

EXECUTIVE SUMMARY

On September 15, 2006, Mr. Phil Bandy, Deputy Director, Idaho State Department of Agriculture (ISDA), invited the University of Florida, Center for Aquatic and Invasive Plants to convene and chair an independent panel of recognized aquatic plant management experts to review the State of Idaho 2006 Eurasian watermilfoil (EWM) management program and to recommend short- and long-term program enhancements. Aquatic plant management and research personnel from Florida, California and Minnesota reviewed the program during the period of October – December, 2006 and submitted a report to the ISDA on December 22, 2006. This effort was conducted through a contract with the Idaho Weed Awareness Program with funds provided by the ISDA.

During the review, the panel identified major and minor issues and has provided specific and general recommendations. Several issues and recommendations address short term improvements in the administration and operations of the current EWM program. The panel also offered long term recommendations necessary to ensure a responsive and effective aquatic invasive species program. These long term recommendations will require ISDA organizational changes, interagency cooperation and delegation of authority, educational programs, stable/recurring funding and action by the Idaho Legislature. A summary of the identified issues and recommendations are:

2006 EURASIAN MILFOIL ERADICATION PROGRAM

- The ISDA and county weed superintendents have extensive experience in the management of noxious terrestrial weeds. However, the influx of significant funding for EWM eradication by the Idaho Legislature in April 2006 required rapid action by the ISDA to develop an aquatic weed eradication effort. It is the opinion of the panel that the 2006 EWM eradication program was a monumental effort of agency action and interagency cooperation and was an overall success in meeting its objectives. The panel was very impressed with the amount and quality of the work accomplished, given the extent of the EWM infestation in Idaho, the timing of the legislative authorization and funding for the program, the need to survey the EWM infestations to be controlled, request proposals for eradication efforts, evaluation and award of the contracts, public involvement and notification, and operational logistics involved in the first year of this program. Input received from cooperators and grant recipients ranged from total satisfaction to various levels of concern relative to the issues noted above. Overall, the ISDA should be commended for its efforts.
- Recommended program planning improvements include longer lead time for surveying and selecting priority EWM infestations to be controlled and techniques to be used; longer solicitation and evaluation periods; more accessible information regarding the granting process; more flexible cash flow considerations for

contractor reimbursement; more citizen involvement and outreach; and more independent quality control and assurance measures for contracted activities.

- Eradication should remain a priority in those areas where realistic confinement and control technologies provide reasonable opportunities for success. In other areas, management programs should be applied to reduce environmental, recreational and economic impacts. The goal of eradication should be the total elimination of the nuisance plant in the specific body of water where practicable and feasible. Otherwise the goal should be to reduce the population to a non-readily detectable level or to levels that do not interfere with predominant water uses.

PROGRAM ORGANIZATION

- The ISDA should be designated as the lead or responsible agency for nuisance aquatic species by the Idaho Legislature. The ISDA should develop a statewide strategic EWM management plan, cooperative agreements and/or delegated authority for coordination, permitting, and administration of the program.
- The county-based weed management agencies should be the operational entities responsible for the management of control activities in their counties under the generalized management and coordination of the ISDA Nuisance Aquatic Management program as specified by state law.
- At least one overall, statewide coordinator and three regional aquatic species management specialists should be allocated to the ISDA by the Idaho Legislature. The statewide coordinator should be assigned to the ISDA Division of Plant Industries. Initially, one regional specialist should be allocated north of the Salmon River, and two south of the Salmon River. These personnel will be responsible for implementing the strategy, planning, local interagency coordination, program effectiveness and contractor oversight to effectively implement a responsive and acceptable nuisance aquatic species management program.

FUNDING

- A sufficient and recurring funding source for the management of nuisance exotics should be established as a revolving trust fund (Idaho Aquatic Species Management Trust Fund), subject to annual allocation of spending authority by the Idaho Legislature. This is necessary to ensure that the gains made in the current program will not be lost.
- Efforts should be pursued to increase cost-sharing opportunities with local governmental agencies, lake associations, and Federal agencies.

REGULATORY AND PERMITTING

- Delegation of authority for “one stop” grant coordination or permitting should be provided to the ISDA. This would include aquatic herbicide application and label requirements, water quality assurance, mechanical harvesting, benthic barrier placement, and biological control with the exception of the sterile grass carp which should remain the primary responsibility of the Idaho Department of Fish and Game.
- The need for sampling of water quality and expensive herbicide residues need to be evaluated to ensure that it is justified by herbicide label restrictions and economics.

RESEARCH NEEDS

- There is a current lack of research/demonstration efforts focused on the short term need to develop and evaluate management techniques for EWM and other potential nuisance species. Both funding and statewide leadership by ISDA is needed as is the development of cooperative research projects/programs with state universities.

AGENCY AND PUBLIC EDUCATION NEEDS

- Idaho freshwater ecosystems are critical to the environmental quality and economy of the state and region. Idaho water quality, habitat, and recreational opportunities are being threatened by EWM and potentially other invasive aquatic plants. Funding for public and agency personnel education and training relative to aquatic species management is an excellent and priority investment in the state’s future.
- Maximum use of the University of Idaho and county Cooperative Extension Service should be made for the development and dissemination of educational materials

PROPOSED LEGISLATION

- A comprehensive statute that would establish the ISDA as the lead agency responsible for permitting, funding, research, public education, program organization and coordination is needed.
- An earmarked source of funding needs to be identified that will allocate sufficient and recurring funds to an Idaho Aquatic Plant Management Trust Fund.

