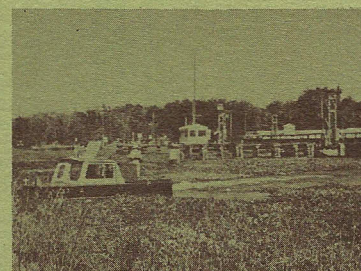
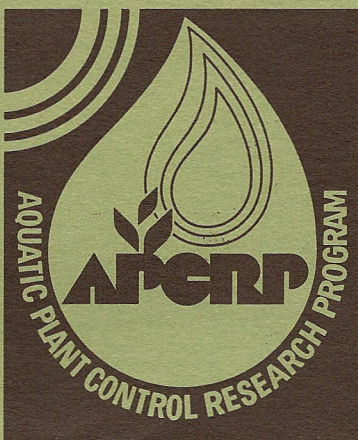
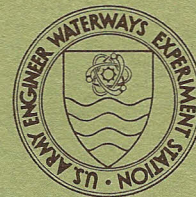
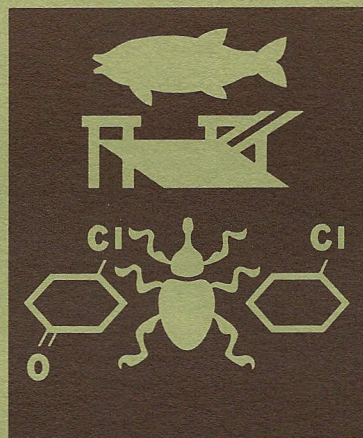


U. S. Army Corps of Engineers
Information Exchange Bulletin



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AQUATIC PLANT CONTROL RESEARCH PROGRAM

Information Exchange Bulletin

This issue of the Aquatic Plant Control Research Program (APCRP) Information Exchange Bulletin provides information on the effect of the recent reorganization of the Waterways Experiment Station (WES) on the APCRP.

Ongoing work in the various technical areas of the APCRP is assigned to new organizational elements. Figure 1 presents the personnel presently involved with the research efforts of the APCRP, their titles, areas of responsibility, and an indication of the principal investigators.

A general overview of the program is presented below.

BIOLOGICAL CONTROL TECHNOLOGY

Research using insects for plant control is being conducted for the APCRP by the U. S. Department of Agriculture, Science and Education Administration (USDA-SEA), Biological Control Laboratory at Gainesville, Florida, and the Aquatic Plant Management Laboratory at Fort Lauderdale,

Florida. At Gainesville, USDA scientists search for and evaluate insects for control of specific problem plants. Once discovered, these insects undergo quarantine testing to ensure their host specificity. Currently, three insects for control of Eurasian watermilfoil are being evaluated. Searches in foreign countries for additional potential agents should be initiated in early FY 80. In addition, USDA entomologists at Fort Lauderdale have been successful in establishing field populations of *Sameodes*, a moth for control of waterhyacinth, in central and south Florida (Figure 2). Attempts are being made to establish this agent in both northern Florida and several locations in Louisiana (Figure 3). USDA-SEA facilities at Stoneville, Mississippi, are also being utilized for insect research. Scientists at Stoneville are presently conducting research on techniques for the mass rearing of populations of *Arzama densa*, another moth that has potential for control of waterhyacinths.

Research using plant pathogens continues and is being conducted by

the University of Florida Plant Pathology Department. The pathogen *Cercospora rodmanii* is being used in the field under operational conditions while other pathogens are being evaluated in the laboratory for control of submersed aquatic plants.

