Andy Price, aquatic biologist for Pennwalt Corporation, is clutching the aquatic weed, Hydrilla Verticillata. He's actually in an airboat in the deep water of Lake Maitland, Fla.

It Takes a Total Water Management Service to Whip This

"Considering that the human body is 70% water, you would think people would recognize the preciousness of our water resources."

ANDY L. PRICE was just warming up to a discussion of his profession when he injected this observation of the most puzzling aspect of his work. Price is an aquatic biologist for the Pennwalt Corporation.

As he continued, he turned up at least three reasons:

—People haven't realized that as population and pollution increase, "good water" — from the standpoint of its multipurpose uses — is a limited resource;

—Too many people don't realize the seriousness of water pollution nor recognize its presence; and

—Those people who recognize pollution don't always know what to do about it or where to go to find the problem's cure.

While Andy Price preaches enthusiastically on all three themes, his profession is to answer the third one — how to deal with water polluted with aquatic weeds.

"All we have to sell is a service — and an end result," he says. That service is the Pennwalt Aquatic Applicating Service. And he calls special attention to the definition of the end result: An understood and accepted "aquatic vegetation management program."

"We're talking vegetation *management*," he emphasizes. Total control, or eradication, may not be possible nor even desirable."

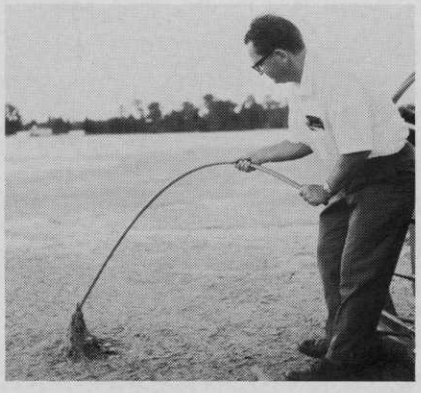
Aquatic Weed Explosion

What has been happening the past few decades, Price explained as background, is that we have had a population explosion and a technological explosion; and the two have produced an aquatic weed explosion with as yet unrecognized proportions.

Technology has produced more leisure hours, and more people are traveling and taking to the water in boats, skis, swim suits and scuba gear. Technology has produced commercial fertilizer for every type of purchaser for every living plant. The excess plant nutrients are going into the water. Result: Aquatic weeds are traveling with their human carriers (boat motors, trailers, etc.), are infesting new water areas, and are growing rapidly in the enriched waters.

"The time is near when a land-

Price demonstrates that Hydrilla not only has mass but weight as well. The weed grows as much as a foot a week. At the surface, it mats with algae strong enough to support large birds.



owner can't go dig a new pond when the old one becomes choked with weeds," warns Price. Nor can a city build a new lake and relocate itself around it.

The introduction of some tropical exotic plants has been especially disastrous, Price said. He singled out hydrilla verticillata. In the proper growing climate, "it will grow a foot a week." And fragments of plants easily take root when they contact soil.

This can mean that the weed introduced into an irrigation canal (30 feet wide and 4 feet deep), perhaps from the prop of a motor boat that went fishing over the weekend, could become an economic problem within three months, Price estimated.

For those who are responsible for potable water supplies, he tosses out this statistic:

"We found that in one surface acre of water, the aquatic weed hydrilla verticillata displaces 698 cubic feet of water."

Service in Reply to Inquiries

Some agricultural and recreational leaders have recognized the growing weed infestation. Out of their repeated inquiries for solutions has evolved the Pennwalt Application Service.

Pennwalt Corporation, a manufacturer of aquatic herbicides since the early 1950s, began some applicating service in 1963. The service was then formalized by regions, beginning with the Northeast Region in 1963.

"Very few people are knowledgeable about the proper handling of aquatic herbicides," says Price. And the truth is that very many people are highly sensitive about what goes into their swimming, fishing, and drinking water.

"You don't just dump a chemical into a lake to control a certain weed," says Price, "without checking to see if the water flows into an irrigation canal for a citrus grove then continues to a stream through a dairy farm, and finally empties into a river from which a city gets drinking water.

"We initiated the idea — we're pioneers — of a professional service that considers all phases of water management."

"Send us your lake and we'll tell you how to weed it," Pennwalt has advertised as the simple way people with water problems can avail themselves of the service.

Actually, Price advises that the systematic approach is to form a lake association or lake committee. "Then we have a practical group to work with."

How the Service Works

"We'll make a survey to determine if the water can be effectively treated," explains Price. "We'll prescribe the treatment, estimate the cost, spell out the degree of control that can be expected and the number of days to achieve it."

Once details are completed, an agreement is written and signed. The Pennwalt crew obtains all necessary permits and the work begins, using ground spray, airboats, or helicopters, as the situation dictates.

Post application inspections are made to assure that intended results were obtained.

The basic compound of most Pennwalt aquatic herbicides is endothall, with the brand names of the most-used being Aquathol Plus, Potassium Endothall and Hydrothol 191.

"But our applicating service is not limited to the chemicals we make," emphasizes Price. "We'll use any herbicide that's federally registered as one that will control the problem in that particular locale."

Employees Carefully Trained

Providing a high-calibre applicating service eliminates hiring just anybody that knows how to run a boat or point a spray stream.

Price has found that it pays to hire employees who take pride in their work and who want to continuously improve their craftsmanship. When he needs additional help, college students have proved most valuable.