- The Idaho Nuisance Species Advisory Council should be established by legislation to provide for interagency and public coordination and input into the development of long term strategy and policy, educational opportunities, and research concerning the control of nuisance aquatic species. The ISDA should also have the authority to establish other councils and committees as needed to carry out its responsibilities.

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INTRODUCTION

The Idaho State Department of Agriculture (ISDA) has long standing responsibility for the statewide management of invasive plant species. This is carried out operationally by the local county weed control organizations in 41 of the 44 Idaho counties. Due to increasing public concern over the impact of the exotic aquatic weed, Eurasian watermilfoil (EWM) and a review of its expansion by the Idaho EWM Task Force, the 2006 Idaho State legislature enacted House Bill 869 that appropriated \$4.0 million to the ISDA for the purpose of eradicating EWM over a two year period (Appendix 1). In response, the ISDA initiated a granting program to address as much of the existing EWM infestation as possible in public water bodies of the state. Following completion of the 2006 control efforts, concerns were expressed regarding the program's effectiveness, management of the contracting efforts, and public involvement expressed by members of the general public and commercial entities.

In response to these concerns the ISDA, through the Idaho Weed Awareness Campaign, commissioned an independent review panel to evaluate the 2006 EWM program and to provide recommendations for future program activities. The specific purposes of the review were to:

- Evaluate the ISDA-funded projects to control EWM during 2006 to include an assessment of the strategic, programmatic, and operational options to minimize the costs and increase the effectiveness of the program in future years.
- Make recommendations on submersed aquatic plant vegetation monitoring protocols both pre- and post treatment.
- Make recommendations for evaluating aquatic plant management contractor performance.
- Identify pesticide registration issues related to the use of aquatic herbicides in Idaho's water bodies.
- Make recommendations on public information initiatives.

In selecting the review panel, particular care was taken to insure that there was complete independence from the ISDA and except for the funding of the review panel, there were no financial interests by the review panel in any commercial aquatic weed management enterprise in Idaho. Based on a request from ISDA (Appendix 2), a team of personnel from the University of Florida Center for Aquatic and Invasive Plants, the Florida Department of Environmental Protection, the Minnesota Department of Natural Resources, and the California Department of Food and Agriculture were identified to conduct the review. The contract for the panel was managed by the Idaho Weed Awareness Campaign. Appendix 3 provides qualifications of the review panel.

Emphasis of this report is on the EWM program; however, many of the issues and recommendations may be generic to other aquatic nuisance species.

REVIEW PROCESS

In order to obtain an overview of the 2006 EWM program and related issues, an evaluation and interview process was developed in conjunction with the review panel and ISDA. The review process encompassed four phases: (1) initial review of numerous documents to include the successful grant applications for the 2006 EWM eradication program; (2) a visit to northern Idaho lakes and interaction with the EWM Task Force by one panel member, November 3-6, 2006; (3) review panel formal meetings at the ISDA headquarters with various entities, visit to two sites that received treatments in 2006, and exit briefing with selected ISDA personnel; and (4) information synthesis and report preparation. Appendix 2 provides the scope of work.

The list of persons to be interviewed was developed by ISDA personnel based upon their knowledge of the EWM issue and those who provided input or whom participated in the 2006 EWM program. The types of individuals with whom the panel interacted included, ISDA personnel, cooperating agency personnel, private citizens representing environmental organizations and lake homeowner associations, commercial aquatic plant applicators, county weed control personnel, members of the EWM Task Force, and local and state elected officials. An itinerary of the review panel and a list of the individuals with whom the panel interacted with are included in Appendix 4.

2006 ERADICATION PROGRAM

The 2006 EWM program was authorized and funded by House Bill 0869. The Governor's directive was to implement the program as a simplified cost share program designed to eradicate EWM. The cost share program was modeled after Idaho's nationally recognized cost share Cooperative Weed Management Area (CWMA) Program for terrestrial weeds. There are 29 such areas in Idaho and require the involvement of the county weed superintendent(s) and approval of county commissioners. There are also ten (10) statewide projects which benefit the entire state. Two of these are directly applicable to the EWM program, i.e. the Idaho Weed Awareness Campaign and the EWM Task Force.

The Governor signed HB-0869 into law on April 12, 2006 which directed that \$4.0 million to be made available to ISDA for EWM eradication on July 1, 2006. In order to implement the EWM control plan, the ISDA followed the scenario:

- Plan was created by ISDA staff based upon the CWMA concept, and developed granting guidelines
- An internal ISDA legal and administrative review was conducted
- A public meeting was held on April 21, 2006 with participation by the review committees, EWM Task Force, and county weed superintendents
- The application process and forms were posted to the ISDA website May 1-15, 2006 (Appendix 5).
- Twenty-four (24) applications were received totaling \$6.58 million
- A EWM Control Program Application Committee was established to review applications received. The committee was composed of non-ISDA personnel from other affected agencies and two legislators.
- An internal ISDA Technical/Consulting Committee was established to review the recommendations of the Application Committee.
- Technical/Consulting Committee met on June 2, 2006 and made recommendations to the ISDA Director for the funding of 14 projects ultimately totaling \$2.6 million. See Appendix 6 for a list of the EWM projects funded and the financial tracking spreadsheet.
- Award/non-award letters to successful applicants were sent June 9, 2006
- Initial 25% of grant funds were made available on July 3, 2006, 50% was released upon completion of control efforts and final 25% to be released upon completion of final reports
- Projects were conducted July-November 2006

