FLORIDA 4-H FOREST ECOLOGY CONTEST
FOREST HEALTH
SENIOR

1a Tree damage is caused by an insect ..... go to 2
1b Tree damage is not caused by an insect ..... go to 15

2a Damage is caused by a larvae or caterpillar ..... go to 3
2b Damage is not caused by a larvae or caterpillar ..... go to 8

3a The caterpillar or larvae make silk webs to live in ..... go to 4
3b The caterpillar or larvae do no make webs to live in ..... go to 6

4a The caterpillar or larvae make their silk webs in the branch tips of pine tree and the webs are often brown because of the frass ..... Pine webworm
4b Not as described above ..... go to 5

5a The insects live in a silk web that is no bigger than a basketball, is found in the branch unions of fruit trees (apple, cherry, plum) and the insects leave their webs to feed ..... Eastern tent caterpillar
5b The insects live in and feed inside of their web, the web can cover large parts of hardwood tree canopies ..... Fall webworm

6a The caterpillar or larvae feed in group on pine trees and move together to mimic a larger animal as a defense mechanism ..... Pine sawflies
6b Not as described above ..... go to 7

7a The tree damage is caused by an adult insect laying its eggs with an ovipositor in slits on the underside of twigs ..... go to 8
7b Not as described above ..... go to 10

8a Large insect with membranous wings deposit its eggs in 1/4-1/2" diameter branches using an ovipositor, adult is 2" long ..... Cicada
8b Not as described above ..... go to 9

9a Adult insect is a moth and it lays her eggs in the tips of newly growing pine branches ..... Pine tip moth
9b Adult chews through the bark and wood of a branch and lays her eggs in the end of the branch, which falls off and overwinters on the ground ..... Twig girdler

10a The insect is found on the underside of sycamore leaves, the insects' wings are lacey appearing, even if the insect is not found black tar-like dots of frass can be found, leaves have stippling from feeding ..... Sycamore lace bug
10b Insect is not a beetle ..... go to 14
10c Insect is a beetle..... go to 11

11a The beetle is the largest bark beetle in the southeastern United States, its damage is seen in the lower 10 ft of the tree stem, as is associated with large globs of resin ..... Black turpentine beetle
11b The beetle is not as described above ..... go to 12

12a The beetle gallery is just under the surface of the bark..... go to 13
12b The beetle makes "noodles" of wood it pushes out of the tree as it bores into the wood, it has a symbiotic relationship with a fungus that it eats ..... Ambrosia beetle

13a The beetle has 1/8" exit holes, its galleries are made up of individual chambers for their grubs to mature in and feed on the inner bark of the pine tree..... Southern pine beetle
13b The beetle makes X-shaped galleries under the bark of pine trees ..... Ips beetle
13c The beetle is tan with black spots and feeds on the leaves of cottonwoods and other *Poplar* species..... Cottonwood leaf beetle

14a The insect is an adult female that looks like a dome-like bump on the branch, twig, or needles. The insect is stationary and uses its piercing-and-sucking mouthparts to connect to the branches to feed..... Scale insects
14b The insect feeds on young bald cypress leaves. Their feeding causes the leaves to grow a gall. ..... Cypress twig gall

15a The damage is caused by a fungus or bacterium ..... go to 16
15b The damage is caused by environmental occurrences, are human-made, or parasitic plant ..... go to 30

16a The damage to the tree is best described as a canker ..... go to 17
16b Not as described above ..... go to 20

17a The canker is caused by a bacterium that makes the dead branches appear blackened and have a shepherd's hook appearance ..... Fireblight
17b Not as described above ..... go to 18

18a The canker is often found on oak trees and other hardwoods, it can appear smooth black or grey ..... Hypoxylon canker
18b Canker is not described as above ..... go to 19

19a The canker is found on pine and is associated with a lot of resin or pitch production by the tree ..... Pitch canker
19b The disease is caused by a conk or shelf fungus on the stems of hardwood trees, when fresh the fungus is brown but turns black and breaks off the tree over time, is associated with hollow trees ..... Hispidus canker

20a The disease has two different host plants from two different tree species ..... go to 21
20b Not as described above ..... go to 22

21a The two hosts are red cedar/Juniper (*Juniperus virginiana*) and apples or crabapple (*Malus* species), on the cedar it produces large round galls and on the apple causes orange leaf spots ..... Cedar apple rust
21b The two hosts are pine (loblolly and slash, especially) and oak (water, willow, and laurel), the fungus causes galls to form on branches of the pine and leaf spots on the oak ..... Fusiform rust

22a The fungus grows at the base of trees ..... go to 23
22b Not as described above ..... go to 24

23a The fungus grows at the base of a conifers, it grows as a conk or shelf-fungus, is brown with a white edge (margin) ..... Annosus root rot
23b The fungus grows as clusters of mushrooms at the base of trees like a little “army”, it can also grow rhizomorphs that look like black-brown shoestrings ..... Armillaria root rot

24a The disease is found on the leaves or needles of the host plant ..... go to 25
24b The disease is a vascular wilt of redbay, swamp bay, avocado, it is caused by a fungus that is moved around by a beetle, symptoms include wilting and discoloration or streaking under the bark in the vascular tissue ..... Laurel wilt

25a The disease is caused by a bacterium, symptoms appear on the leaves of hardwoods, like oak, at can look like drought stress, the edge (margin) of the leaves become dead and brown (necrotic) sometimes with a yellow halo between the dead tissue and live ..... Bacterial leaf scorch
25b Not as above ..... go to 26

26a The fungus infects the needles of pine trees and causes them to turn red-brown and be prematurely dropped from the tree ..... Needlecast
26b Not as described above ..... go to 27

27a The disease is caused by a fungus that grows on the upper surface of leaves, it looks like white fluff ..... Powdery mildew
27b Not as described above ..... go to 28

28a The disease is found on sycamore trees, it causes dead areas (necrosis) of leaves in a delta-shape along the veins, and causes cankers of the branches, the cankers result in witch's brooms ..... Sycamore anthracnose
28b Not as described above ..... go to 29

29a The fungus infects leaves of oak trees causing raised bumps on the leaves that appear a lighter shade of green ..... Oak leaf blister
29b The fungus grows on the upper surface of maples and hollies, appears as black splotches on the leaves that are raised from the leaf tissue, are leathery to the touch ..... Tar spot

30a The damage are V-shaped grooves cut into the bark of trees, it was caused by humans during the collection of pine resin from trees to make turpentine, is sometimes associated with metal attached to the tree ..... Catface
30b Not as described above ..... go to 31

31a The damage appears as an overgrowth of tissue that can be round, oval, or elongated, they can appear on branches, stems, or leaves, and can be cause by insects, diseases, or abiotic factors ..... Galls
31b Not as described above ..... go to 32

32a Damage looks like vertical slashes in the tree's bark and is caused by giant sparks of electricity ..... Lightning
32b Not as above ..... go to 33

33a The damage looks like a green plant growing on the branches of its host tree, it does not lose its leaves in the winter, is a higher parasitic plant ..... Mistletoe
33b An abnormal overgrowth of twigs or branches growing from one area, often associated with branch damage (insect, disease, pruning), the tree overgrows to compensate for the loss of branches and leaves ..... Witch's broom