

2023 Community Forestry Test

April 19, 2023



Scispork **Community Forestry Test**

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Team Name: _____ Team Number: _____

Section 1 (8pt)

1. Identify the species in Figure A with its scientific name.
2. What is the fruit of the species in Figure A used for?
3. When does the species in Figure A flower, and when does it fruit?
4. Identify the species in Figure B with its common name.
5. What did the indigenous peoples of California use the species in Figure B for?
6. T/F: The species in Figure B is not an invasive species.
7. Identify the species in Figures C and D with its scientific name.
8. What is the phyllotaxy of the species in Figures C and D?

Section 2 (15pt)

9. Out of Figures E, F, G, and H, give the binomial nomenclature of the tree that does not belong.
10. Referring to your answer to question 9, what kind of fruit does this tree produce, and how are they transported?
11. Referring to your answer to question 9, within this tree's family, how are the trees famously pollinated which hints at their ancient history?
12. Referring to your answer to question 9, what does this tree share in common with *Pinus strobus*?
13. Referring to your answer to question 9, what is the Janka hardness score of this tree (lbf or N accepted), what does it mean, and is the tree classified as a hard or softwood?
14. Give the common name of the tree in Figures I and J.
15. What animal avoids eating the fruit of the tree in Figures I and J due to the high levels of acetogenins contained in the foliage?
 - (a) *Homo sapiens*
 - (b) Squirrels
 - (c) Deer
 - (d) Foxes
 - (e) Opossums
16. T/F: The tree in Figures I and J produces the second largest **edible** fruit in North America.
17. Is the tree in Figures I and J generally shade tolerant or intolerant? Describe how this impacts its place within a forest community.
18. The tree in Figures I and J requires cold stratification to reproduce. Describe what this means, and why it's necessary given where the tree naturally lives.

Section 3 (13pt)

19. What is the scientific name of the specimen depicted in Figures K and L?
20. The tree in Figures K and L has distinctive bark. Describe it.
21. What does the scientific name of the tree in Figures K and L mean? What is the reason behind it?
22. The tree in Figures K and L grows mostly in wet habitats and prefers damp, loose soils. What enables this tree to do so?
23. The tree in Figures K and L is found on the west side of which mountain range?
 - (a) Sierra Nevada
 - (b) Appalachian Mountains
 - (c) Rocky Mountains
 - (d) Cascade Range
24. Name the structure in Figure L.
25. What soil pH does the tree in Figures K and L prefer?
26. Why is the lumber of the tree in Figures K and L valued as firewood?
27. How and when does the tree in Figures K and L distribute its seeds?
28. The tree in Figures K and L is often found in pure stands. What is a pure stand?

Section 4: Berry Me Alive (12pt)

29. What **family** are the specimens in Figures M and N both in?
30. What was the earliest cultivation of the specimen in Figure N used for?
- (a) for their fruits, to nourish silkworms
 - (b) for their fruits, to be used in many dishes
 - (c) for their wood, used in a variety of products
 - (d) for their sap, used to treat ringworm and other ailments
31. Where is the specimen in Figure M considered endangered?
- (a) North Carolina
 - (b) Canada
 - (c) Iran
 - (d) Texas
32. The following questions relate to “popcorn disease”
- 32.1 What is the scientific name of the fungus which causes popcorn disease?
- 32.2 What seasons does it most often occur?
- 32.3 Where and how does this disease manifest?
33. What is **rapid plant movement** and how does the specimen in Figure N display this trait?
34. Why might the berries of the specimen in Figure M be a bad commercial fruit species?
35. Name a cultivated variety of the specimen in Figure N.
36. Name the only synapomorphy within the family between the specimens in Figures M and N.

Section 5 (17pt)

37. Give the scientific name for the specimen in Figure O.

38. The bark of which Figure matches the specimen in Figure O?
 - (a) Figure P
 - (b) Figure Q
 - (c) Figure R
 - (d) Figure S

39. Give the common name of the trees in Figures P, Q, R, and S that **do not** belong to the specimen in Figure O.

40. How would you distinguish the tree in Figure O from other members of its family?

41. A part of the tree in Figure O is known for having a certain mineral. What is this mineral, and where in the tree is it found?

42. Describe the fruit of the tree in Figure O, giving the shape, color, and size. Is it edible?

43. The writer of this station is from the great state of Texas. Is the tree in Figure O widespread in Texas? If so, which region of Texas? If not, where is the general location of its distribution?