ISSUES

The review panel was repeatedly informed by a variety of individuals that ISDA did a remarkable job in getting the program organized, funded and implemented in such a short time frame given the legislative and executive mandate under which it operated. It is the opinion of the review panel that the 2006 EWM eradication program was a monumental effort of agency action and interagency cooperation and was an overall success in

meeting its objectives. The panel was very impressed with the amount and quality of the work accomplished in a very short timeframe.

The review panel found there was considerable confusion relative to the review process and who was on the various review committees, concern over the short length of time to assemble the necessary information, availability of EWM survey data and contractors to prepare the applications, difficulty in scheduling qualified aquatic herbicide applicators, concerns about a perceived over-reliance on herbicides for eradication efforts, cash flow issues based on the 25-50-25% distribution schedule, and lack of coordination with other management agencies for lake drawdowns and wildlife issues. Most of these issues and those identified elsewhere appear to have been caused by two circumstances: i.e. (1) the shortness of the time available to implement a new and much more complex weed control program than ISDA or the state had previously experienced and (2) the lack of adequate communications with the public and potential grant applicants.

PROGRAM ORGANIZATION

Issue: 1.0 Granting process

There were several comments regarding the grant review and award process that seemed to stem from a misunderstanding of the process and composition of the various committees involved in the program. There also were repeated comments regarding the time available to complete required steps in the grant request process as well as delays in receiving reimbursement for work performed. Finally, there were requests for clarification of requirements for preparing reports necessary to receive final payments.

The objectives, functions, composition and roles of the various milfoil task forces and committees, some formed rapidly in Spring 2006 to facilitate selection of grant recipients, caused confusion and consequently some concern over possible conflicts of interest. For example:

- The Milfoil Task Force has been in place for 2-3 years and has prioritized research projects and weed surveys.
- The EWM Control Program Application Committee was formed in Spring of 2006 to review grant applications and provide a priority list of projects to receive funding from the department. There were no ISDA staff members on this committee.
- The ISDA Technical/Consulting Committee was also formed in Spring of 2006 and consisted of entirely ISDA staff to evaluate legality and feasibility of proposed projects.

Recommendation 1.1. Transparency of grant review and award process

The ISDA has to ensure both a transparent and unbiased process for grant selection in the future and the selection process has to be made known and readily available to applicants as well as to the public. In future grant application cycles, the ISDA should insure that

the grant application is as transparent and publicly available as possible. One possible mechanism would be the refinement of a web site that delineates the application process, timelines for application, cost sharing requirements, the review process (to include the membership and roles of the various review committees), financial management requirements, and reporting requirements. Given the seasonal nature of the EWM infestations, latitude and flexibility should be allowed between the number of acres estimated to be managed in the application process and the actual need at the time of management.

Recommendation 1.2: Program leadership

The stated purpose of the program is to eradicate and control EWM infestations. While this is the responsibility of the ISDA, all phases of monitoring, control, education, outreach, etc. are carried out by other stakeholders. Therefore, it is incumbent upon ISDA to ensure EWM is managed according to a comprehensive state plan. ISDA should focus on EWM management by identifying priority management or information needs and seeking, encouraging, or assisting entities to apply for grants to fulfill these needs. Currently, grants may be denied even for work in priority areas if they do not meet administrative criteria. ISDA should work with grant applicants to ensure complete applications are submitted within the appropriate time frame that adequately address program needs. For example, ISDA should work with applicants, especially first time applicants requesting to apply herbicides, to assist in procuring a Short Term Activity Exemption. Additionally, ISDA should enter into agreements with other environmental agencies to delegate authorities or modify statutes to eliminate dual permitting. For example, if ISDA issues a grant to control EWM using herbicides or small area benthic barriers, then additional permits should not be required from the Idaho Division of Environmental Quality (IDEQ) or the Idaho Department of Lands (IDL). IDEQ and IDL interests can be addressed during the development of grant application criteria, by delegation of authority for the purpose of EWM management and/or by including agency representatives on the grant review committee.

Recommendation 1.3: Grant administration process

ISDA distributed notebooks to the Panel that describe the grant review and reimbursement process including a timeline. This information seemed comprehensive and should be modified and made available on the ISDA website during the grant application and review process. What is not clear to several grantees that were interviewed is the information needed by ISDA in the final report to evaluate project effectiveness and release the last payment. ISDA should meet with stakeholders to further develop, streamline, and clarify all application and reporting documentation within Idaho rules and regulations prior to distributing requests for grants in 2007.

