems	• Need to understand life span of each type of orchard and define contract or deed mechanism to have perpetual access (easement) for orchards, • Need to develop monitoring approaches that identify ownership issues with existing orchards.
Orchard owners, local communities and chapter members exert insufficient leadership and involvement/ engagement to allow expansion and maintenance of orchards needed to restore chestnuts in Virginia	• Establish on-going education and membership development as a feeder system of volunteers, • Track volunteer involvement in order to understand what is working and not working, and use systematic communication approach to keep volunteers engaged, • Continue to drive public/ private partnerships.

TABLE OF GOALS AND OUTCOME MEASURES TO BE INSERTED HERE?

TACF BACKCROSS BREEDING CHART

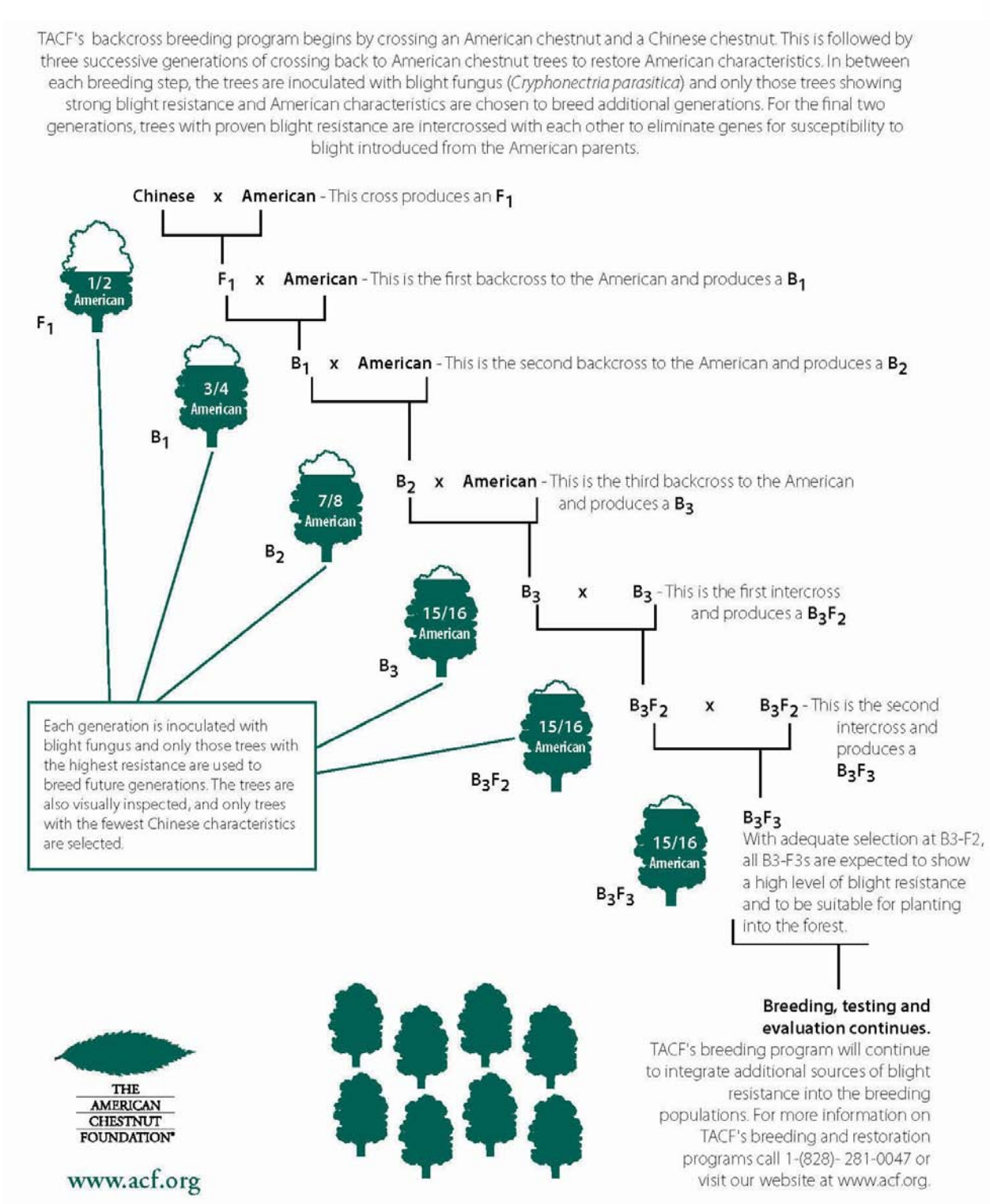


Table: 2 Phases of VATACF Breeding Program

Phase Type of Orchards Source of Resistance	Start[i]	Completion[ii]	# of orchards established /required	Type of seed planted[iii]	# of unique genetic lines	Acres secured/ required	# of trees planted /currently alive[iv]	Start of selection[v]	# of trees selected/ minimum goal	Selected level of resistance for trees in orchard	Seed produced from selections
1. Backcross Breeding											
a. Backcross orchards											
a. Graves	2006	2030	7/7	B3 or B4	25/20[vi]	10/10	2000	2014	0/20[vii]	intermediate	B3F2 (1st Intercross)
b. Nanking	2012	3036	4/7	B3 or B4	13/20	4/10	560	2020	NA	intermediate	B3F2 (1st Intercross)
