Identifying and documenting non-native invasive plant species on the Appalachian Trail

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1

Outline

- What are non-native invasive species
- Identification
- Field Documenting
- American Chestnut

2

What is a non-native invasive plant species?

- Non-native plant species that occur outside of their native home range.
- Invasive species cause environmental and/or economic harm.
- Not all non-natives are invasive.

3

What is wrong with non-native invasive species?

- They prevent our native species from growing in the space occupied by the non-native invasive.
- Many of these species have allopathic properties. 'Poisoning' the soil and preventing other plant species from germinating.
- Reduces our native plant species populations.
- Our native insects and animal species may not be able to eat or collect pollen and nectar from the non-natives, reducing their populations.

4

Identification

5

Multiflora rose, *Rosa multiflora*

Appearance

Multistemmed, thorny, perennial shrub.
Up to 15 ft. tall.
Green to red stems grow into arching canes with stiff curved thorns.

Foliage

Leaves are compound with 7-9 leaflets 1-11.5 inches long with serrated edges.

From: EDDMapS find · map · track

6

Multiflora rose, *Rosa multiflora*

Flowers

Small white to pinkish, 5 petals in clusters in the spring.

Fruit

Small, red rose hips remain on plant throughout the year.

Birds and other wildlife eat and disperse the seeds.

Ecological threat

Extremely prolific and can form impenetrable thickets that exclude native plant species. Invades disturbed open woodlands, forest edges, successional fields.

Control

Herbicides foliar spray

From: EDDMapS find · map · track

7

Multiflora rose vs catbriar or greenbriar, *Smilax* species

Catbriars are viny and do not form dense clumps like Multiflora rose

8

Multiflora rose vs blackberry, *Rubus* species

Blackberries and Multiflora rose have similar growth with long arching canes

More than three leaves

Always three leaves

9

Tree-of-heaven, *Ailanthus altissima*

Appearance
Rapidly growing, small deciduous tree up to 80 ft. in height and 6 ft. in diameter. Bark is smooth and light grey resembling the skin of a cantaloupe. Leaves and other plant parts smell like rancid peanut butter.

Foliage
Leaves are pinnately compound and 1-4 ft. long with 10-20 leaflets. Resembles native sumac, walnut, and hickory species, but has untoothed leaf margins and glandular, notched base on each leaflet. .

Flowers
Species is dioecious (separate male and female plants) and flowering occurs in early summer when large clusters of small yellow flowers on 20 inch long stems develop above the foliage

From: EDDMapS find · map · track

Smooth leaf margins. Walnut and sumac have toother margins

10

Tree-of-heaven, *Ailanthus altissima*

Fruit

Fruit produced on female plants are tan to reddish, single winged with one seed in the middle and can be wind or water-dispersed. Fruit can remain on the tree through the winter. A single tree can produce 325,000 seeds per year

Ecological threat

Forms dense, clonal thickets which displace native species and can rapidly invade fields, meadows, and harvested forests. Extremely tolerant of poor soil conditions. *Ailanthus altissima* is not shade tolerant, but easily invades disturbed forests or forest edges causing habitat damage.

Control

Herbicides, girdling

Seeds

From: EDDMapS find · map · track

Bush or Amur honeysuckle, *Lonicera maackii*

Appearance

Large, upright, spreading shrubs,15–20 feet in height.

Foliage

Deciduous, opposite, simple, 1–3 inches long, narrowly oval with a rounded or pointed tip, the margin entire (not toothed or lobed); upper surface green, lower surface pale green and slightly fuzzy. **In late autumn, leaves typically remain green and attached well after the leaves of our native trees and shrubs have fallen.**

Flowers

May–June, fragrant, paired, growing from the stem, tubular, 1 inch long, slender. Petals change from white or pink to yellowish as they age.

Leaves remain green during winter and spring, easy to spot.

From Missouri Department of Conservation:

Bush or Amur honeysuckle, *Lonicera maackii*

Fruit

Mature in September–October; typically, red berries about ¼ inch across, 2–6 seeded, in pairs in the axils of the leaves.

Ecological threat

Bush honeysuckles shade out native wildflowers and young native trees on the forest floor. They compete with native plants for soil moisture and nutrients.