ISDA should consider and discuss with stakeholders moving the grant application submission time table earlier in the year to allow more time to prepare and review applications. Final reporting requirements and deadlines can be fairly standard for administrative projects like outreach and education that produce a clear product or

outcome, but may be more difficult for management operations, especially if operations or follow up management is not applied until the end of the fiscal year. Rather than waiting for an end-of the year report, ISDA should consider disbursing management funds based on proper execution of an approved management plan and not necessarily on successful reduction of EWM. ISDA field biologists should observe applications to verify that management techniques are applied according to an approved plan. Moreover, results may take months to assess, especially for a fluridone herbicide treatment, or control may not be achieved because of extenuating environmental conditions. Grantees should not be penalized by withholding reimbursements for conditions that are beyond their influence or control.

Where possible, ISDA should attempt to ensure more uniform contracting/bidding processes at the county level. There appeared to be some concerns relative to different processes in the counties involved in the 2006 program.

Recommendation 1.4: ISDA auxiliary contracts

ISDA should take innovative steps to facilitate management operations, especially for early detection and rapid response (EDRR) situations and to assist local entities in funding management operations requiring large financial outlays. ISDA should consider entering into statewide contracts to purchase herbicides in order to stabilize and reduce costs. These contracts should be available for other governments to share or “piggyback” or ISDA should consider purchasing herbicides outright and coordinating delivery to control sites. ISDA should keep herbicide suppliers apprised of potential control locations and anticipated quantities of herbicides needed to ensure availability and timely delivery of herbicides.

In addition, ISDA should consider entering into longer-term contracts (subject to annual renewal) with entities independent of contracted applicators to map and control EWM. These entities can augment existing local government management personnel, supply services that local governments do not provide, or respond quickly where no local government program yet exists.

Recommendation 1.5: Contract/Task assignments vs. grant

ISDA should consider actively seeking contracts with counties and other local entities to control EWM in high priority areas rather than passively waiting for local entities to apply for grants. Further, long-term contracts should be considered for counties with waters where eradication may not be feasible and long-term management programs to contain EWM are anticipated. For example; contracts could be valid multiple years with local governments and with private companies contingent upon funding availability and contractor annual performance. Once a long-term contract is in place, annual management plans or specific control operations can be authorized through task assignments. Contract or grant amendments can take considerable time to amend if they require legal review, while task assignment amendments are operational in nature, requiring fewer levels of review. Such contracts would also facilitate EDRR operations.

Recommendation 1.6: Funding allocation flexibility

A percentage of the funds available each year should be held in reserve by ISDA to direct toward high priority problems that may arise during the year. The program should remain flexible to allow for additional funds to be allocated to projects when unforeseen problems arise that were not included in the original grant. Likewise, provisions need to be in place to expedite the return of funds if anticipated problems do not arise or do not require the originally anticipated funding level. Returned funds should then be allocated to areas of greater need. Funds from one fiscal year should be allowed to be certified forward for several weeks or months to pay for work completed at the end of a fiscal year but not invoiced until the beginning of the new fiscal year. Funds not expended by the end of the fiscal year should be directed to a EWM management trust fund for use when conditions are more favorable for control. A cap can be applied to the trust fund, so if funds continue to build beyond a prescribed level, they can be redirected to the state's general revenue fund or to other invasive species issues. Allowing funds to be certified forward in an established trust fund allows managers to control plants based on science and current conditions and not on a prescribed administrative schedule. Another advantage of the establishment of a trust fund is to avoid the common perception that herbicide applications are done simply to utilize funds remaining at year's end to insure receipt of additional funding the next fiscal year.

Recommendation 1.7: Reimbursement flexibility

While administrative-type grants like outreach or education projects can be completed on an incremental schedule throughout the year, effective EWM management in Idaho waters seems to be confined to June through August or September; across fiscal years which run from July 1 – June 30. Future year grant applications may need to be made many months prior to operations; before the current year management results have been fully assessed or before current year management programs have even been completed. Rather than releasing funds according to a prescribed percentage formula (25% - 50% - 25%), the program should remain flexible allowing reimbursement after large funding outlays for control. Reimbursements should be considered on a quarterly or monthly basis especially to entities that received a large grant and have large monthly expenditures. For example: a county with relatively low internal fund availability receiving a million dollar grant with monthly expenditures of \$200,000 during the prime control period may need more frequent reimbursements. Centralized statewide contracting by ISDA for herbicides could reduce the local cash flow impacts and realize significant savings.

Issue 2.0: EWM management program direction

In 2003, the Milfoil Task Force (MFT) initiated a survey of Idaho waters to determine the extent and cover of EWM. By 2005, EWM was identified in 10 of the 44 Idaho counties with an estimated cumulative cover of about 7,500 acres. The MTF estimates that EWM could expand to cover more than 210,000 acres and recommends immediate action to

eradicate EWM where possible and to reduce or contain EWM where eradication does not seem feasible.

Statutes and rules have been revised to address EWM control authority and expenditures within the ISDA. This enabled ISDA to quickly establish an invasive aquatic plant management program where none existed previously. Early detection and rapid response (EDRR) is important when eradicating or attempting to contain early infestations of invasive aquatic species. Several federal, state, and local government agencies as well as Native American tribes have authorities in waters susceptible to or already infested by EWM. A comprehensive state strategy needs to be developed to locate, manage, and assess control impacts related to EWM to conserve surface waterbody uses and functions within the state of Idaho.

