Question	Asker Name	Answer
I know this is off topic & early. But what is the latest status on the legal process for using the transgenic chestnut?	Brad Johnson	Our current estimate is August 2023, give or take a few months. This is our best estimate, but not written in stone, because this is in the hands of the regulators, not us. Hope this helps. Thanks for the update, Bill!
I'm finding my populations map to divergent habitat requirements and not quite sure whether to use the state wide model or switch to local mapping.	Anne Bobigian	live answered
What programs work well for transfer to models to the field -- Field Maps? Survey? and how did Brian Roth get his maps to use in aerial searching? Anne	Anne Bobigian	Hi Anne, we used ArcGIS Field Maps for our French Creek data collection. I believe Brian Roth flew a plane when chestnuts were flowering in order to find them. I'm trying to get a transfer of my 30-m Maxent models to something they can load in plane navigation maps, and Brian did that. Anne, I believe Brian used "the Soils Map Ap" which overlays USDA soils maps over Google Earth, and can be down loaded to your cell phone. Al Faust Pres METACF
Congrats Alec that is wonderful!	TT	Congrats Alec that is wonderful!
why is the chestnut blight orange.	Russel Boyer	The fruiting bodies of the blight fungus, as well as some the related reproductive structures, are orange. Not really sure why they are this particular color. Mushrooms come in a variety of colors, and the blight's fungal fruiting bodies can be thought of like teeny, tiny mushrooms. I've never encountered a rationale for why blight happens to have orange frutiing bodies, but likely because the color offers some benefit or is the by-product of the make-up of the fungus. Good question!
Jen, can you tell us what is the basis of the "nearly 4 billion" estimate of the number of chestnuts before the blight? Is it derived from the old, now disproven estimate that chestnut made up 25% of the eastern deciduous forest (see the Faison and Foster 2014 paper in Arnoldia)? Do your GIS results help come up with a better estimate of the population at different times in the past (e.g. pre-European-settlement, or pre-blight)?	Doug Boucher	live answered

Question	Asker Name	Answer
Given it has been ~100 years since chestnuts were effectively removed and are no longer the dominant species in forests, should reintroduction be thought of as an invasive species, and can we take advantage of what we know encourages spread of invasives?	Sean T Hammond	live answered
Given it has been ~100 years since chestnuts were effectively removed and are no longer the dominant species in forests, should reintroduction be thought of as an invasive species, and can we take advantage of what we know encourages spread of invasives?	Sean T Hammond	Wouldn't reintroduction lead to changes in species diversity though? The current dominant species might be displaced by chestnuts
What are the details of changes in range induced by climate Change? -TATE	JIM TATE	
Does your model have a name? Is it MaxEnt?	Sean T Hammond	\o/ thank you
How do we choose the best grove site on our 627 acres? -TATE	JIM TATE	Add: Montgomery County, MD As Sara mentioned, Web Soil Survey is a great tool for exploring your site. Looking at drainage, percent clay, depth to a restrictive layer are all helpful for honing in on a good site: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm
do you distinguish between chestnut trees that grow large versus those that die young from the blight?	ericmassant	
Do you incorporate climate change modeling to predict future SDMs?	Linda Krueger	I have in the past, but we haven't yet had time to do that for this project! I would like to, though.
Hi Jen: Your habitat modeling in Shenandoah Park used 50 "Large and Mature" wild Americans that you found. What are the dimensions of a "Large and Mature" American in your modeling? Thanks !	Ken Darnell	Hi Ken, I can't remember exactly off the top of my head, but it was outlined in the MEGA-transect protocols. They did have to have evidence of catkins/burrs to count.
there is apparently enough trees to get enough data to draw statistical significant conclusions?	Ben Pinti	Yes, Bayesian methods like maxent are particularly adept at working with smaller datasets. Dentatabase for PA has a lot of records as well, so we have hundreds of trees to include! nice! can some soils be too sandy?
RTK-GPS? precision GPS?	Jim	live answered
Hi Alec, I was wondering if Villanova offered an Environmental Engineering Major. If so, how does it compare to Environmental Science? Also, what do you enjoy (and not enjoy) about Comp. Sci?	Anonymous Attendee	live answered

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Question	Asker Name	Answer
Excellent work all around team! Ton of work over the years, it is clear. May I ask, what is your capacity (and willingness) to scale this out to other states? Better still, what is you capacity/willingness to teach someone like me how to do identify ideal habitats over a given area?	TT	Excellent work all around team! Ton of work over the years, it is clear. May I ask, what is your capacity (and willingness) to scale this out to other states? Better still, what is you capacity/willingness to teach someone like me how to do identify ideal habitats over a given area?