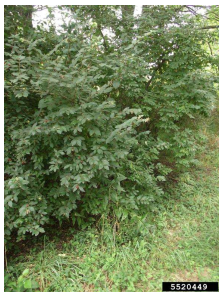
They compete with native plants for pollinators, resulting in fewer seeds set on native species.

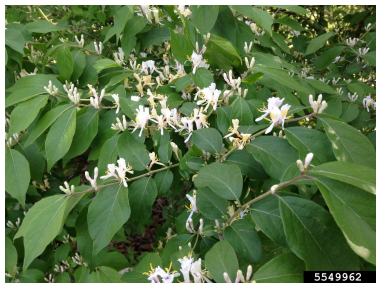
Birds tempted to nest in the sturdy lower branches of bush honeysuckles suffer higher nest predation, being closer to the ground.

The berries of bush honeysuckles, though abundant, are carbohydrate-rich and do not provide the high fat content required for the long flights of migrating birds

Control

Cutting and treat stump with herbicide.





From Missouri Department of Conservation:

13

Garlic mustard, *Aliaria petiolata*

Appearance

Herbaceous biennial forb. First year plants are basal rosettes, in second year they bolt and flower. Has distinct garlic odor when crushed.

Foliage

In first year, rosettes are green heart shaped, 1-6 in. long leaves. Foliage becomes more triangular and toothier as plant matures.

Flowers

Second year plant produces 1-4 ft. tall flowering stalks. Each flower has four small white petals in early spring

Rosettes

From: EDDMapS find · map · track

14

Garlic mustard, *Aliaria petiolata*

Fruit

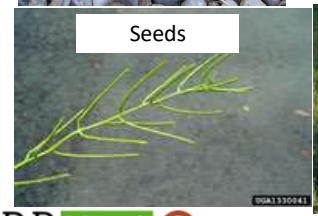
Mature seeds are shiny black in erect green pods that turn brown when mature. Seeds remain viable in soil for up to 10 years.

Ecological threat

Aggressive invader, highly shade tolerant in mature woodlands. Shade out native plants and produce allelopathic compounds that inhibit native seed germination.

Control

Pulling and herbicides foliar spray From: EDDMapS find · map · track



Seeds

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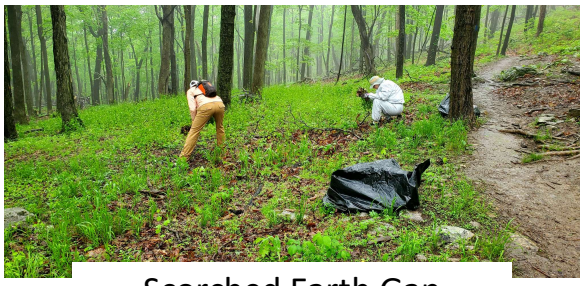
Garlic Pull along the Andy Layne Trail, April May 7 , 2022

About 100 pounds removed!



Scorched Earth Gap

16

Autumn Olive, *Elaeagnus umbellata*

Appearance

A deciduous shrub from 3-20 ft. in height with somewhat thorny branches. It is easily recognized by the silvery, dotted underside of the leaves.

Foliage

Leaves are alternate, 2-3 in. long and 1 in. wide. The margins are smooth and wavy. Leaves are bright green to gray-green above and silver scaly beneath with short stems.

Flowers

Small, yellowish tubular flowers are abundant and occur in clusters of 5 to 10 near the stems from February to June.

From: EDDMapS find · map · track

17

Autumn Olive, *Elaeagnus umbellata*

Fruit

Rround, red, juicy drupes that are finely dotted with silvery to silvery-brown scales. Each drupe contains one seed. Fruits ripen from August to November.

Ecological Threat

Invades old fields, woodland edges, and other disturbed areas. It can form a dense shrub layer that displaces native species and closes open areas. Native to China and Japan and was introduced into North America in 1830. Since then, it has been widely planted for wildlife habitat, mine reclamation, and shelterbelts. It is a non-leguminous nitrogen fixer

Control

Herbicide foliar sprays, burning

From: EDDMapS find · map · track

18

English Ivy, *Hedera helix*

Appearance

Evergreen perennial climbing vine that attaches to the bark of trees by root-like structures that exude a glue-like substance to aid in adherence.

Foliage

Leaves are alternate, dark green, waxy, somewhat leathery; extremely variable leaf forms, from unlobed to 3-5 lobed; typically, green with whitish veins.