Recommendation 2.1: Program responsibility

The Idaho Legislature has designated the ISDA as the lead agency with the specific responsibility to coordinate invasive aquatic weed management issues. However, weed management operations are the responsibility of County Weed Superintendents. Pertinent statutes and rules should be revised to: routinely monitor the level of EWM infestation, clarify EWM management objectives, provide sufficient and recurring management funding, and evaluate the cost-effectiveness of management programs. This includes the adoption of standard assessment techniques and weed mapping protocols. It is important for these parameters to be codified in statute and rule to provide program consistency throughout the state as well as longevity of the program necessary for invasive aquatic plant management. While most of the EWM management may be conducted by local entities, there needs to be statewide coordination and oversight. This level of oversight can be supplied with minimal ISDA staff through statutory authorizations, delegations of authority and memoranda of understanding among agencies with water resource management responsibilities, and through contracts with private companies to augment agency staff.

Recommendation 2.2: Staffing

The review panel feels strongly that to develop an efficient and publicly acceptable EWM management program it must increase staffing particularly at the field level. An overall program coordinator should be stationed at the ISDA headquarters in Boise. Given the current distribution of EWM in Idaho, two field level regional biologists should be authorized by the legislature. These two initial positions should be stationed one each in the northern area of the state, north of the Salmon River, and a second position stationed in the southwestern portion of the state. Periodic surveys of waterbodies in the southeastern portion of the state should be conducted and if EWM or other invasive aquatic species are detected in that area, a third regional biologist should be allocated to that region. These positions will be a tremendous asset in the regional management and grantee oversight of the EWM management efforts. They could also play key roles in public coordination and education. Appendix 7 provides a position description for the

Florida Regional Biologist with aquatic plant management, coordination and oversight responsibilities.

Recommendation 2.3: Program intent

Section 22-2402, Idaho Code, should be amended to further clarify the definitions of eradication and control (see Issue 6.0). The ISDA has been given funds to eradicate and control EWM. Sections within the Noxious Weed Rules (02.06.22) suggest there are EWM populations that can be eradicated (Statewide EDRR Noxious Weed List) and others that can be controlled or contained. EWM is currently on the Statewide Control Noxious Weed List, but the Milfoil Task Force suggests that there are some instances where EWM can be eradicated and others where EWM may only be controlled. Clarifying Legislative intent that efforts should be made to eradicate new or isolated EWM infestations while established populations should be managed at the lowest feasible levels that technologies, waterbody conditions, and funding allow will assist in long-term program understanding and stability.

Recommendation 2.4: Management plan and priorities

Legislation should direct ISDA to develop an annual EWM management strategy for Idaho waters. This plan should include ISDA management objectives for waters infested with EWM so that County Weed Superintendents or other local entities can accordingly apply for ISDA funds to achieve these management objectives. There also should be an annual or ongoing assessment of EWM populations and management efforts to gauge the overall effectiveness of the program and to support funding requests on a priority basis. Thus, program funding will be come performance-based as well as needs-based.

Recommendation 2.5: Funding

Given that EWM is fairly widespread within Idaho waters and in neighboring states and provinces, it likely will not be eradicated from all Idaho waters, or if eradicated in a given waterbody, will likely be reintroduced. Therefore, legislation should be developed for a long-term source of funding for EWM management and personnel and appropriate equipment within the ISDA to coordinate monitoring efforts and oversee the management program. Numerous examples of such funding sources exist including a surcharge on boat trailers and/or boat licenses, allocation of a proportion of state gasoline taxes in proportion to the amount estimated to be used by the boating public, a fee on property sales, a portion of fishing licenses, a fee on ad valorem property tax bills for water front properties, etc. The choice of funding sources must be seen as fair and linked to the management of the resource.

Issue 3.0: Herbicide residue analysis and Adjuvants

Costly residue analyses of herbicides and adjuvants were required of contractors by the Idaho Department of Environmental Quality programs and to determine when water can be used for potable or irrigation use per label directions. Contractors treating potable or irrigation water sites individually contracted with private laboratories for residue

analysis. The added requirement for a quick turn around time on the samples added significant costs. Contractors had to spend time to get these bids, and in at least one example, the cost of residue analyses exceeded the cost of the herbicides used in the project.

Recommendation 3.1: Herbicide residue analysis

- Minimize the number of samples required to be analyzed that will be collected from treatment sites to those necessary to document contract performance or to ensure adherence to required residue levels.
- During the 2006 program, the Idaho Department of Environmental Quality required that residue samples be analyzed from some herbicide applications beyond those required by the herbicide labels. These data should be compiled and evaluated to determine if this policy needs to be continued, and if so, how the number of samples can be reduced significantly.
- Residue analytical costs can be greatly reduced by ISDA placing out to bid annual contracts for herbicide residue analyses from all the state contractors. This will save contractors time and the higher number of samples in one performing laboratory may reduce per sample costs.