"It takes at least a year to train a good sprayman," estimates Price.

They must learn how to mix a wide variety of chemicals, learn the most effective spray patterns, proper feathering, and boat maneuvers; how to avoid trapping fish in coves; and on occasion how to calm an aroused landowner by carefully explaining what is being done, why, and what effects can be expected.

Seeing a Pennwalt sprayman decked out in rubber gloves, overalls and boots, and wearing a face shield may cause some people to wonder if all that protective gear is necessary, thinks Price.

"But we take pride in our employees, and that's a measure of our interest in their health and safety," he explains.

Examples of Costs

Trying to pin down a cost for the Pennwalt Applicating Service and a time required for accomplishing a given task is next to impossible. About the best that can be done to give some idea of cost is through specific examples.

For a surface aquatic weed, a floater such as water hyacinth, "we're talking about $30 per sur-

Hurricane Fibreglass "Aircat" has proved the ideal vehicle for aquatic weed treatment, floating over the surface without picking up weed particles. Normal operation is to introduce chemicals below the surface as shown here. The airboat is equipped with an F. E. Myers 10 gpm pump.

face acre to clean it up," estimates Price. "The submersed problem is the highest priced with some species requiring as much as $35 *per acre foot*. (A 1-acre pond 10 feet deep would cost $350.)

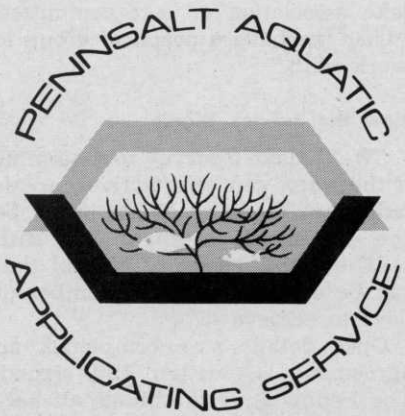
Concerning time and length of control, an airboat can cover one surface acre in about 30 minutes, and most weeds could be expected to disappear in about a week.

In many situations, broad cost-sharing appears to be the only feasible — and fair — way to handle an aquatic weed problem.

At Winter Park, Fla., for example, Parks and Recreation Director Jay L. Blanchard says:

"We feel that because of the value of the chain of lakes to the city as a whole, it (aquatic weed infestation) is a community problem, a county problem, a state problem, and it is a federal problem."

Residents of Winter Park have at least agreed that aquatic weeds is a community problem by approving a city-wide one-mill levy to become effective on Nov. 1. They approved the levy to finance the fight against aquatic weeds even though only about 10% of the residents are lake property owners.



Pennsalt has become Pennwalt since a recent merger. Assistance and consultation on aquatic weeds are available through four offices, in Tacoma, Wash., Philadelphia, Pa., Montgomery, Ala., and Orlando, Fla.

Winter Park has 14 lakes, either part or wholly within the city limits. The lakes represent 800 acres of surface water and more than 20 miles of shore line.

Working for Winter Park Since '66

The aquatic weed problem has taken on such magnitude that the next year's budget calls for a Lakes Division within the Parks and Recreation Department. The budget will be between $150,000 and $180,000. Eight men out of a 60-man staff work in aquatics full-time. Winter Park has used mechanical harvesters since 1963 and three years ago brought in the Pennwalt Aquatic Applicating Service as added reinforcement.

In the past 2½ years, Winter Park has spread 17½ tons of Hydrothol 191 at a cost of $14,425. The coming year's budget calls for four aquatic herbicide applications at an estimated $20,000.

"We find this herbicide to be very satisfactory, and individual lake front homeowners are pleased with the results," says Blanchard.

Despite the city's mounting attack, in budgetary terms from about $18,000 in 1966 to possible $180,000 next year, the total weed population is increasing.

"Still, we feel the best method is to continue both the mechanical harvesting and herbicide treatments," states Blanchard. "Right now, we feel we've pulled ahead of the game in physical appearance."

An Airboat You Can Build

Need a floating platform to work narrow canals, maneuver among aquatic weed beds, or investigate shallows where motors cannot navigate? Then, consider the outfit put together by Leonard Devine, superintendent of public works at Palm Beach Gardens, Fla.

Devine bought a 12 hp motor, added a screen-enclosed 42-inch propeller, and mounted the outfit on a 14-foot, flat-bottomed boat, 6' 10" in width. Result is a unit weighing about 350 pounds that can be hauled on any trailer. It's truly an air-driven platform that's useful for pesticide application of aquatic weeds.

Hubert "The Boatman" Williams, pilots Palm Beach Garden's aquatic spray boat on a local canal. Lloyd "Tex" Horrell is sprayman and does all of the city's aquatic weed control work.

His bill of materials and approximate cost consisted of: (1) Model 300421 Briggs and Stratton 12 hp motor @$231; (2) a 42" propeller with 24" pitch and 1" shaft size, designed for counter-clockwise rotation @$37; and (3) a Monticello aluminum flat-bottom boat @$350; plus miscellaneous screen and mounting brackets.

His regular spray equipment is hauled in the boat. It consists of a John Bean spray pump, hose and tanks, etc.

Devine says it has proved practical for municipal weed control and mosquito spraying and fogging. Because the unit is capable of slow speeds and very maneuverable, it has proved an excellent piece of equipment for close-in work in small canals which are typical of many city problem areas.