Flowers

Flowering occurs in late summer to early fall, typically under full sun conditions; flowers are small, greenish-yellow, and occur in globular starburst type inflorescence at tips of flowering stems.

From: EDDMapS find · map · track

19

English Ivy, *Hedera helix*

Fruit

Fruits are black with a fleshy outer layer and stone-like seeds. New plants grow easily from cuttings or stem fragments that make contact with the soil.

Ecological threat

An aggressive invader threatening all levels of forested and open areas, growing along the ground as well as into the forest canopy. Vines climb up tree trunks and envelop branches and twigs, blocking sunlight from the host tree's foliage, impeding photosynthesis. An infested tree will exhibit decline for years before it dies. The weight of vines also makes trees susceptible to blowing over in storms.

Control

Herbicides foliar spray and cutting

From: EDDMapS find · map · track

20

Japanese stiltgrass, *Microstegium vimineum*

Appearance

A delicate, sprawling, annual grass that is 0.5-3.5 ft in height. The stems can root at the nodes.

Foliage

The leaves are pale-green, alternate, lance-shaped, 1-3 in. long, asymmetrical with a shiny, off-center midrib. The upper and lower leaf surface are slightly hairy. A silvery line runs down the center of the blade. Stems usually droop.

Flowers

Flowering begins in September when delicate flower stalks develop within the leaves or at the top of the stems.

From: EDDMapS find · map · track

21

Japanese stiltgrass, *Microstegium vimineum*

Fruit

Fruit is produced from late September through early October.

Ecological threat

Most commonly an invader of forested floodplains, also found in ditches, forest edges, fields, and trails. It is very shade tolerant and can completely displace native vegetation. It is native to Asia and was accidentally introduced into North America sometime around 1920.

Control

Herbicide foliar sprays, pulling and cutting

From: EDDMapS find · map · track

22

Spotted knapweed, *Centaurea stoebe*

Appearance

An herbaceous biennial or perennial plant that readily invades open areas. Its name is derived from the black margins of the flower bract tips which give the flower heads a spotted look..

Foliage

A basal rosette of deeply lobed leaves is produced the first year. and approximately 8 in. long. Flowering stems are 1-4 ft. tall and branched. Stem leaves are alternate and may be slightly lobed or linear. Leaves become smaller and less lobed toward the apex.

Flowers

The small purple to pink flowers bloom in the early summer.

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23

Spotted knapweed, *Centaurea stoebe*

Fruit

Reproduction of spotted knapweed occurs solely by seed. Hundreds and/or thousands of seeds are produced. Seeds are easily distributed by wind, animals, and contaminated hay. Seeds can remain viable in the soil for up to 8 years.

Ecological threat

Invades a wide variety of habitats including pastures, open forests, prairies, meadows, old fields, and disturbed areas. It displaces native vegetation. It is native to Europe and western Asia. It was accidentally introduced into North America in contaminated alfalfa and clover seed in the late 1800s.

Control

Herbicide foliar sprays.

From: EDDMapS find · map · track

24

Japanese Barberry, *Berberis thunbergii*

Appearance

A small deciduous shrub from 2-8 ft. tall. The thin, grooved branches have thin, straight spines. Very shade-tolerant and can form dense stands which shade out and displace native species.

Leaves can be green or purple

Foliage

The leaves are up to 1 in long and paddle-shaped.

Flowers

The pale-yellow flowers occur in drooping clusters of 2-5 and develop in mid-spring to early summer.

From: EDDMapS find · map · track

25

Japanese Barberry, *Berberis thunbergii*

Fruit

The berries ripen to a bright red color and are 0.25-0.3 in. long.

Ecological Threat

Invades a variety of habitats from shaded woodlands to open fields and wetlands. Rapidly spread by birds that eat the berries thus dispersing the seeds. Still widely planted for landscaping and hedges.