Issue 3.2: Use of adjuvants

While there is no doubt that surfactants/adjuvants are important in foliar applications of herbicides, there is little data to support use of adjuvants to improve efficacy against submersed aquatic weeds. Granular formulations and fluridone liquid most likely do not benefit from the addition of adjuvants due to the release rates of granules and the mode of action of fluridone. The only possible benefits of the addition of adjuvants may be for liquid herbicides that are absorbed rapidly, such as 2,4-D amine, diquat and endothall. Data supporting this premise are not available, despite the fact that some applicators are convinced that improved efficacy results from addition of surfactants for herbicide absorption and sinking agents for herbicide placement

There is concern by some state agencies that certain surfactants may be toxic to zooplankton and other invertebrates. Combine this with the fact that EPA does not regulate nor register surfactants makes regulatory agencies hesitant to allow their use. Washington State has developed a list of approved adjuvants which seems to be a reasonable approach until additional studies or data are collected which would either a) show toxicity or lack thereof of surfactants to invertebrates or b) definitive data are provided which clearly shows significantly improved efficacy of the addition of adjuvants to herbicides used for submersed weed control. Adjuvants used in this context includes surfactants, foams, sinking agents or other chemical spray additives

Recommendation 3.2:

Allow applicators to use approved adjuvants from the Washington State list at http://www.ecy.wa.gov/programs/wq/pesticides/final.pesticide.permits/registered_pesticides.html.

Issue 4.0: Exemption from state water quality standards by temporary water quality degradation caused by aquatic weed control activities.

Excessive uncontrolled growth of aquatic weeds alters water quality by changing dissolved oxygen patterns, pH, carbon dioxide, alters light penetration, zooplankton and phytoplankton populations, among other parameters. Likewise, weed control activities, whether mechanical or herbicidal can cause short term water quality changes depending upon the method of control and the amount (area and biomass) of vegetation controlled.

For example, Chapter 403.088, section 1 of the Florida Statutes (www.leg.state.fl.us/statutes) essentially allows the Florida Department of Environmental Protection (FDEP) to conduct and permit aquatic weed control activities without having to get a pollution control permit from the same agency. This statute has saved the FDEP as the lead aquatic plant management agency in public waters extensive and unnecessary water quality monitoring and submission of permit applications. The relevant section of the statute is reprinted below.

403.088 Water pollution operation permits; conditions.--

(1) No person, without written authorization of the department, shall discharge into waters within the state any waste which, by itself or in combination with the wastes of other sources, reduces the quality of the receiving waters below the classification established for them. However, this section shall not be deemed to prohibit the application of pesticides to waters in the state for the control of insects, aquatic weeds, or algae, provided the application is performed pursuant to a program approved by the Department of Health, in the case of insect control, or the department, in the case of aquatic weed or algae control. The department is directed to enter into interagency agreements to establish the procedures for program approval. Such agreements shall provide for public health, welfare, and safety, as well as environmental factors. Approved programs must provide that only chemicals approved for the particular use by the United States Environmental Protection Agency or by the Department of Agriculture and Consumer Services may be employed and that they be applied in accordance with registered label instructions, state standards for such application, and the provisions of the Florida Pesticide Law, part I of chapter 487.

Recommendation 4.1: Establish temporary water quality exemption by statute.

The Idaho Department of Agriculture should codify the exemption of approved aquatic weed control operations from state water quality standards as necessary to facilitate the control of aquatic weeds within the framework of Idaho law/rules and regulations.

Issue 5.0 Invasive aquatic weed list

The aquarium and water garden industry and aquatic and wetland restoration projects have high potential to introduce new and even more aggressive invasive weeds into Idaho. Recent research conducted in Minnesota clearly shows that not only state listed noxious weeds, but even federally designated noxious weeds were commonly found in shipments of aquatic and wetland plants imported into that state (Maki and Galatowitsch, 2004, Biological conservation 118:389-396). Current draft revisions to IDAPA02, Title 06, Chapter 22, Noxious Weed Rules, proposes addition of *Egeria densa*, *Hydrilla verticillata* and *Eichhornia crassipes* to the Idaho Noxious Weed list. There are two known species of *Egeria*, *densa* and *najas*, and there are additional potentially noxious species of *Eichhornia*.

Other genera of aquatic plants causing major problems in northern states and also in states near Idaho include species (or lower taxa) of *Phragmites*, *Cabomba*, *Potamogeton crispus*, and *Trapa*. These genera are expanding and becoming increasingly problematic in the USDA plant hardiness zones 4, 5 and 6 in the Northeast, Michigan and Kansas/Nebraska (www.usna.usda.gov/hardzone) which have similar climatic conditions to large portions of western Idaho.

Recommendation 5.1: Additions to the Invasive Species List.

Additional aquatic plants need to be added to the noxious weeds rules to prohibit introduction of known noxious invasive aquatic weeds into the state to protect the natural beauty and value of Idaho waters. Serious consideration should be given to revision of current draft legislation to designate the following (and possibly others) to the statewide EDRR Noxious Weed List:

Egeria sp.
Eichhornia sp.
Hydrilla verticillata
Hydrocharis sp.
Trapa sp.
Phragmites sp.
Cabomba sp.
Potamogeton crispus
Hydrocharis morsus-ranae

Further it is recommended that:

- A panel consisting of botanists, invasive aquatic plant experts and regulators from adjacent states should be convened to review additions to the above list. The movement of invasive plants is at the very least a regional issue.
- Plant surveys should be conducted of Idaho lakes and waterways to determine the extent of these invasive plants, if present, which might allow a rapid response and eradication effort.