44. The writer of this station is also an ornithology lover. Name two birds that eat parts of the tree in Figure O.

45. What is a larval host, and what is the tree in Figure O a host for?

46. Climate change is a serious issue! How is this species in Figure O impacted by it?

Section 6 (10pt)

47. Give the common name of the species in Figure T.

Context: some folks were out taking measurements to find some lore about a woodland of the tree species from Figure T.

48. To see how fast the trees were growing, they took cores of some trees from the base of the tree and from a few other heights (60 cm and 135 cm) and estimated the ages at those heights. Why might coring at different heights help them see how quickly the trees increased in height?
49. The species in Figure T resprouts from the roots when it's top-killed (when the stem dies). Why might that make it hard for these folks to figure out when these trees first germinated from their acorns?

Context: These folks surveyed an area where some trees were cut for firewood in the 1980's, so they were also able to analyze whole cross-sections of tree trunks.

50. They looked at fire scars on these tree trunks and estimated an average fire return interval by looking at scars on different trees in the area. Would you suspect that their estimates of the average fire-free interval would be an underestimate or an overestimate? Why?
51. A lot of the trees in the area had multiple trunks which dated to generally the same time, particularly the trees which dated to spawning around the 1850s (not as many of the trees that dated to spawning way before the 1850s had these multiple trunks). What would you expect might have caused this?
52. At the present day (and since European settlement of the area for the most part), there are very few new sapling/pole-sized trees that are spawning. The following possible causes are suspected to cause this lack of "recruitment." Explain why each of them could cause less recruitment.
- 52.1 Less frequent fire
- 52.2 Introduction of cattle
53. Some tree stumps were unable to be sampled because of heart rot. Do you expect these to be older or younger trees?

Section 7: Fruits and Facts (10pt)

Identify the species given the following images of their fruits (OR CONES THAT LOOK LIKE BERRIES), aided by descriptions of some of the prominent features or characteristics of the species. There are REPEATS — that is, each species can be depicted ONE OR MORE times in the images, and there are **FIVE TOTAL SPECIES** in this station.

54. Refer to **Figure U1**. The largest registered living tree of this species is growing near Armada, MI at a height of 125 ft (38 m) and is often found growing in deciduous and temperate broadleaf forests. This monoecious dicot, which can live up to 200 years under ideal conditions, has smooth grey bark at a young age, which darkens and cracks into slightly raised long plates as the tree grows. The twigs of this tree bear small lenticels, and this tree is relied on by the rosy moth species *Dryocampa rubicunda*. For 1 point, give the common name of this species, the base of whose **samara** is in Figure U1.

55. Refer to **Figure U2**. This tree can be found in woodland margins, rocky hillsides, stream banks, and roadsides. It prefers moist soil, and it provides nesting and denning for many birds and small mammals. This monoecious dicot has thorns, which have been used to treat arthritis, albeit very painfully. Infusions using its shoots, bark, and/or sapwood have been used to treat sores, diarrhea, and dysentery, and its flowers have a hypotensive effect and act as a mild heart tonic. For 1 point, give the common name of this species, which is derived from the waxy-like coating on its edible **drupe** depicted in Figure U2.

56. Refer to **Figure U3**. This deciduous tree is considered a short-lived species, and it also grows less than 1 foot per year. Thus, it is relatively short tree, reaching only about 40 ft (12 m) in height. It can be found in deciduous forests, and it has low tolerance for CaCO₃. In cultivation, this monoecious dicot does best in the northern part of its range and at high altitudes. For 1 point, give the common name of the species whose **pomes**, pictured in Figure U3, are $\frac{1}{4}$ inch in diameter and grow in large clusters.

57. Refer to **Figure U4**. This species is largely monoecious with both sexes on the same plant, but around 10% of plants are dioecious. The Havasupai Native Americans used the bark as beds, ate the cones in cakes, and used the gum to cover wounds. For 1 point, give the common name of this species that does not bear fruits. Instead, the picture on the left shows a unilocular **gall**, *Oligotrophus betheli*, at the tip of a shoot of the tree.

58. Refer to **Figure U5**. This tree, commonly affected by fireblight, is generally only used commercially as an ornamental tree. Its leaves are frequently browsed by moose and white-tailed deer. In the opposite seasons as those in which it boasts its showy white flowers, the fruits of this tree mature to the color shown in the picture to the left. For 1 point, give the common name of this species whose **pomes**, pictured in Figure U5, are commonly eaten by such birds as grouses, robins, thrushes, jays, and more.