CHEMICAL CONTROL TECHNOLOGY

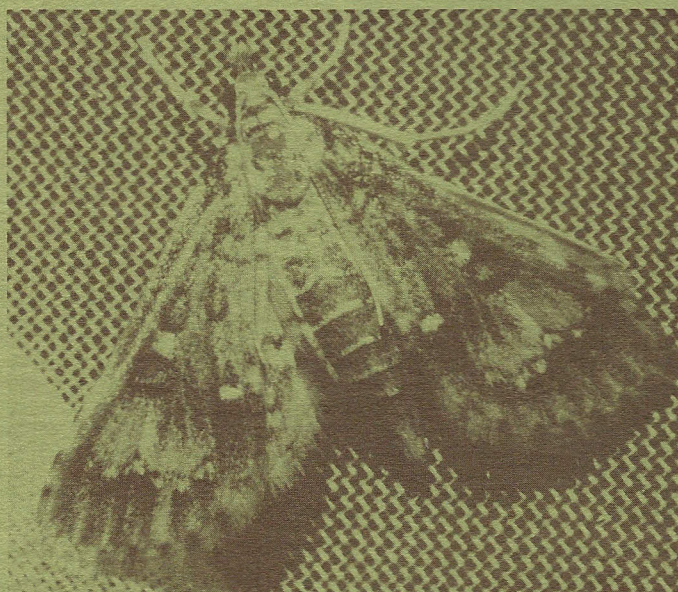
Research conducted for the development of chemical control technology is directed toward the final objective of making approved chemicals available to Corps operations personnel for the management of aquatic plants. Testing and evaluation of both the chemical compounds themselves and associated techniques in equipment used to apply these compounds are of primary concern. Specific interest in this program element is placed on encouraging chemical industries to develop and offer for evaluation new compounds that may show promise for use in the aquatic environment. Research items are as follows:

Program/ Group	Area of Interest	Personnel	Title
APCRP	Program Management	Mr. J.L. Decell* Mr. W. N. Rushing Ms. Linda Parker	Environmental Engineer, Manager, APCRP Botanist Secretary
Wetlands and Terrestrial Habitat Group (WTHG)	Biological Control Technology Large Scale Test Using Insects and Pathogens	Dr. H. K. Smith Dr. Dana R. Sanders** Mr. E. E. Addor Mr. R. F. Theriot Mr. E. A. Theriot Mr. S. O. Shirley	Research Wildlife Biologist, WTHG Plant Physiologist Botanist Biologist Microbiologist Engineering Technician
Ecological Effects and Regulatory Criteria Group (EERCG)	Chemical Control Technology Effect of Light, Temperature, etc., on Growth of E. Watermilfoil and Hydrilla Plant Succession Studies	Dr. R. M. Engler Dr. H. E. Westerdahl** Dr. J. W. Barko**	Soil Scientist, EERCG Research Ecologist Research Biologist
Environmental Assessment Group (EAG)	Problem Identification and Assessment Panama Canal Assistance Large Scale Test Demonstrating Prevention Methodology Fish Tracking Study for Lake Conway	Mr. J. K. Stoll Mr. A. M. B. Rekas** Mr. R. L. Lazor Mr. S. D. Parris Mr. M. P. Keown**	Geologist, Chief, EAG Zoologist Biologist Biologist Physicist
Waterway Habitat and Monitoring Group (WHMG)	Large Scale Test Using White Amur— Lake Conway Mechanical Control Technology Herbicide Platform Evaluations	Dr. W. B. Gallaher Mr. J. D. Lunz** Mr. H. W. West**	Research Biologist, Chief, WHMG Marine Biologist Civil Engineer
Water Resources Engineering Group (WREG)	Simulation Modeling for Mechanical Control	Dr. R. L. Montgomery Dr. E. R. Perrier**	Civil Engineer, WREG Soil Scientist

* As Manager, APCRP, Mr. Decell reports to Dr. J. Harrison, Chief, EL, and Mr. F. R. Brown, Technical Director, WES.

** Principal investigators.

Figure 1. Structure for Aquatic Plant Control Research Program



Sameodes adult



Larvae

Figure 2. Moth used in biological control research



Figure 3. Introducing *Sameodes*

- USDA-SEA scientists at the Aquatic Plant Management Laboratory at Fort Lauderdale, Florida, are conducting a screening program for promising chemicals.
- Controlled release herbicide formulations are being developed and evaluated by scientists at Wright State University at Dayton, Ohio, and the Creative Biology Laboratory at Barberton, Ohio.
- Large-scale field efforts are being conducted to evaluate two compounds produced by Pennwalt Corporation for the control of hydrilla in Gatun Lake in the Panama Canal Zone.
- A nationwide effort to evaluate fenac for control of submerged aquatics is being conducted in cooperation with Union Carbide Agricultural Products Company.
- Through cooperation with the Bureau of Reclamation, data have been gathered and submitted requesting an extension of the label for the

butoxyethanol ester of 2,4-D (2,4-D BEE) to allow its use in waters of the northwestern United States for control of Eurasian watermilfoil. This label is presently held by TVA and has been used in TVA lakes for control of this noxious submersed aquatic plant.

- Studies of the fate of herbicides in aquatic environments are being conducted by the Syracuse Research Corporation, Syracuse, New York, to ensure that certain herbicides that appear promising are not detrimental to aquatic ecosystems.