Control

Herbicide foliar sprays, pulling, burning

From: EDDMapS find · map · track

Inner wood is yellow

Along the AT south of Rt. 42

26

Field Documenting

Provides a permanent record of where and what invasive species are located

27

EDDMapS
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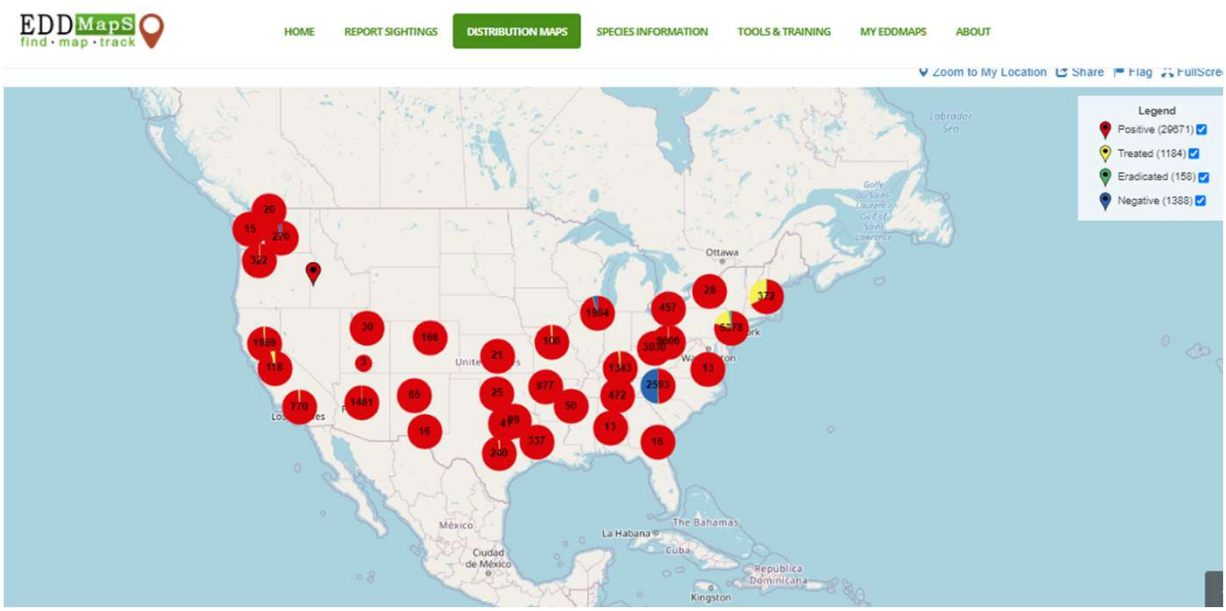
Early Detection & Distribution Mapping System