c. TBD	TBD		0/7	B3 or B4[viii]	0/20	0/20	20000		NA	intermediate	B3F2 (1st Intercross)
b. Mother tree orchards	2012	TBD	1/?	Am	NA	2	200		NA	low or none	TBD
c. Seed orchards											
a. Graves	2016	Indefinite	1-9	B3F2	20	9	27,000	2023?	180	high[ix]	Restoration 1.0
b. Nanking	2026	Indefinite	1-9	B3F2	20	9	27,000	2029?	180	high	Restoration 1.0
c. TBD	TBD	Indefinite	1-9	B3F2	20	9	27,000	?	180	high	Restoration 1.0
2. Test plantings											
a) Progeny from Meadowview planted in VA	2011	Dependent upon test results	5/?	Restoration 1.0	40	7/?	2968/		NA	high	
b) VA Chapter program seed	2025	Dependent upon test results	TBD	VA Restoration 1.?						high	
3. Reintroduction plantings	TBD[x]	Dependent upon test results									

[i] VA Chapter breeding program with newly developed sources of resistance may start at an earlier stage in the six generation backcross process.

[ii] Estimated end of program use of orchard and Chapter need for maintenance

[iii] B4 seed has an additional generation of American parentage and is used interchangeably with B3

[iv] Target, actual, currently surviving

[v] Trees are inoculated with known strains of blight fungus to test for blight resistance and are selected for blight resistance and American character

[vi] Although there are at least 25 distinct genetic lines currently in Graves backcross orchards, some contain too few trees to function as a separate line. Collectively, however, the trees currently growing will be sufficient to advance to the seed orchard stage if survival to sexual maturity is adequate.