59. Refer to **Figure U6**. This dioecious dicot can live up to 150 years but usually does not grow more than 20 ft (6 m). It likely came to the Americas from Japan or the Bering strait. Its discoverer, Captain John Smith, described the fruit's apricot-like taste in 1609. Its genus name means "divine fruit" in Greek, and a common name for this tree alludes to the possum's love for their fruit. For 1 point, give the common name of this species whose **berries**, pictured in Figure U6, look like plums but lack their stones and thus are not considered drupes.
60. Refer to **Figure U7**. Although a short tree, the largest individuals of this species of monoecious dicots are located along the northern shores of Lake Huron and Lake Superior. It likes acidic soil with good drainage and full sun to light shade. The flowers of this tree are somewhat fragrant in late spring or early summer, and its leaves can turn yellow, orange, and reddish-purple in the fall. For 1 point, give the common name of this species whose **pomes**, pictured in Figure U7, are eaten after their first winter freeze, either raw or cooked.
61. Refer to **Figure U8**. Native to the eastern United States and southern Canada, this monoecious dicot has serrated leaves that often appear 3- to 5-lobed. Interestingly, this species is missing from the edition of *National Audubon Society Trees of North America* referenced on the official rules manual, even though it is indeed a tree (unlike the saguaro) and is found in North America (unlike the candlenut). This is because it is generally considered as several species, rather than just one. For 1 point, give the common name of this species whose **drupes**, pictured in Figure U8, have edible pulp.
62. Refer to **Figure U9**. This monoecious dicot is a small, ornamental tree native to northeastern North America. With 11-17 oblong or lanceolate leaflets, its close resemblance to the quinine tree led its bark to be used as an anti-malarial medicine by some pioneer doctors. This tree is uncommonly referred to as missey-moosey and mose-misse. For 1 point, give the common name of this species whose immature **pomes**, pictured in Figure U9, ripen in the autumn, persist into winter, and can be used to make pie and jelly.
63. Refer to **Figure U10**. The leaves are arranged in opposite decussate pairs or whorls of 3, and the adult leaves are scale-like. This gymnosperm is native to the southwestern United States, and grows at moderate altitudes on dry soils along with the single-leaf pinyon. Its seeds are dispersed by mammals such as jackrabbits and rodents and notably by Townsend's solitaire. The Navajo sweep their tracks with branches of these trees to deter death. For 1 point, give the common name of this species whose fruits are not depicted in Figure U10. Instead, the picture shows one of its berry-like **cones**.

Section 8: Never Gonna Rick You Up (13pt)

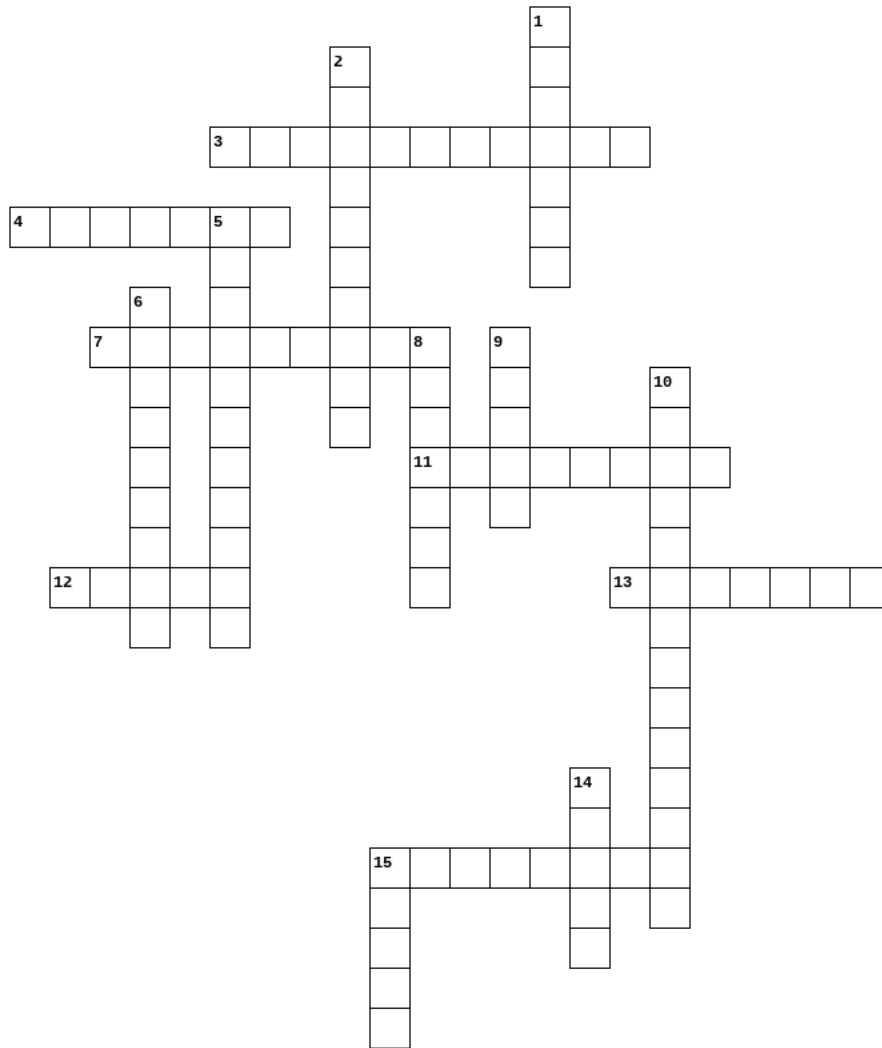
Rick Astley, upon traveling the East Coast, has amassed a few samples of trees (images shown below) that he wishes to analyze. However, in a haste, he mixes up the samples, forgetting which specimens were which! Help him by answering the following questions so he can ascertain which samples correspond to which species!