Maintained by the University of Georgia

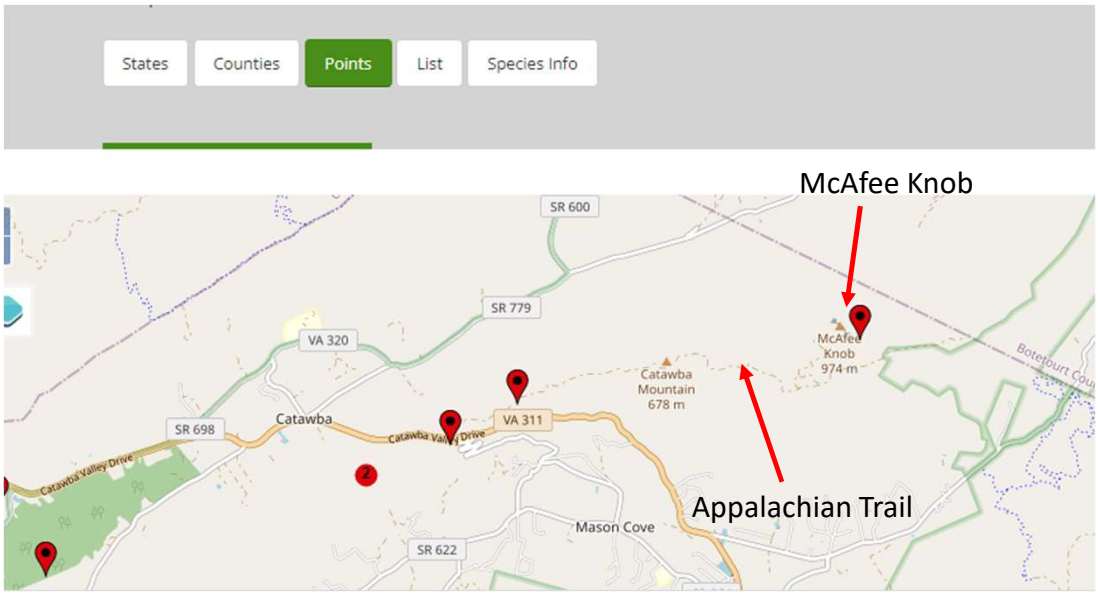
28

Tree-of-heaven distribution on EDDMaps



29

EDDMaps
tree-of-heaven



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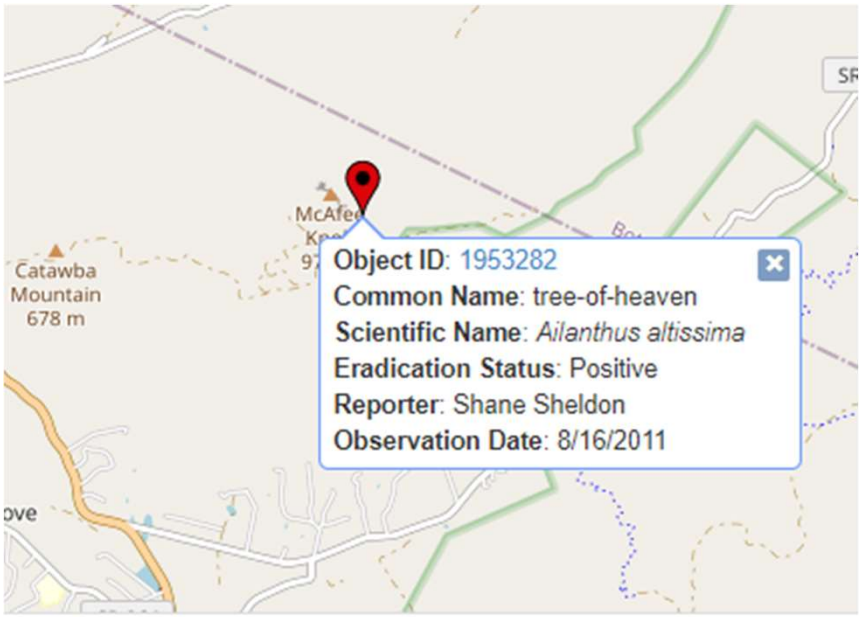
EDDMaps
tree-of-heaven



31

EDDMapS
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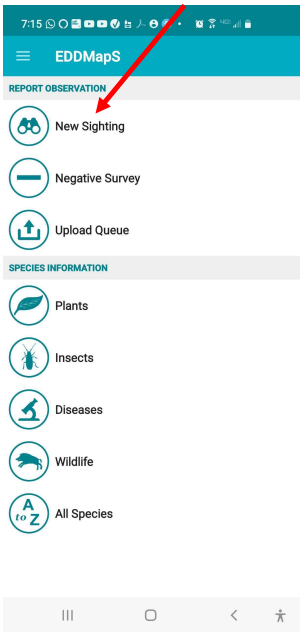
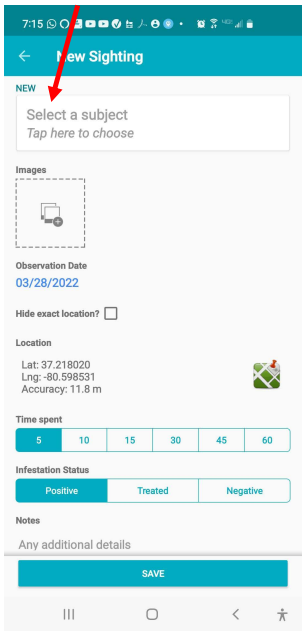
Download the app to your phone
It's free
Create username and password
https://www.eddmaps.org/

32

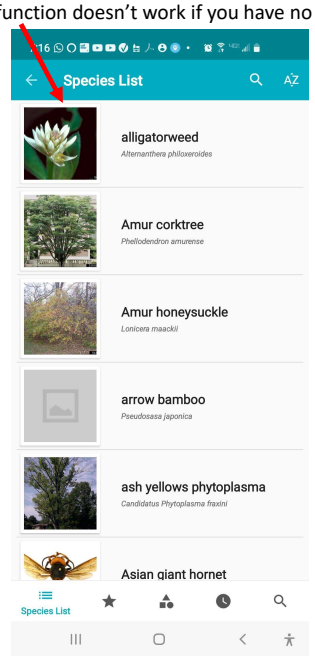
Open EDDMapS on phone.
Tap 'New Sighting'



