

## SILVICS &gt; SILVICULTURE

*tuberosa*; blazing star, *Liatrix* spp.; and black-eyed susans, *Rudbeckia hirta*, are offered in seed catalogues on a limited basis. Some nurseries specializing in aquatic plants offer such native species as pickerel weed, *Pontedaria cordata*; arrow-leaf, *Sagittaria* spp.; and waterlilies, including *Nymphaea odorata*.

Some of our native tropical epiphytes, including such bromeliads as *Tillandsia fasciculata* and such orchids as the cow-horn orchid, *Cyrtopodium punctatum*, have found favor with home growers. The almost endemic onion orchid, *Encyclia tampensis*, is often grown and frequently used in orchid hybridization.

But other than these few examples, it's difficult to find South Florida wildflower species in cultivation. This is curious. It makes me wonder why nobody has done selective breeding with the weedy spanish needles, *Bidens alba*, to develop a beautiful hot-weather alternative to the shasta daisy. I wonder why butterweed, *Senecio glabellus*, and flat-topped goldenrod, *Flaveria linearis*, aren't being utilized as the gorgeous annual bedding plants they could be. And why aren't we growing our handsome native *Iris hexagona* var. *savannarum*, which turns the mucky depths of the Big Cypress Swamp into places of beauty each spring?

Listed below are a few of South Florida's beautiful and unusual native wildflowers which I feel have potential as cultivated plants. I am not a gardener nor am I a geneticist, so I cannot state with certainty that selective breeding will improve or overcome negative characteristics of each species so they can become useful additions to the cultivated landscape. However, as a traveler and observer in South Florida's dwindling natural habitats, I can point the way to beautiful species which I feel have potential. It's up to someone more skilled in horticulture to prove their worth.

(The **Wildflower List** is available from FNPS, 1203 Orange Ave., Winter Park 32789, for \$1.00 and SASE.)

## INSECT PESTS AND NATIVE TREES

by Wayne N. Dixon

Dr. Dixon is a Registered Professional Entomologist with the Florida Division of Forestry, Department of Agricultural and Consumer Services.

Many causal agents regularly inflict injury and damage to trees, for example, fire, flood, weather, chemicals, diseases, and animals, to name just a few. Within the animal realm, a general list would include nematodes, mites, millipedes, slugs, snails, birds, rabbits, mice, dogs, livestock, man, and insects. Insect pests are important not only because of the damages to trees per se, but also their high nuisance value to landowners, loss of vegetational aesthetics, and expenditures necessary to prevent or control pest insect damage.

## Native Trees

Native trees are damaged by insects. So, too, are exotic trees. In the inescapable war of people and trees versus insects, the advantages lie with having native trees

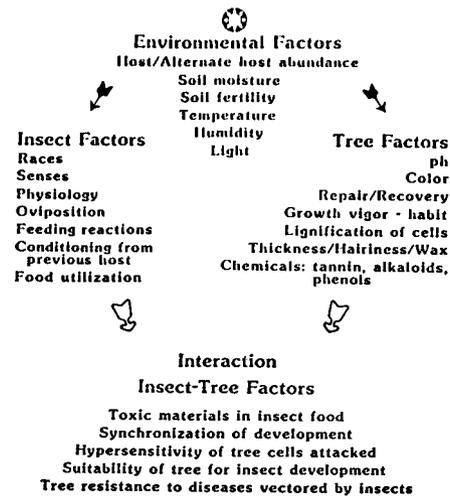
growing under your care and supervision. The advantages are resistance, silviculture, and information on pest biology/habits.

Resistance of a native tree to indigenous pests is more likely to be present than for an exotic tree. Generally, resistance may be expressed in one of the following categories:

1. Preference-nonpreference
2. Tolerance
3. Antibiosis

Briefly, preference-nonpreference is the interaction of tree characters and insect responses that lead to or away from the tree for oviposition, food, shelter, or a mixture. Tolerance is the tree's ability to grow and reproduce itself or repair injury in spite of a damaging insect population. Antibiosis is the tree's characteristics in preventing, injuring, or destroying insect life, for example, reduced fecundity, decreased size, abnormal length of life, and increased mortality. Not necessarily is one type of resistance present to the exclusion of another; often it is a medley of resistance mechanisms. Indeed, the factors that confer resistance are many (Fig. 1).