64. Refer to Figure V. It is the possible subspecies of which Figure? Select all that apply.
 - (a) Figure W
 - (b) Figure X
 - (c) Figure Y
65. Where, geographically, has the species in Figure V been found? (Answer with a general area/region)
66. What type of fruit does the species in Figure W produce?
67. The fruit of the species in Figure W has been a favorite of birds such as the ruffed grouse and waxwings. However, humans cannot consume its fruit raw. Why? List a method used to prepare the fruit and a use.
68. The specimens in Figures W and X come from the same species. What type of habitat does this species favor?
69. The common name of the species in Figure Y comes from the Catawban group, showing the importance of this species to indigenous groups. How did the native groups utilize this species, and which part of the species was utilized?
70. European colonists observed that the native groups that consumed the berries of the species in Figure Y displayed symptoms of vomiting, leading to the naming of its specific epithet, vomitoria. Which other tree in its genus on the Science Olympiad 2023 National Tree List also induces vomiting? State the binomial and common name.

Section 9 (14pt)

71. Figures Z, AA, and AB depict the same species. Identify this species by common and scientific name.
72. Why is the species in Figures Z, AA, and AB so annoying to eradicate as an invasive species?
73. How should you attempt to control/kill the tree in Figures Z, AA, and AB?
74. In which states is the tree in Figures Z, AA, and AB considered invasive? Name two.
75. Why are invasive species generally bad for the habitat they invade? Are there cases in which they may be better for the environment? If so, state why.
76. Which parts of the tree in Figures Z, AA, and AB are poisonous?
77. If I decided to eat the flowers of the species in Figures Z, AA, and AB raw, what would they taste like?
78. Daphne (a friend of mine) decides to eat the bark of the species in Figures Z, AA, and AB. What symptoms would she start showing afterwards?
79. Daphne then feeds the bark of the species in Figures Z, AA, and AB to her horse, Josephine, knowing of its danger to humans. Could she be charged with homicide/animal abuse, or is the horse okay?
80. Well, it's not all bad- what link does the tree in Figures Z, AA, and AB have to the food industry in the eastern US?

Section 10 (16pt)



Across:

- 3. Clade that translates to "naked seeds"
- 4. Refers to the upper surface of a leaf
- 7. The characteristic of shedding leaves annually, typically in autumn
- 11. A region of rapidly dividing and undifferentiated cells
- 12. Vascular tissue that transports water
- 13. The first root to emerge from a seed
- 15. A bundle or cluster of needles

Down:

- 1. The root system that all (answer 14) trees use
- 2. Possessing both male and female flowers on the same tree
- 5. Clade of all flowering plants
- 6. Where the majority of chloroplasts are located inside a leaf
- 8. Openings that regulate gas exchange on the surface of leaves
- 9. Seed of an oak tree
- 10. A clade that is divided into (answer 5) and (answer 3)
- 14. A tree that produces seeds with two cotyledons
- 15. A ripened ovary