Tap 'Select a subject'

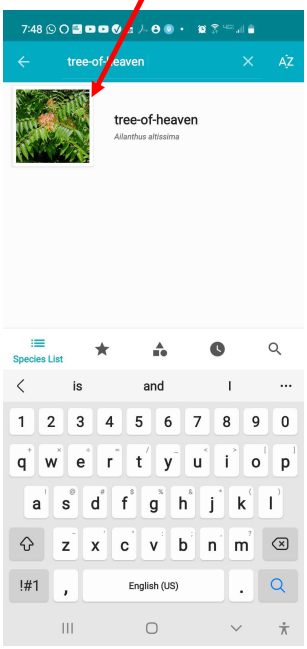


Scroll for species you think it is, e.g. tree-of-heaven.
'Search' function doesn't work if you have no cell service.

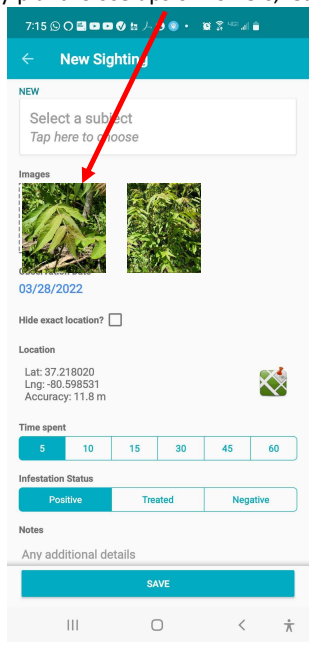


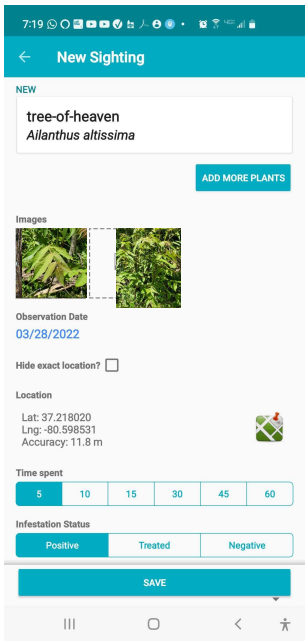
33

Tap on 'tree-of-heaven'.



Be sure to take pictures that will help reviewer identify plant. Close ups of flowers, leaves, etc.





