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PRESIDENTIAL ADDRESS

"Managing Aquatic Plants in the 1990's"[1]

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I would like to welcome you to the 30th annual meeting of the Aquatic Plant Management Society (APMS). This meeting marks a significant milestone for APMS. In 1961, a small group of individuals met in Florida to consider various methods for controlling waterhyacinth (*Eichhornia crassipes* Mart. Solms.), the major aquatic weed problem at that time. In fact they named their group after this plant, The Hyacinth Control Society. As you know, the program, newsletter, and other publications of the society are printed on lavender colored paper—the same color as the flower of the waterhyacinth plant. Now, 30 years later the ideas and objectives of this group are still in existence, and we are standing on the edge of a new decade.

The beginning of each new decade produces its crop of those individuals who like to predict what the next 10 years will bring. As President of the APMS at the start of a new decade, and incidentally the last decade of the last century of a millennium, although some will argue that the decade doesn't really begin until January 1, 1991, I would like to take a few minutes to look back at the original objectives of the society and then share with you a few of my ideas as to what I think the next 10 years will have in store for APMS.

The recording of one's thoughts on paper always invites later reflections by others who are able to examine critically the writer's comments and ideas. The recording of predictions of future events has the inherent problem that they are viewed with hindsight based on knowledge of the events that actually occurred. It is well known that futurism has always been a risky business, but when the future is viewed with knowledge of the past, then perhaps some information as to what might occur in the future can be used to serve as guidelines for expected events.

In his Presidential Address to the Hyacinth Control Society, Frank Wilson (1970) stated, "Predictions are tricky. There is only one that we can make with the complete assurance that it will occur. This is *change*. Things will not be the same next year or even next month." He went on to add "Our operations will be much more technical and complex in the 1970's and 1980's." How right he was! One can only guess what his predictions might have been for the 1990s.

The noted Swiss historian Jakob Burchhardt (1818-1897) wrote "Neither in the life of the individual nor in that of mankind is it desirable to know the future." Human endeavor thrives on goals and challenges, and it may be that knowledge of the future removes the challenge and excitement of the unknown, and a certain amount of curiosity in not knowing what the next day will bring. In order to be prepared for the future, one must gain as much knowledge as possible about the past in order to plan for future directions.

In reviewing the history of APMS it is obvious the society has remained dedicated to its original objectives with some changes and modifications along the way. In the invited keynote address for the 1987 annual meeting of APMS, Herb Friedman stated, "Let us not forget our original goals. For should we lose sight of where we have been, good or bad, we may lose sight of where we should be going" (Friedman, 1987).

So if you will permit me, I would like to take a few moments and look back to examine the original objectives of the society. Article II in the Certificate of Incorporation of the Hyacinth Control Society, Inc. states "The general nature of the objects of this society shall be to assist in promoting control of water hyacinths and other noxious aquatic weeds, to provide for the scientific advancement of members of the society, to encourage scientific research, to promote university scholarships and to extend and develop public interest in the movement" (Anon. 1962).

If you will look in the back of your program, you will see the present objectives of APMS stated as follows: "The objectives of the society shall be to: 1. Encourage scientific research and assist in promoting the control and management of aquatic plants through scientifically sound procedures, 2. Recognize and promote scientific advancement of the members and facilitate the education of aquatic plant scientists through scholarships and other assistance programs, 3. Publish the results of meritorious research and other information of value that pertains to aquatic plants and their management, 4. Extend and develop public interest in, and understanding of, aquatic plant management problems and solutions, and 5. Cooperate with local chapters and other societies and organizations with similar and related interests" (Anon. 1990).

The objectives of the society have been expanded but are still very similar in concept to the original ones. The name change in 1976 from the Hyacinth Control Society to the Aquatic Plant Management Society is an indication that the society is interested in many other aquatic plants than just waterhyacinth, although this plant still continues to be a problem in some areas. The addition of state and regional chapters, of which there are now six, has greatly broadened the scope of the society.

Changes that have occurred within APMS since its beginning have been evaluated by several individuals. Don Lee in his 1979 Presidential Address stated "It is imperative that extensive fundamental research be continued. Without the knowledge derived from this research, it will

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be impossible to develop aquatic weed technology needed to cope with the problems caused by aquatic weeds" (Lee 1979). Couch (1990) examined the subject matter of articles published by the society's journal from 1962 to 1988. His analysis showed a decline in operational research reports and a dramatic increase in both biological and ecological research reports. Likewise, Decell (1987) evaluated APMS based on information published in the journal, and concluded "The burden of encouraging basic research technology rests with the National Society."

If past history is any indication of the future, then it is clear that basic research on aquatic plants will continue to be one of the major objectives of APMS of the 1990's. But as you look at your program today you will see that applied studies still constitute a sizable portion of the societies' interest. The results of basic research must be tempered with knowledge of the practical aspects of the management of problem aquatic plants in order for research knowledge to be transferred to the field, and I am confident the applicator in the field will still continue to play a major role in helping to guide the direction of basic research.