We have a distribution model for Kentucky at 30-m using Maxent, with lots of other R package work for validation, and developing separate parameters, including climate parameters. |
DO you have findings regarding suitable PH?	Steve Johnstonbaugh	We do not from these models. It is difficult to get that as a GIS dataset, but I would love to include it if possible!
Is it a waste of effort to try to establish mother orchards outside traditional Appalacian zones or, beside spread of genous to new regions, can there be benefits by establishing in extremely remote regions (Northern Michigan), if growable, with regard to protection against disease or survival? Will it help the effort or would it be doomed to fail?	Rick	The soils are going to be the most important to consider, as well as climate. But assuming those would support chestnut, plantings outside of the native range can ceraintly help with germplasm conservation. We do still see blight in Michigan (there is a large growers coop out of MSU) and into Wisconsin, but blight pressure would be quite a bit lower.
Land use type makes sense if you want to model where chestnut occurs now, because it obviously is not to be found on crop land, for example. But what if you want to predict what sites could be successfully reforested with chestnut?	Kim Steiner	live answered
AUC is somewhat marginal, especially given the large scale. Did you do validation with Boyce's Index?	Anonymous Attendee	live answered
What is 80% canopy exactly?	ericmassant	Canopy is about 80% covered, so 20% open for sunlight to reach the forest floor.
What do you think elevation means -- e.g. it is an indirect variable, is this a proxy for temperature? for soil types?	Anonymous Attendee	live answered
One variable not considered is at one time almost all trees were removed for farmland. When woodland recovered it was after the chestnut was gone. It was a large factor in NY but the ground is good habitat now in areas.	Paul Anderson	Good point. Certainly the case across most of New England as well.

Question	Asker Name	Answer
<yikes. more words than I initially planned> Dr. Santoro noted how important chestnuts were as a source of food for wildlife. My grad student found it was critical to take changes in foraging behaviour at the Beanfield Mountain (Catherine Keever's survey site) location when hindcasting and forecasting. Are your models taking that into account when thinking about long-term reintroduction as trees naturally reproduce and spread (i.e. animals switching from white oak acorn consumption and back to chestnuts), or is the intent to identify where chestnuts would grow well_right_now_ and less about whether there will be restructuring of forest communities as they naturally reproduce and spread.	Sean T Hammond	
Thankyou.	Russel Boyer	Thankyou.
Thankyou.	Russel Boyer	You are welcome!
To plant, you have to model what humans can manage -- e.g. forest cover much less, access to roads, and slope < 15 degrees.	Anonymous Attendee	automated planting via drone is a possability
To plant, you have to model what humans can manage -- e.g. forest cover much less, access to roads, and slope < 15 degrees.	Anonymous Attendee	Good point. A first step is suitable habitat, but a follow-up would be what is actually available and reasonable to plant.
Was soil pH used as a variable?	Ivan James	live answered
Great presentations Jenn and Alec. Have you studied how the co-occurrence of other species of trees (e.g. American Beech, Black Cherry, American Tulip, Shagbark Hickory, etc) predict the existing success or planting site suitability of American Chestnut from a correlated and/or causative standpoint? i.e. co-occurrence of various specific tree species as a predictor similar to importance as say sand:clay soil ratio or slope percentage etc? Thank you!	Mark	live answered
Is there a 'kitchen sink' test to determine sand to clay ratio for us lay people?	Steve Johnstonbaugh	put soil in a jar with water and shake. sand will settle out almost emediately. silt next clay will take hours or even days.
Do you have a model with a vector map layer over that raster most suitable layer that you had up? Just asking because I was having a time of loacating my farm with just the topogragh when you had it presented.	BlackRock	live answered
Alec, can you tell us about the sample sizes that are the basis for the models (both state and local)? And related to that, is it possible to say which relationships that come out of the MaxEnt model are actually significant, given the sample sizes? Thanks!	Doug Boucher	live answered