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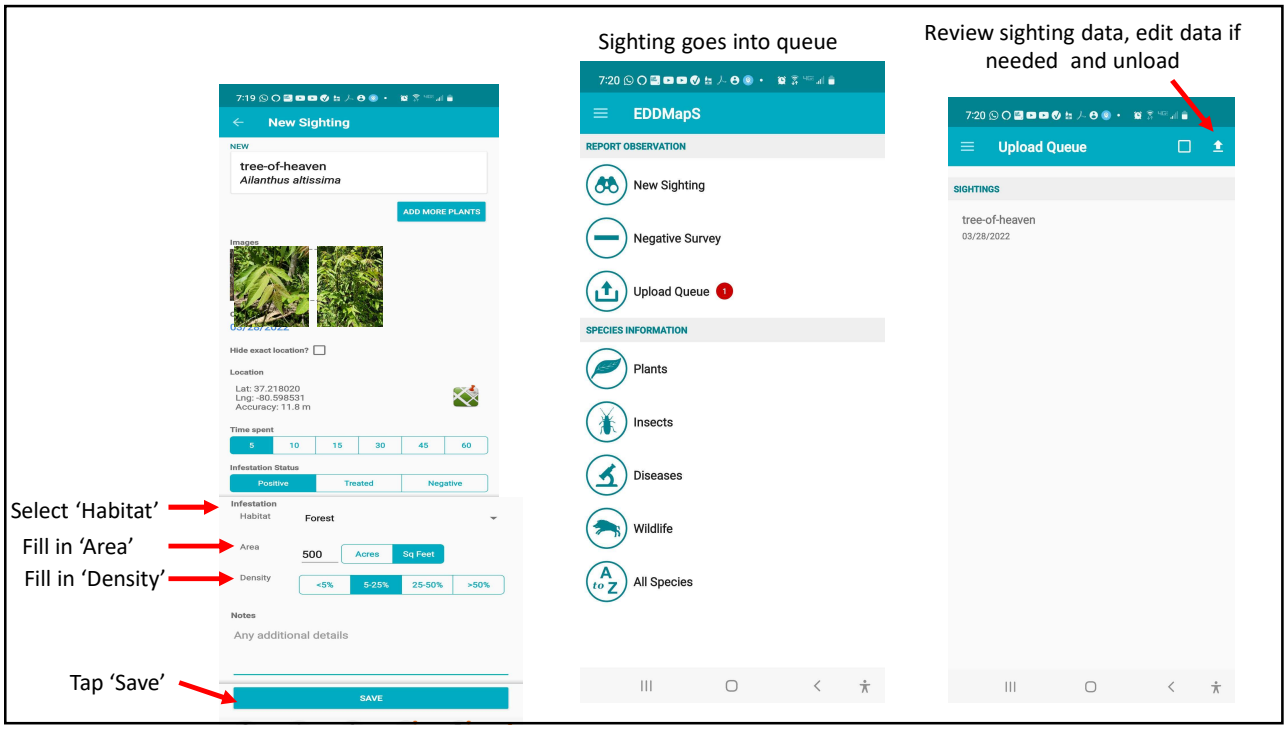
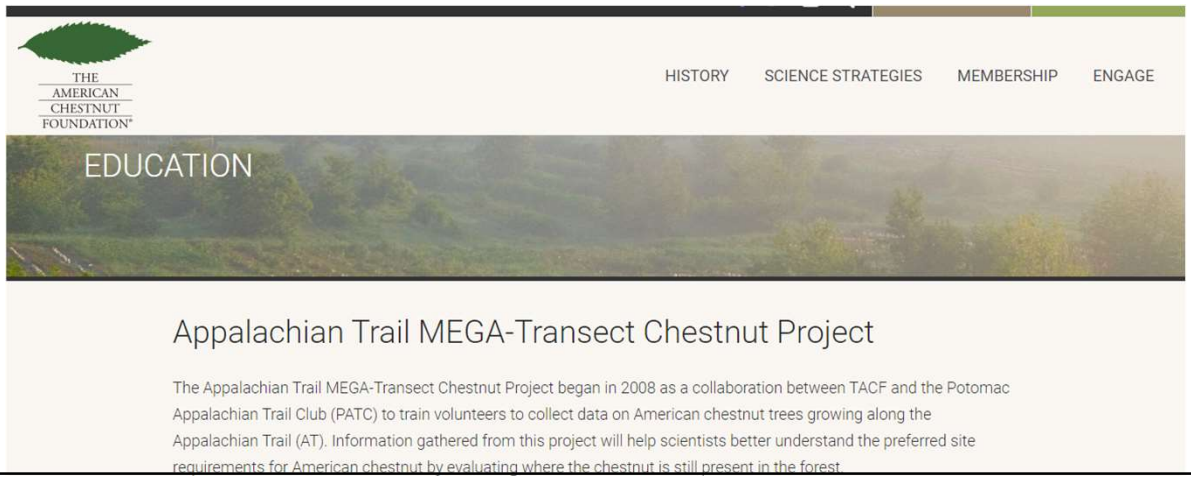


35

Documenting American Chestnut, *Castanea dentata* on the Appalachian Trail

Collaboration between The American Chestnut Foundation (TACF) and the Potomac Appalachian Trail Club (PATC)

https://acf.org/resources/education/appalachian-trail-mega-transect-chestnut-project/



36

Identification information

https://ecosystems.psu.edu/research/chestnut/reports/mega-transect/id-resources-page

Downloadable pdf:

Chinese vs. American Chestnut

(*Castanea mollissima* vs. *Castanea dentata*)

Top View

American Leaf (left):

Leaf is long in relation to its width

Large, prominent teeth on edge; bristle at the end of each tooth curves inward

Base of leaf blade tapers sharply

Leaf is very thin and papery

Chinese Leaf (right):

Leaf is oval-shaped

Teeth are smaller

Base of leaf blade is rounded

Leaf is thick and waxy-feeling

Burs and Nuts

American vs. Chinese

American Chestnut Burs:
A dense mass of long, slender spines
Spines are 2 to 3 cm long, 0.5 mm thick
Up to 3 nuts per bur