## RESISTANCE



Silviculture of native trees is more likely to be available than for exotic trees. Important areas of silviculture are:

1. Site selection
2. Site adaptations
3. Maintenance programs

Briefly, many tree species have been studied that are native to North America such that the best sites are known for optimal tree growth. If the site is not optimal, however, native trees often successfully modify physiology or structure to adapt to the site. Often, proven maintenance programs are available and adequately tested to yield expected results in tree growth and appearance. The information required to grow desirable trees is extensive and intensive (Fig. 2).

Information on pest biology/habits is another area conducive to growing native trees, not exotic trees. Important categories include:

1. Base information
2. Control methods
3. Predictive capabilities

Briefly, base information or knowledge on general interactions of tree and insect is



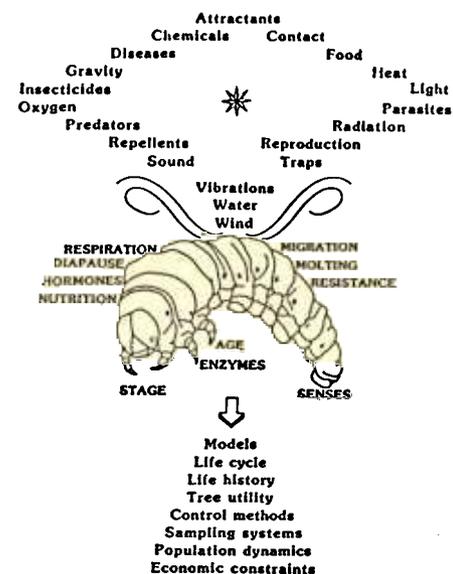
## Silvics

Slope  
Longevity  
Root system  
Rate of Growth  
Growing season  
Shade tolerance  
Branching pattern  
Tree form, height, shape  
Temperature: atmospheric, soil  
Atmospheric gases, moisture, wind  
Soil fertility, gases, layers, moisture, texture



readily available in many cases of native trees and native pests. Answers are at hand for questions such as: Who is the pest? What damage can be expected? Where will the damage appear? Control methods, tested and efficacious, are available for insect pests of native trees. And, intensive research has provided the capability of predicting insect population responses given known changes in certain parameters, for example, weather, food quality, numbers of insects. Overall, native insects have received considerably more study — as would be expected. This has led to knowledge in several areas (Fig. 3), all of which require years of intensive research, to maximize the probability of suppression of pest insect populations.

## PEST BIOLOGY / HABITS



For comparison, a listing of the disadvantages that pertain to exotic trees would include:

1. Little or no information base for many exotic tree species
2. Lack of resistance fine-tuned to one or more native pests
3. Suboptimal sites for tree growth may be all that's available
4. Control measures for pests may be

**PROCEEDINGS** \_\_\_\_\_ from page 9

absent

5. Pest insect-tree interaction little understood
6. Proper maintenance procedures and schedules are not fully developed
7. Absence of natural enemies to contain pest insects and/or prevent exotic tree from becoming a weed.

In general, exotic trees and native trees can be compared in terms of risk of pest infestation. It is greater for exotic trees, less for native trees. And insect damage on a native tree is an identifiable and controllable condition.

### **Evidence of Insect-caused Damage**

There are many clues that can be used to ferret out whether insects are the responsible or causal agents of observed damages to trees. The following table is based on the particular part or component of your tree damaged and the typical damage types that can suggest insect activity. Some words of caution: There are some diseases and other causal factors that can cause similar damage types. A close observation may be necessary.

### **Insect Identification**

Many insects feed on trees. Rather than list the insects, typical damages, and their biology and control, I will refer the reader to two publications available from the Division of Forestry:

**Pest and Problems of South Florida Trees and Palms.** C.W. Chellman. 1978. 103pp.

**Insects and Diseases: Important Problems of Florida's Forest and Shade Tree Resources.** E.L. Barnard and W.N. Dixon. 1983. Bull. No. 196-A. 120pp.

Please send your requests to either your local Division of Forestry office or the Bureau of Forest Education, Division of Forestry, 3125 Conner Blvd., Tallahassee, FL 32301.

Consultation with your local county or urban foresters plus referral to these publications should help you identify if an insect is at fault, and appropriate control measures