CHESTNUT CHAT SERIES: Q &A
CHAT # 35: Habitat Suitability
DATE : Friday, April 15, 2022

Question	Asker Name	Answer
How are AC growing in PA at Flight 93?	Linda Coyle	live answered
What if you have state wide populations with divergent adaptation, so that they have different parameter ranges?	Anonymous Attendee	
Alec Great presentation !!! you have a wonderful future.	Robbie Shaw	Glad you enjoyed the program today, Robbie!
Alec, when you looked at slope, did you ever differentiate between the sunny SE slope and shady NW slope? Most slopes in PA are either one or the other. My guess is Chestnuts have a strong preference for one over the other.	Hartwell Davis	
Is cardinal direction of slope worth modeling?Are south facing slopes better than North facing of same slope? Looking at your fine scale data map seems to suggest this.	Stewart Clements	Believe this issue of directionality was addressed live.
Have you considered where diseases are present or not such as root rot and asian ambosia beetles?	Roger Willby	I don't believe these parameters are available as spatial data layers.
Has this same technology been used for the related Ozark chinquapin?	Brad Johnson	Not that I'm aware of, but certainly could be. I'm not sure what the availability of occurance data looks like for the species, which would be helpful for modelling.
Native trees are still actively sprouting and growing without assist so native/invasive is kind of decided by nature.	Rick	Chetnuts are a tough breed, luckily, and are deperately trying to survive. And thank goodness they are, right? :)
Thanks, Al. I'm working also with U of L on GIS modules for getting better aerial searching.	Anonymous Attendee	Sounds like fun! :)
Are there are other trees that have similar requirements so we could look for where those trees are growing and plant nearby?	william richtsmeier	Chestnut is often a component of oak-hickory forests, so these can be a good proxy. They also like more acidic soils so ericaceous species like mountain laurel can also be good indicators. Chestnuts are generalists but don't do well on wet sites, so another approach is to look for indicators that the site is wet and avoid those sites.
Thank you Jen and Alec. Your work and dedication is much appreciated! Comment: Invasives spread due to a lack of competion. Chestnuts are still the favorite food of native species in the area, so they would spread with difficulty. I'm hoping to keep them alive on my WV mountain.	Virginia Dirschka	Thanks for that thought - and your work in WV!

CHESTNUT CHAT SERIES: Q &A
CHAT # 35: Habitat Suitability
DATE : Friday, April 15, 2022

Question	Asker Name	Answer
how would a novice measure their sand/clay ratio? can soils be too sandy?	Ben Pinti	live answered Hi Ben - Yes, soil can be too sandy - we think that upper limit is 75% based on the Noah et al model from last year.
North or South facing slope.	Paul Anderson	live answered
In the southern Appalachians, presence of chestnut oak is a good predictor species for Am. chestnut.	hmcnab	For sure - thanks!
Get your computer guy to emulate SETI and we'll volunteer the mips you need to model new regions. State level models might benifit from adding datum such as topographic elevations.	Rick	
l am interested in the questions about aspect and orentation to cRdnal directions.	David Hunter	live answered
Great discussion! Per Dr. Powell's note re: August 2023 timeline, given how amazing these seeds and seedlings are for the future of our environment and strategy to slow/reverse climate change through ACF restoration.. what top strategies should private forest owners invest in insofar as deer browsing prevention and control. i.e. is it almost guaranteed that any population of white tail deer will kill seedlings without proper 8 foot tall fencing or other control (i.e. fishing line strung around the perimeter, etc). I am hoping to plant inside an existing forest with approx 30% sunlight through the canopy (is more sunlight needed through the canopy than 30%?) Any other ideas to protect against white tail deer eating the seedlings? Any testing with natural ingredient based bittering agents to put on saplings? Sorry for the multiple questions.. basically it comes down to optimum sunlight exposure in sandy interior forest plantings + best strategy for preventing deer from eating/killing seeds/seedlings/saplings?	Mark	live answered