Chinese Chestnut Burs:
A sparse mass of short, thick spines
Spines are 1 to 2 cm long, 1 mm thick
Up to 3 nuts per bur

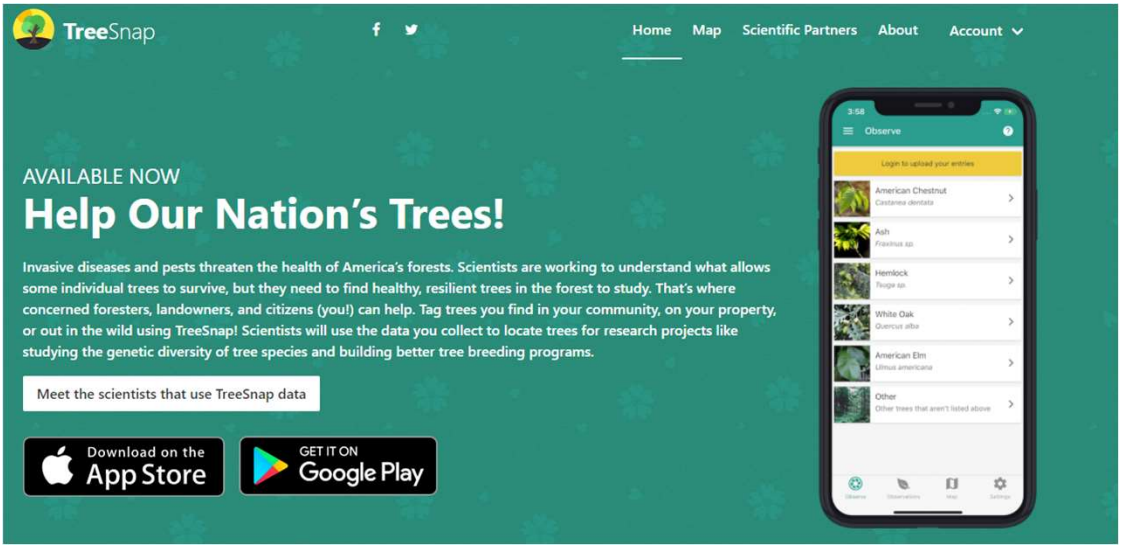
37

Looking for chestnut burrs along the trail is a good way to spot chestnuts.

Chestnut tree along the AT

38

Documenting American Chestnut, *Castanea dentata* using TreeSnap app



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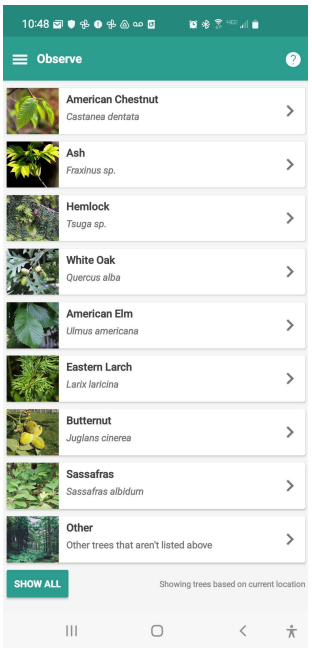
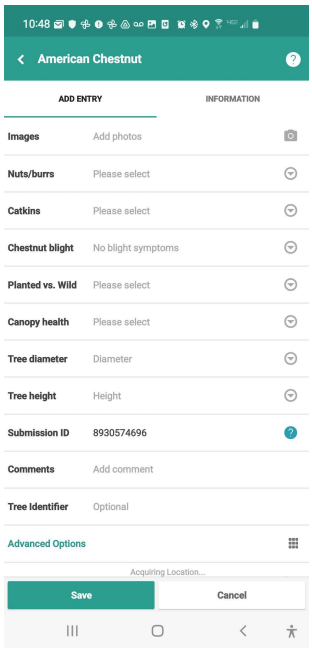
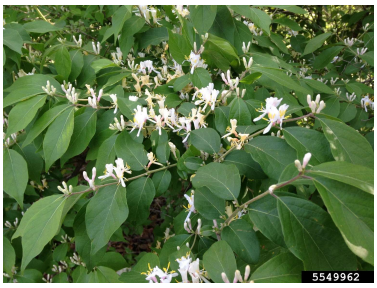




40

Questions?



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41