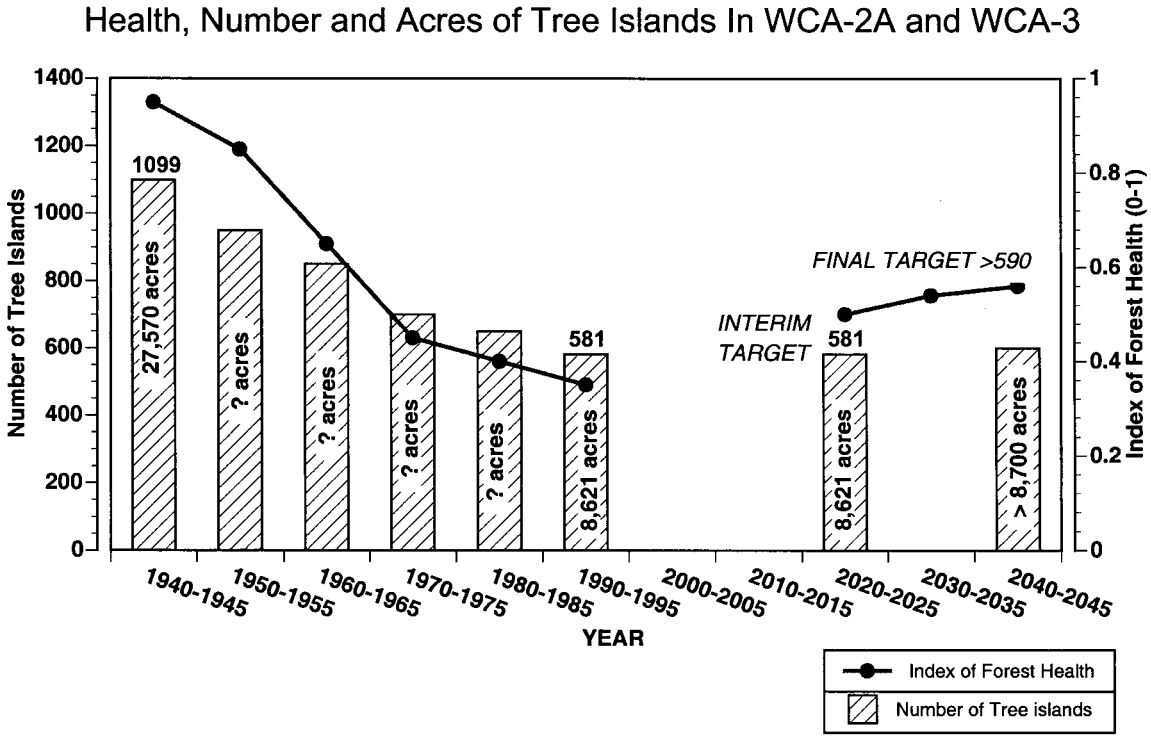
6. EVERGLADES TREE ISLANDS RECOVERY

CERP TARGET

A density-weighted tree island "health index" ranging from 0 (death is imminent) to 1 (completely stress free) is based on tree island canopy density and diversity, exotic plant density and tree growth. The CERP target for WCA-2 and WCA-3 is to increase the health index by 25 to 50 percent and prevent any further reduction in tree island area (**Figure 8**).



Note: Historic trends from 1950 to 1985 were estimated.

Figure 8. Historic values for the Index of Forest Health assumes that tree islands in 1940 were near optimum health. An interim tree island target is a positive trend for this index and is not a net loss. An interim target for WCA-1, Big Cypress Preserve and Everglades National Park should be to maintain current density and health

SIGNIFICANCE AND BACKGROUND

Tree islands occur throughout the Everglades marshes. Tree islands are small, isolated "high spots" that historically have provided essential habitat for a variety of plants and animals. Tree islands serve as a refuge for animals during periods of high water, are sources of food and cover for wildlife, and provide nesting sites for wading birds and freshwater turtles. The islands are also highly important to the culture of both the Miccosukee and Seminole Tribes. Hunters, fishermen and recreational visitors into the Everglades consider tree islands to be symbolic of the ecosystem's health. **Figure 9** illustrates the trends, importance, attributes and stressors associated with tree islands.