MECHANICAL CONTROL TECHNOLOGY

During the past two years, intensive efforts conducted for the Jacksonville District have revealed that certain on-the-shelf systems for mechanical control do have limited application in certain problem areas for submersed aquatic plants. Through research and field testing conducted in operational areas in

Florida, it was found that small operational level control programs can be conducted in an economical manner. Data are presently being collected to generate the required engineering data to determine improved criteria for design of new systems. In addition, evaluation of the St. Johns River is being conducted to determine the feasibility of the application of mechanical systems to this environment for control of waterhyacinth. During the last quarter of FY 79, a mechanical system will be demonstrated by Limnos, Ltd., Toronto, Canada, in the Withlacooche River of Florida and possibly in other operational areas as designed by the Jacksonville District.

PROBLEM IDENTIFICATION AND ASSESSMENT

The problem identification and assessment work area of the APCRP develops techniques for locating, identifying, and mapping the character and distribution of aquatic plant problems on a large scale. In addition, a methodology for determining the economics of aquatic plant control is being developed to provide Corps users with not only a method of assessing the nature and scope of their aquatic plant problems, but also enabling them to assess the dollar value of aquatic plant control and the benefits to be derived as a result of that control.

PUBLIC INFORMATION AND TECHNOLOGY TRANSFER

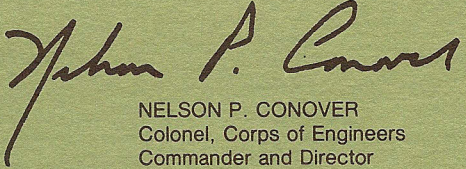
The APCRP continually strives to keep the public informed of aquatic plant control research and operation's activities through publication of this bulletin, technical reports, brochures, and news releases. Movies on major projects are available on loan to interested groups. Technology transfer is further effected through participation in the Annual Research and Operations Planning Meeting conducted by the APCRP. This year the 14th annual meeting will be held on 27-29

November 1979 at Fountainhead Lodge at Lake Eufaula, Oklahoma, approximately 70 miles south of Tulsa.

LARGE-SCALE OPERATIONS MANAGEMENT TEST (LSOMT)

Three LSOMT's are being conducted in cooperation with Corps Districts. The LSOMT using the white amur at Lake Conway, Florida, is being conducted for the Jacksonville District. The project was initiated in 1976 and will continue until September 1980. The lake was stocked with white amur in September 1977, and subsequent monitoring of ecosystem parameters has continued. Trends to date indicate a general reduction in the hydrilla infestation with negligible adverse effects on the various other components of the aquatic ecosystem. An LSOMT is being conducted for the New Orleans District using insects and pathogens for control of waterhyacinth. Planning and preliminary tasks have been completed and the project is now entering full operation. Various combinations of waterhyacinth weevils, the moth *Sameodes*, and pathogen *Cercospora* are being distributed on preselected sites. An LSOMT to demonstrate prevention as an aquatic plant management method is being conducted in the State of Washington for the Seattle District. The test plan for this project is being finalized and

This bulletin is published in accordance with Army Regulation 310-2. It has been prepared and distributed as one of the information dissemination functions of the Environmental Laboratory of the Waterways Experiment Station. It is principally intended to be a forum whereby information pertaining to and resulting from the Corps of Engineers' nationwide Aquatic Plant Control Research Program (APCRP) can be rapidly and widely disseminated to Corps District and Division offices as well as other Federal agencies, State agencies, universities, research institutes, corporations, and individuals. Contributions are solicited and will be considered for publication so long as they are relevant to the management of aquatic plants as set forth in the objectives of the APCRP, which are, in general, to provide tools and techniques for the control of problem aquatic plant infestations in the Nation's waterways. These management methods must be effective, economical, and environmentally compatible. This bulletin will be issued on an irregular basis as dictated by the quantity and importance of information to be disseminated. Communications are welcomed and should be addressed to the Environmental Laboratory, ATTN: J. L. Decell, U. S. Army Engineer Waterways Experiment Station, P. O. Box 631, Vicksburg, Miss. 39180, or call 601-636-3111, Ext. 3494.


NELSON P. CONOVER
Colonel, Corps of Engineers
Commander and Director

preliminary tests are just getting under way. The project is scheduled to reach full scale during the early months of next fiscal year.



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