

commonly, and another 31% use them rarely (Duever et al., 1986). Large cypress swamps provide cover for deer, bobcats, and small mammals such as raccoons, rabbits, and rodents (Davis, 1943). Birds that nest in cypress forests in south Florida include wood storks, snowy egrets, little blue herons, green-backed herons, great blue herons, swallow-tailed kites, turkeys, black vultures, white ibis, and several species of owls, woodpeckers, and warblers (Duever et al., 1986). In north Florida, reptiles and amphibians dominate the cypress pond fauna during summer, and birds dominate in winter (Harris and Vickers, 1984).

Impact of Insects and Diseases

The cypress leaf beetle (*Systema marginalis*) can cause reddening of foliage over large areas (Barnard and Dixon, 1983) and probably decreases growth (Chellman, 1971). Another agent of foliage discoloration is the red spider mite (*Tetranychus* spp.), which can reduce growth and make trees more susceptible to other pests (Putnam et al., 1960). The cypress looper (*Anacamptodes pergracilis*) was responsible for defoliating nearly 11,340 hectares (28,000 acres) in the Big Cypress National Preserve in 1980; it may also cause branch dieback (Dixon, 1982). *Bacillus thuringiensis* is a potential control for this caterpillar (Dixon, 1982).

The most serious predator of cypress cones may be the baldcypress coneworm, *Dioryctria pygmaeella*, whose larvae apparently feed exclusively on seeds of pondcypress and baldcypress. In 1978, 75% or more of the cones on north Florida host trees were infested

(Merkel, 1982), although the viability of infested seed was not determined. In the following year, fewer than 1% of the cones on the same trees were infested. The baldcypress coneworm is difficult to detect because the cones remain green after the moths emerge. Pine coneworms, *D. ebeli* and *D. amatella*, also occur in cypress cones (Merkel, 1982).

Other cypress pests are fall webworms (*Hyphantria cunea*), whose larvae feed on cypress needles, and cicadas (*Diceroprocta* and *Tibicen* spp.), which lay eggs in slits torn through the bark (Barnard and Dixon, 1983). Girdled trees in the Fakahatchee Strand in south Florida were attacked by ambrosia beetles (members of the families Platypodidae and Scolytidae) (Craighead, 1971).

The fungus *Cercospora sequioae*, which causes needle blight disease, infects baldcypress in Japan (Kobayashi, 1980). It was introduced from the United States early in this century on *Taxodium mucronatum* specimens. In severe infestations, needle blight disease can almost completely defoliate the host tree.

Pecky cypress heartwood is caused by the fungus *Stereum taxodii*, which represents a serious threat to production of high-quality lumber in Florida (Chellman, 1971). Roth (1898) said pecky cypress looks "as if a number of small pegs, 1/4 to 1 inch thick, had been driven into the log, then withdrawn, and the holes filled with powdered, decayed wood." Wind-dispersed spores usually enter a tree through the crown. Trees with basal cavities, broken tops, or woodpecker holes are almost always pecky. The fungus is not fatal, but it could weaken the tree and make it vulnerable to wind damage (Chellman, 1971).



Fig. 6. Extreme butt swelling on cypress trees. Compare with tree in Fig. 2. (Photograph by J. Ewel)

Forestry Practices and Lumber Production

Mensuration

Estimating the volume of wood in cypress trees is not easy. One difficulty is deciding where on the stem to measure diameter. Diameter at breast height (dbh), (1.4 meters, or 55 inches above ground) is not always appropriate because of irregularity in the height, shape, and degree of butt swelling (Fig. 6) (Hotvedt et al., 1985). The few tables of equations that have been formulated for cypress volume are therefore not all based on the same point of measurement. On the other hand, the high degree of irregularity in cypress may be an advantage. Tables constructed with data collected from only a small part of the species' range may be applicable throughout the commercial range of cypress because of the wide variation in cypress growth rates within any particular locality (Mattoon, 1915).