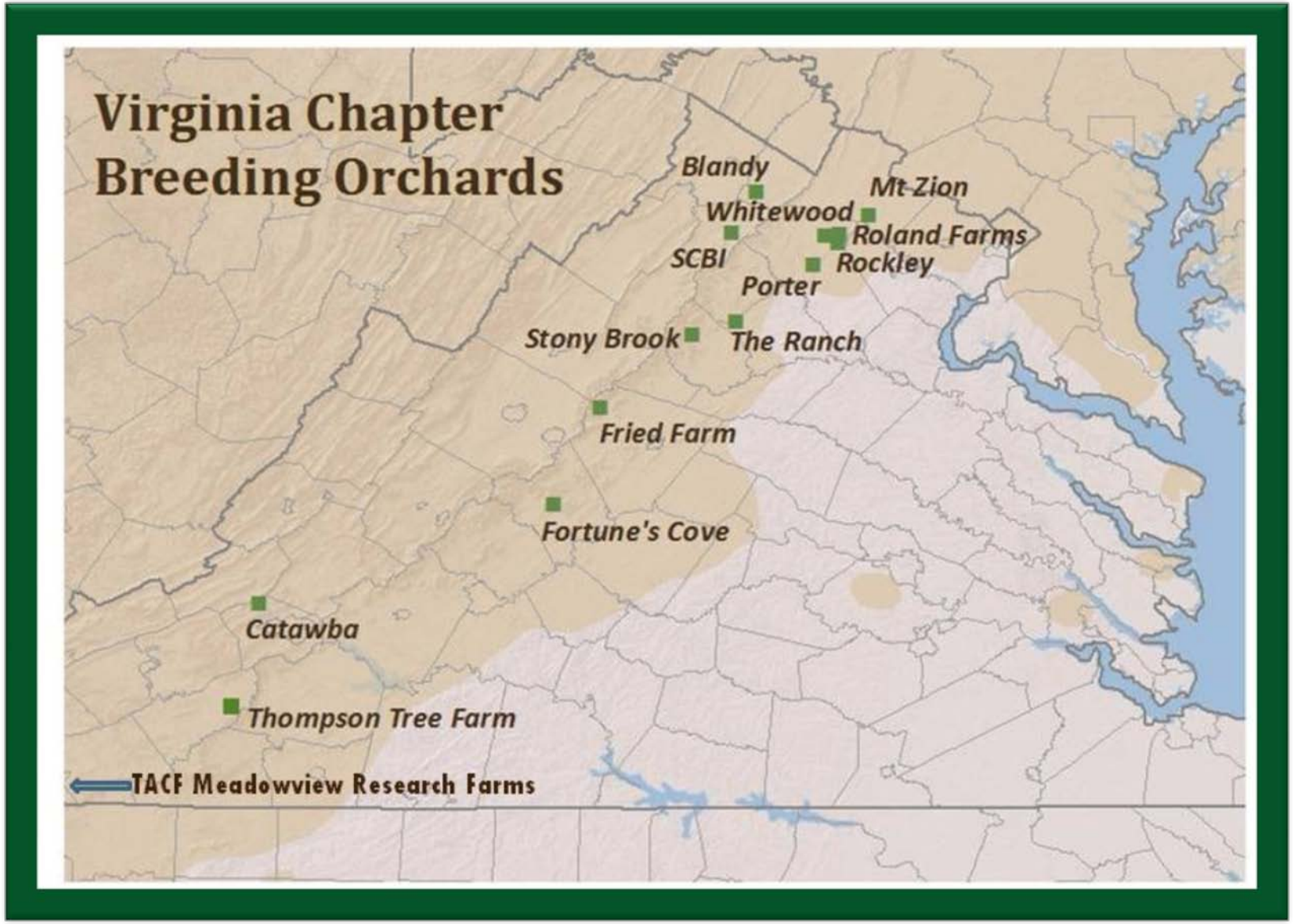
[vii] 20 is min more from initial selections

[viii] VA Chapter breeding program with newly developed sources of resistance may start at an earlier stage in the six generation backcross process.

[ix] High resistance means resistance equal to the original source of resistance (e.g. Chinese parent in first cross of six generation process)

[x] Depends on results of testing to determine suitability of seed for reintroduction/release to public.

VIRGINIA PLANTING LOCATIONS


Virginia Chapter
Breeding Orchards
Blandy
Mt Zion
Whitewood
Roland Farms
SCBI
Rockley
Porter
Stony Brook
The Ranch
Fried Farm
Fortune's Cove
Catawba
Thompson Tree Farm
TACF Meadowview Research Farms

Action Plan for Communications Infrastructure

Action Item	Description	Notes	Action Steps	Target Date
Assess VATACF communications	Conduct a thorough assessment of current and desired communications for VATACF		1. Conduct assessment 2. Get Master Naturalists study results from Alycia Crall (head of state program)	1. Nov 2013 2. Nov 2013
Establish communications hierarchy	☐ Need structured roles--state to regions to branches, etc. ☐ Need chain of command ☐ Similar structure needed at branch level ☐ Orchard reports should be sent by regions to Marshall	☐ Goals need to be defined ☐ Roles need to be defined ☐ Training and supporting materials needed for each role	1. Recruit a communications coordinator 2. Clarify goals 3. Define communications roles 4. Develop training and supporting materials for each role	1. Dec. 2013 2. March 2014 3. June 2014 4. Sep. 2014
Create contact lists	☐ Contact information ☐ Media contacts should be to VATACF Office in Marshall ☐ List people to contact on specific issues	☐ Press contacts ☐ Presenters ☐ Scientists ☐ Others?	1. Create speakers list 2. Create press contacts list 3. Create scientific contacts list	1. Dec 2013 2. Dec 2013 3. Dec 2013
Enhance use of Google calendar	☐ Allow BOD and regional reps to access calendar for posting ☐ Tie calendar to map so viewers can see what's happening in their region	☐ Need to ID who should have access ☐ Each posting must have a contact person with their role identified	1. Create list of persons to post to calendar 2. Grant access to calendar 3. Establish mapping link capability	1. Dec 2013 2. Dec 2013 3. March 2014