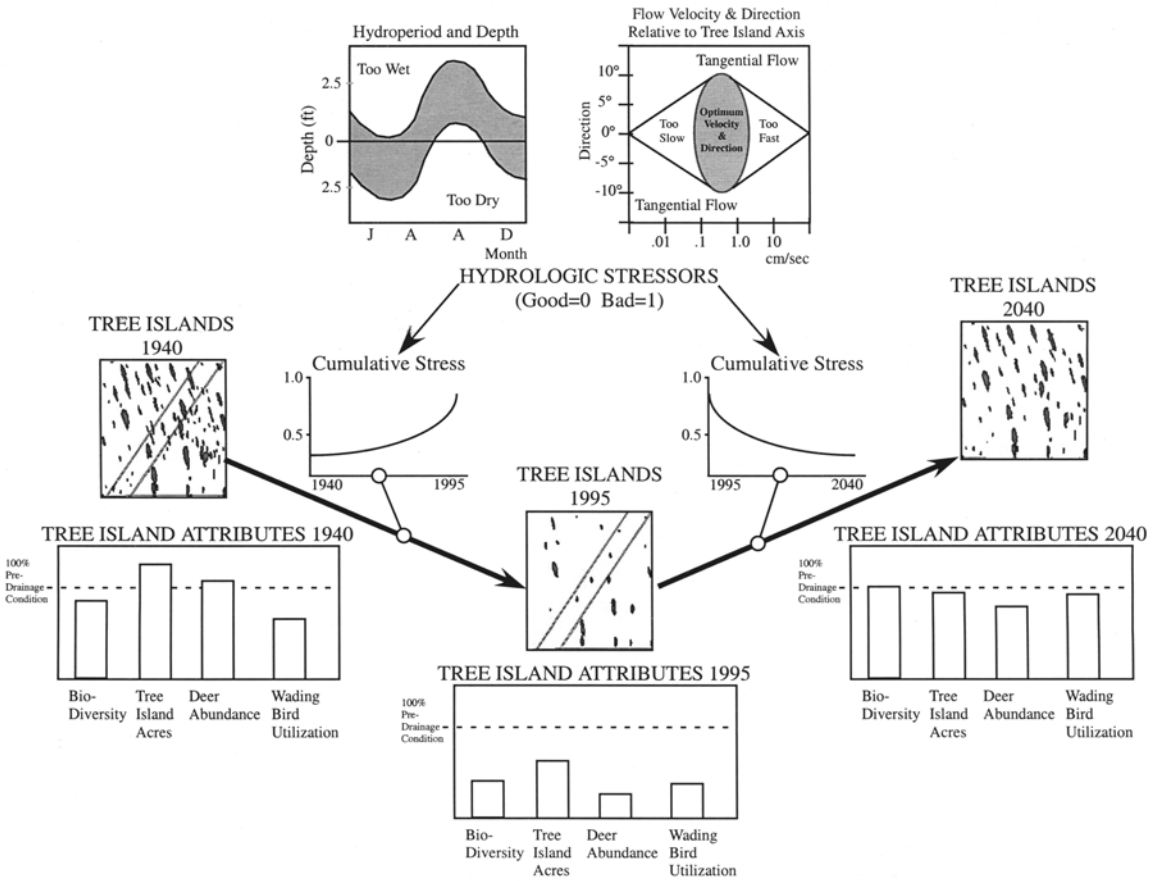


Figure 9. The ecology of tree island historic and predicted change in the Everglades

Because the maximum elevation of the highest tree islands is only slightly above the maximum water levels in the surrounding marshes, tree islands, with their less flood-tolerant vegetation, are very sensitive to unnaturally deep water. Unnaturally deep water can occur in regions where water flow is impeded and dammed. However, relatively deep water can also occur when tree islands lose elevation. Elevation loss occurs when the system is too dry for too long and the peat soils become oxidized or burned. Water management practices have substantially increased the frequency and duration of unnaturally deep water in WCA-2 and WCA-3, resulting in the loss or degradation of many tree islands.

RECENT STATUS AND TRENDS

Comparisons of the number, size and distribution of tree islands between 1940 and 1995 in WCA-2A show that only four of the original 58 tree islands have survived the past 55 years. Three of the four remaining tree islands are stressed and continue to lose trees. Similar comparisons for WCA-3A and WCA-3B show a 45-percent reduction, from 1,041 to 577 tree islands, and a reduction in total tree island acreage from 24,700 to 8,600 acres (a 65-percent reduction).

INDICATOR GRADE

The tree island grade is “red.” The relatively high water conditions from 1995 to 1999 were a stress on tree islands and the relatively dry years of 2000 and 2001 could have been catastrophic. However, tree islands did not burn, and none were destroyed during the drought. Individual islands appear healthy despite the 2001 drought due to the fact that the dry conditions were good for hardwood seed germination and sapling development. Sapling survival will depend on the amount of tree island soil oxidation (and hence elevation loss) relative to the return of high waters during the 2001 to 2002 wet season. Presently, the existing tree islands in WCA-2 or WCA-3 show no evidence of recovery.

RESTORATION ACTION

Large-scale peat burns and tree-island loss were prevented in WCA-3 despite extreme drought conditions. The lack of muck burns was accomplished by rapidly developing an Everglades drought severity index to demonstrate the need for water use restrictions. Other actions in 2001 included (1) the issuing of a remote sensing contract to help develop an inexpensive tool for measuring island tree mass and canopy density for the establishment of a Tree Island Health Index, and (2) the development of a tree island model for the prediction of recovery rates in WCA-2.