- Internet sales and culture of plants for sale in private aquaculture ponds (particularly in Eastern Idaho) may be a significant source of potentially invasive aquatic plants that should be monitored on a regular basis.
- Training should be sponsored by ISDA for persons involved with monitoring and managing Idaho waters in order to identify all invasive aquatic weeds so that appropriate management efforts can be quickly applied.
- ISDA should develop a program to inspect nurseries and retail outlets that grow or sell aquatic and wetland plants. Businesses and activities of persons that engage in aquatic and wetland plant revegetation or restoration should be inspected or permitted by the appropriate agency to ensure that plants are not collected and transported from a waterbody infested with EWM or other noxious weed to previously uninfested Idaho waters.

Issue 6.0: Eradication goal

The stated objective of the Idaho State Department of Agriculture’s (ISDA) EWM Eradication Program is to eradicate EWM from all the state’s infested waterways. The definition of “eradication” in the authorizing legislation is “Eradication means the elimination of a noxious weed based on absence as determined by a visual inspection by the control authority during the current growing season” (Idaho Code Section 22-2402 (10)). This is an operational definition, which provides guidance to project managers in the field, and provides a measurable objective to program managers at ISDA. The EWM Program Review Panel understands that, in the context of the ISDA EWM Eradication Program, this definition includes the meaning that, to be considered eradicated, all EWM must be controlled in a given waterway.

Judith Myers, in a paper on pest eradication in general, has defined the term “eradication” in a more abstract way as “Eradication is the removal of every potentially reproducing individual of a species or the reduction of their population density below sustainable levels” (Myers, et al 2000). Leavitt, in regards to weed eradication in California, has given a similar definition and also contrasts eradication with control: “What exactly does eradication mean? It means that every plant or plant part capable of reproduction is removed from a defined area... whereas control means the temporary suppression of plant germination, emergence, or growth sufficiently enough so that crop, forest, range production, highway safety, or other goals can be achieved for a season. Once eradication is accomplished, treatments can stop; with control, treatments must continue year after year” (Leavitt 2006).

Abstract definitions do not give operational guidance as program endpoints are difficult, if not impossible, to define in practice. For this reason, the California Department of Food and Agriculture (CDFA) adopt the following operational definition of eradication in its Hydrilla (*Hydrilla verticillata*) Eradication Program: “If no hydrilla plants are detected after three years of intensive survey, a Declaration of Eradication will be issued by the Department. However, if a plant is detected during this period, treatments would be initiated and another three consecutive years of negative survey will be required before a declaration can be issued” (CDFA 2005). The CDFA’s terrestrial weed eradication

programs also use the negative survey for “three consecutive years” rule (Rejmanek and Pitcairn 2002). In Australia, weed control managers used a “no plants had been detected for 5 years or more” as the operational definition of “eradication” for a kochia (*Bassia scoparia*) eradication program (Dodd and Randall 2002). Five years was adopted because this was considered the upper limit for seed persistence of this species.

The elimination of EWM from a defined area will require control of all EWM stems and leaves, control of the root crown and stolons, and control of new plants sprouting from EWM fragments and seeds. Therefore, the ISDA definition of “eradication” may be an adequate operational endpoint for their EWM Eradication Program if adequate underwater surveys are conducted to ensure control of all plant parts, the root crown, and new sprouts from defined areas. However, the review panel did detect considerable confusion over the statutory definition from both an operational and public understanding perspective.

Panetta and Lawes have introduced three criteria “by which progress towards the weed eradication objective may be evaluated” (Panetta and Lawes 2005). These are: delimitation, containment and extinction. “Delimitation” refers to the ability to find all the plants. “Containment” refers to prevent further spread and to prevent re-infestation. “Extinction” is their word for elimination.

Recommendation 6.1: Clarification of the program goals

The ISDA EWM Eradication Program can be successful if it detects and delimits all of the EWM infestations statewide (not just in cooperating Weed Management Areas), if it prevents movement of EWM fragments into new areas or prevents them from re-infesting old areas, and if it eliminates all plant parts as described above. However, one concern of the EWM Program Review Panel is that prevention of re-infestation may not be an achievable goal in Idaho waterways that are contiguous with EWM infested adjacent states. Long-term eradication may not be achievable in these waterways, but eradication in the current growing season, as per the ISDA definition of eradication, may still be achievable. A more workable program goal would be to (1) aggressively reduce the presence of EWM to non-readily detectable levels in those enclosed waterbodies where deemed practically and economically feasible and (2) reduce EWM populations to levels that do not significantly interfere with fish, wildlife or public recreation use of the water body in those large open, moving water systems. Such a program will require the development of site specific management objectives in cooperation with concerned entities.

Issue 7.0: Methods for survey of Eurasian watermilfoil

The review panel heard concerns relative to the proper method to survey EWM infestations, as well who should have the authority and responsibility for pre- and post-treatment surveys of contracted aquatic plant treatment operations. This appears to be a concern due to perceived conflicts of interest of commercial applicators surveying and mapping pre- and post-treatment weed control efforts. Additionally, there was some

confusion over the actual areas treated and in some cases weed beds expanded between initial surveys and application, as well as concern over treatments of areas that contained native vegetation instead of the targeted EWM.

Recommendation 7.1: Review survey techniques appropriate for the program goals.