Produce press releases	Announce VATACF and Branch activities to press	Requires a communications coordinator	1. Develop boilerplate press release 2. Develop guidelines for effective press releases 3. ID persons to create releases	1. March 2014 2. March 2014 3. April 2014
Enhance *The Bur*	☐ Produce *The Bur* semi-annually ☐ Add links to web version for more information ☐ Add a feedback capability (e.g., survey)	Consider more frequent issues	1. Recruit media assistants 2. Add feedback capability	1. March 2014 2. March 2014
Build a web toolbox	☐ Use web for knowledge and document management ☐ Include updates on stories ☐ Press releases ☐ Use the web proactively ☐ Add updates showing results ☐ Add feedback capability (e.g., surveys) ☐ Add frequently asked questions	☐ Practical information and documents for ☐ Growers ☐ Volunteers ☐ Presenters ☐ Video information ☐ Documents needed to support volunteer activities ☐ Materials to use with booths, displays	1. Recruit web assistants 2. ID information needs 3. Assess need for supporting materials for booths, displays 4. Develop information materials	1. March 2014 2. May 2014 3. June 2014 4. Sep. 2014

Produce webinars and video presentations	Web broadcasts, perhaps via YouTube, on various subjects; link to web site	☐ Training for volunteers ☐ Education for general public ☐ Education for youth	1. ID topics for videos 2. Recruit producers 3. Develop production techniques 4. Produce videos 5. Post videos 6. Evaluate videos	1. May 2014 2. July 2014 3. Sept 2014 4. 2014-15 5. 2014-15 6. Ongoing
Enhance the email system	☐ Target emails and limit numbers going to each person ☐ Let people subscribe to topics they want ☐ Send regular emails with updates on events and upcoming events	Investigate: ☐ Volgistics ☐ Constant Contact ☐ Google Groups	1. Evaluate alternative technologies 2. Determine when and whether national will adopt blanket technology 3. Implement technology	1. Oct 2013 2. Oct 2013 3. Dec 2013
Use social media	Use social media to attract and engage younger volunteers and provide rapid and open communications		1. Recruit social media manager 2. Develop rules for social media use 3. Set up a VATACF Facebook page 4. Set up VATACF on Twitter	1. March 2014 2. June 2014 3. July 2014 4. July 2014

Strengthen connections with partner organizations	☐ Need a lead for building relationships ☐ Volunteer should report to a Board member with point responsibility for partnerships ☐ Contact potential and current partner organizations to get them involved in activities ☐ Communicate with them regularly ☐ Ask them for news regularly so it's a two-way information street	☐ Create links to partner organizations ☐ Encourage back links to VATACF web site ☐ Link to events of other organizations	1. Recruit a partnership coordinator 2. ID Board member to supervise 3. Establish list of partner organizations 4. Establish schedule for regular sharing 5. Establish regular schedule to get their updates	1. March 2014 2. March 2014 3. May 2014 4. May 2014 5. May 2014
Collect and use feedback	Use surveys to collect feedback information	☐ In *The Bur* ☐ On the web site ☐ In after-action reports for volunteer activities ☐ For people who stop participating (on why they stopped)	1. Evaluate web-based survey tools 2. Select a tool 3. Develop survey for volunteer activities 4. Develop survey to assess web content and features 5. Develop survey for people who stop participating 6. Develop other surveys as needed	1. March 2014 2. May 2014 3. July 2014 4. Sept 2014 5. Nov 2014 6. Ongoing
Establish a volunteer database	Track skills, locations, interests	Will Volgistics do this?	1. Evaluate Volgistics 2. Determine if TACF national will adopt blanket technology 3. Implement technology	1. Oct 2013 2. Oct 2013 3. March 2014

Enhance volunteering information	Increase quantity and types of information about volunteering on the web	☐ Describe specific volunteer opportunities ☐ Present stories of volunteer experiences	1. Add a "Volunteer" link to the home page 2. List volunteer opportunities on the web site 3. Show volunteer "stories" on the web site	**1. Completed Aug 2013** **2. Started Aug 2013** 3. Sept 2013
Build more effective volunteer support	Facilitate effective, efficient and satisfying volunteer experiences	Create an "event kit"	1. Recruit volunteer coordinator 2. ID alternative event types needing "kits" 3. Define requirements for kits 4. Develop kits	1. Mar 2014 2. May 2014 3. Aug 2014 4. Dec 2014
Collect and use data on accomplishments	Develop information on activities and accomplishments for use with funding organizations	Collect accomplishments information on volunteer activities	1. ID software solution for data collection and processing 2. Implement volunteer activity data collection 3. Report on volunteer activity and accomplishments	1. May 2014 2. Sept 2014 3. Dec. 2014 and ongoing