

Aquatic Weed Control In Florida's Soil And Water Conservation Districts

HOWARD R. BISSLAND

*Biologist, Soil Conservation Service, U.S.D.A.
Gainesville, Florida*

My story today is principally about Florida's small lakes and ponds that dot the landscape of our sub-tropical peninsula. Privately owned and far overshadowed in importance and use by their big shimmering sister waters, these little waters are none-the-less of importance to the people who own them.

Numbering into the tens of thousands, totally they are of considerable economic and recreational importance to Florida. In an economic way, because they provide farmers, ranchers, and growers with water for irrigation, livestock watering and commercial fishing. Their recreational importance lies in providing family fishing, swimming and other forms of water-based outdoor recreation.

Let me speak briefly about Florida's 60 soil and water conservation districts. They are local subdivisions of government whose boundaries in Florida ordinarily correspond to county lines. Organized by referendum and chartered by the State, they are governed by five locally elected supervisors.

USDA's Soil Conservation Service provides technical assistance to organized districts in soils, engineering, agronomy, woodland and wildlife conservation. It is the working Federal partner of districts.

Trained conservationists are each and every day attempting to show landowners how to use their lands and waters wisely to grow crops of food and fish.

With the conservation of our water resources principally in mind, 22 years ago we began in peninsular Florida to show people how to grow crops of fish in natural pond waters.

After some experience we were able to take ponds that had not produced good fishing at all in 48 years, and produce good fishing in 18 months. By chemically removing existing fish populations and counting and weighing all fish removed, we found that natural ponds in Florida would produce from 15 pounds to 1,000 pounds of fish per acre of water. The lowest weight was taken from a pond in poor sandy soil and the highest weight was taken from a very fertile farm pond.

After killing, counting and weighing fish from many natural pond waters in central and north Florida, we concluded that the total number of fish that a pond would support was dependent upon the fertility of the water and the watershed of the body of water.

From this beginning, farmers, ranchers and growers in Florida's soil and water conservation districts now have stocked and have under management more than 8,000 farm ponds. Several of these ponds in the one-acre size class have provided good fishing for 20 years.

Most of these farm ponds had or have aquatic weed problems.

Ponds filled with underwater weeds are generally poor fish ponds. The weeds form such a tangled mass of vegetation that it is difficult or impossible to fish and it may be difficult to even paddle a boat. Pond weeds protect

small fish, particularly Bluegill Bream, from the large fish. The pond then becomes overcrowded with small Bluegill, the fish are stunted and never grow to any size. Partial or total elimination of the weeds may change this picture completely.

Floating plants like water hyacinth (*Eichhornia crassipes*), water lettuce (*Pistia stratiotes*), salvinia (*Salvinia rotundifolia*) and the duckweeds (*Lemna minor*, *Lemna minima*) exclude sunlight from the water, thus causing a chain reaction that eliminates oxygen from the water. Desirable fish like Large-mouth Black Bass and Bluegill Bream need adequate oxygen. Garfish and mudfish require very little. Timmer and Weldon (1) have described this situation very well. The same authors have cited the evapotranspiration rate of water hyacinth as being 3.7 times greater than the evaporation rate of water.

Pond weeds clog up and damage irrigation equipment and machinery. Our interest then in the control of aquatic weeds is the conservation of water for use.

In 1950 I stated in a report, and I quote, "We have been able to control and eradicate such troublesome water weeds as water hyacinths, water lettuce and water lilies and many varieties of submerged vegetation. We have used both chemical and mechanical means of control."

You know, back then after actively personally doing much of this pioneering work and working closely with research people from several of the companies represented at this meeting, aquatic weed control in farm ponds seemed relatively simple. We actually thought we knew a lot about it.

Five years later, in spite of the considerable help of very able people from commercial companies and from Florida Experiment Stations, I knew that our multiplying problems required additional help. About that time the Angel Gabriel came to Florida in the person of Dr. F. L. Timmons. Through his efforts the Plantation Field Laboratory for Aquatic Weed Control was set up under the Crops Research Division of the Agricultural Research at Fort Lauderdale. As a direct result, for some years now we have had the very able research assistance of Dr. Lyle Weldon and your President, Bob Blackburn.

The technical assistance the Soil Conservation Service provides to Districts includes technical guides on fish pond management and wildlife wetland development. These guides include our best knowledge of aquatic weed control for each of these purposes. We check our knowledge periodically and constantly rely on the help of Lyle Weldon and Bob Blackburn.

Since the early fifties our technical assistance in wildlife has been involved more and more with waterfowl management on privately owned lands. Though we have hundreds of thousands of acres of wetland in Florida, thousands of acres are useless and of no value because of aquatic weeds. Very few aquatic weeds are of value to waterfowl. This does not seem to be commonly understood, but it is

a fact. We are, therefore, involved more in the control of noxious aquatics than we are in trying to grow more of them.

In north Florida wild ducks and geese by the thousands have abandoned lakes and marshes containing aquatic weeds of no value and are using man-made duck fields where the planted choice food is corn and millets. This choice food is flooded to a depth suitable for the feeding ducks by water control measures.

Most of you here have witnessed the severe drouth we went through in April and early May. Then the rains came to south Florida and Abby came to central Florida and northeast Florida. So once again peninsular Florida's rainfall pattern repeats itself here in the early summer of 1968.

Seeking more efficient use of land devoted to the production of food and fibre, Florida's farmers, ranchers and growers have sought to equalize the vagaries of our annual rainfall pattern. Our engineers have assisted them in the design of the V-type field ditches to take water off the land when they have too much, and put it back when they don't have enough. This is water control. Subsurface irrigation is practical and effective in our porous sandy soils where a high water table exists. Annually now for several years more than one thousand miles of mains and laterals have been constructed by district cooperators with the technical guidance of SCS engineers. Aquatic weeds are a constant problem.

The Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress) was signed by the President August 4, 1954. To date in Florida, sixteen small watershed projects have been authorized covering more than one million acres, with an estimated total cost of more than 29 million dollars. Included in the structural measures to be installed are 406 miles of channel improvement.

It does not seem to be commonly understood that small watershed projects are locally initiated and locally sponsored by Soil and Water Conservation District Boards of Supervisors, Boards of County Commissioners, or special purpose districts. A watershed planning party of the Soil Conservation Service assists the local sponsors in the preparation of a work plan. Every work plan that is written contains the stipulation that the sponsors of each small watershed project will maintain the works of improvement and control the water weeds. In recent months aquatic weed control has become a major problem in channels already improved.

In the Secretary of Agriculture's Memorandum No. 1516, dated November 2, 1962, the Soil Conservation Service was assigned major responsibility in the field of income-producing outdoor recreation. Among the many categories in this broad field, fishing waters, fee fishing on privately-owned land are becoming popular in Florida.

From this brief outline you can see that our technical responsibilities in aquatic weed control have today multiplied many times since the early days of our work with Soil and Water Conservation Districts.

As in the past, we will continue to rely on our able research people within our USDA family, Lyle Weldon and Bob Blackburn, for technical help. However, we also welcome the cooperation and assistance of other agencies and groups represented here today.

LITERATURE CITED

1. Timmer, C. E., and Weldon, L. W., 1967. *Evapotranspiration and Pollution of Water by Water Hyacinth*, Hyacinth Control Journal, Vol. 6.
2. Weldon, L. W., and Blackburn, R. D., 1963. *Suggested Control Measures for Common Aquatic Weeds at Florida*, CR56-63.