I am not telling you anything new when I say I have seen changes in the way we manage aquatic plants during the time I have been working with aquatic plants, and I am certain these next 10 years will bring even greater changes. Shifts in the species of aquatic plants that cause problems have occurred and will continue to occur. Although it is difficult to comprehend the establishment of a plant more difficult to manage than hydrilla (*Hydrilla verticillata* (L.f.) Royle), we do know that in many cases the elimination of one plant problem often results in another species taking its place.

There is a saying that goes something like this, "nothing is more constant than change." Some changes are for the better and some are ones which we don't particularly like, and some changes are ones that will be quite unexpected. In looking at some of the changes that may possibly occur during the next 10 years, I would like to discuss briefly three areas in which I think we will see some major changes.

An example of how rapidly changes can occur is evident in the herbicide industry. A couple of years ago the likelihood of new aquatic herbicides appearing on the market in the foreseeable future was rather bleak. But with the recent development of 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]- 4(1*H*)-pyridinone (Fluridone), commonly called Sonar® for aquatics use, we have seen a positive change in the development of new herbicides designed for use to manage aquatic weeds. With Sonar we have a product that is effective on the target weeds but with little effect on some of the desirable native species.

It would not surprise me to see in a few years new compounds developed specifically for use in aquatic systems. Perhaps in the future we will see more effort aimed at the development of herbicides designed specifically for use in aquatic systems, rather than the redesigning of terrestrial herbicides for aquatic weeds.

I see little likelihood of any major reduction in the use of herbicides for managing aquatic plant problems during the next 10 years. I think that herbicides and their prudent use will continue to be the primary factor in managing most aquatic plant problems.

During the past couple of years we have seen herbicide companies change names and owners through corporate mergers and takeovers. Hopefully these companies now will have sufficient resources to meet the required testing for registration of a new product. I doubt if governmental bureaucracy will change sufficiently to allow the herbicide industry to know exactly what is required for product registration. If anything, we will probably see more rules and regulations for herbicide use.

The concern over the environment will continue to cast shadows over the use of any material for application in and near water. I think we will see more enforcement activity as county and state governments continue to exercise their authority over environmental issues. It is up to APMS to help provide the public with information on herbicide use. And of course, it is up to the applicators and aquatic plant managers to make sure herbicides and other products are being used according to label instructions.

Studies related to biological control of aquatic plants is the second area in which I think we will see major activities during the next 10 years. In past years research activities on biological control with the grass carp (*Ctenopharyngodon idella* Val.) caused much controversy; however, the development of triploid fish eliminated many of the fears for use of this herbivorous fish and they are now being used in many bodies of water throughout the country.

The grass carp is one of the most efficient and effective biological methods to come along in many years, but this herbivorous fish is not the answer to all aquatic weed problems. The grass carp however does offer the potential of converting unwanted weeds into useful fish protein. I would like to see more research activities on the use of the grass carp to convert weeds to protein. In the not to distant future, it would not surprise me to see fish farmers culturing aquatic plants to remove nutrients from effluent waters of intensive fish culture ponds and then feeding the aquatic plants to grass carp.

I think the 1990s will see more attention given to an integrated approach with grass carp and herbicides than we see today. In the past some of those in the herbicide industry saw the grass carp as a threat that would reduce or eliminate the use of herbicides. Others saw the grass carp as a way to eliminate herbicides from use in water. Neither of these has happened. Herbicides are needed, and in some cases are better than grass carp. I have always maintained that an effective aquatic plant management program will stress use of both grass carp and herbicides. I see herbicides as a way to keep the bulk of the problem under control, and then use a few fish to prevent regrowth with an occasional application of herbicide to bring the weeds back to low levels the grass carp can manage.

Considerable effort is being expended in the search for new biological controls for several troublesome aquatic plants. Promising candidates for biological control with insects include the small fly, *Hydrellia pakistanae* Deonier, for use on hydrilla and the beetle, *Neohydronomus affinis* Hustache, for water-lettuce (*Pistia stratiotes* L.). Both of these insects are now in field trials and show promising results.

The third major research area I see for the 1990s are studies designed to evaluate the interaction of aquatic plants. More information is needed on the interaction of exotics and native aquatic plants as they compete for space and nutrients in a body of water. Unless we understand better the factors that contribute to causing exotic plants to get out of hand in the first place there is little likelihood that we are going to make much progress on eliminating or reducing some of our major weed problems.

The past several issues of the APMS Journal have included articles on the allelopathic potential of aquatic plants. The study of allelochemicals is an area of tremendous interest because of the potential which these chemical may have in increasing our understanding of the relationships of certain plants and their possible use to regulate growth of certain plants.

In the past few years we have seen major efforts in revegetation and restoration, and this activity is likely to expand considerably. The present concern over the environment will result in more effort to promote growth of native plants. Studies on allelochemicals and nutrient relationships of sediments to plant growth are essential if the effort to establish aquatic plants is to be successful.

I appreciate the opportunity to serve as President of APMS for this past year. It has been an interesting and challenging experience for me. I am sure the next 10 years will be ones that result in new changes for APMS and will provide many opportunities for the society to promote effective management of aquatic plants.

Thank you for your attention.

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