Before selecting a survey method, it is important to identify and describe the goals of a survey. If the purpose of a survey is to serve as a basis for control, then one needs to consider the type of control to be undertaken. Control of EWM or other invasive plants might be categorized as eradication, high intensity management or maintenance management (Smith et al. 1991). Eradication is control meant to completely eliminate the non-native, invasive plant from a water body and is rarely achieved. High intensity management involves the expenditure of large amounts of money and effort to reduce the abundance of the plant and slow its spread. Maintenance management is focused on reducing nuisances caused by the plant for recreational or other uses of a waterbody. In the case of a well-established and extensive population of EWM, maintenance management was considered by Smith et al. (1991) as the only realistic option for management.

In the cases of eradication and high intensity management, one wants to know, to the extent possible, where all of the EWM plants in a lake are located so that they may be controlled. Ideally, this requires as complete a census of the plants in a water body as possible. Such a census would likely be performed by SCUBA divers and require a high level of investment per unit area.

In the case of maintenance management, it is important to know where EWM causes problems, such as interference with fishing, boating, swimming or water management. Problems such as these usually arise because the plant is abundant and growing near the water's surface or matted at the surface. Areas with problems such as these can be readily identified and delineated by people working either from boats (Newroth 1993) or, less commonly, from aircraft (Newroth 1993, Farone and McNabb 1993). After this is done, control may be planned and then carried out.

If the purpose of survey were to evaluate the efficacy of control, in the cases of eradication and high intensity management, one would expect to repeat the census done before control. In the case of maintenance management, one might consider a number of different approaches to evaluating abundance, including an assessment of the extent of matting at the water's surface, biomass, distribution or some combination thereof. Techniques for the assessment of biomass were described by Madsen (1993); these techniques included the use of hydroacoustic systems, which also were described by Sabol et al. (2002). Assessment of the distribution, i.e., presence or absence, of EWM and other species may be done by line transect sampling (Titus 1993) or, as is more commonly done at present, point-intercept surveys (Madsen 1999).

Some or many of these techniques are used mainly for research. Few of them are used for operational control programs. In deciding which survey techniques to use for a

control program, consideration should be given to the costs and practicality of different approaches.

Considering the difficulty that may be encountered in distinguishing between the non-native Eurasian and various native watermilfoils, it is important to remember to collect voucher specimens (Haynes 1984, Hellquist 1993). Difficulties of this sort in southern British Columbia were described by Newroth (1993). In addition, identification of watermilfoils can be made difficult by the occurrence of hybrids between *Myriophyllum spicatum* and *M. sibiricum* (Moody and Les 2002). It is recommended that people working on the identification of watermilfoils in Idaho cooperate with the L.C. Erickson Weed Diagnostic and Invasive Plant Mapping Laboratory at the University of Idaho and other sources of technical assistance.

Recommendation 7.2: Operational surveys

Assessment of EWM before and after control may be done by staff of the ISDA or a Cooperative Weed Management Association or a county or another unit of government. If contractors are used to conduct the surveys, the ideal situation would be to separate the contracts for surveying and control operations. Alternatively, such an assessment may be done by a contractor, who may also conduct the EWM control operations. When funds from the ISDA are used to cover at least a portion of the costs of control, some effort by staff of the ISDA or other unit of government as described above is needed to verify the reliability of the assessment done by the contractor.

In Florida, the monitoring of plant populations is greatly facilitated by GIS/GPS mapping programs and done annually by 16 FDEP biologists in 450 lakes in Florida covering an area of 1.3 million acres (<http://www.dep.state.fl.us/lands/invaspec>). The FDEP biologists utilize GPS to outline weed beds, develop maps and compile acreage estimates quickly with this method. Other states including California and Minnesota and others regularly survey state water resources. Monitoring of herbicide treated areas can be as sophisticated (and costly) or as simple (cheap) as a visual comparative observation.

As noted above, there are many ways to determine treatment effectiveness. Post-treatment sampling for contact herbicides 2,4-D and triclopyr can be done 4-6 weeks post-treatment. Post-treatment evaluation for fluridone is best accomplished in late fall, 10-12 weeks post-treatment.

Regardless of the survey methods chosen, it is imperative that a separate organization from the applicator does the pre- and post-treatment surveys to avoid real or perceived conflict of interest.

Issue 8.0: Boat washing stations to prevent the spread of Eurasian watermilfoil and other invasive species.

During the 2006 granting process a contract was let for the construction of a boat washing station. The panel received questions as to whether or not boat washing stations are effective or practical.

Recommendation 8.1: Practicality of boat washing stations

The washing of boats to prevent the spread of EWM and other invasive species has been proposed in a number of states and Canadian provinces. While this activity may have merit under certain circumstances, it is only one of a number of ‘tools’ that may be used to prevent the spread of non-native, invasive species. In areas of low usage, where the use of the station is closely managed, the construction of the wash station may have merit if certain concerns are addressed. However, in waterbodies with heavy boating activity, thousands of boats may be launched during peak use periods, there is very low expectation that the wash station can be used with any degree of practicality. A more thorough discussion of boat washing produced by the Wisconsin Department of Natural Resources is included in appendix 10. More practical approaches are (1) on site education efforts to encourage removal of EWM observed on or in vessels and/or trailers, and (2) intensive management of EWM at boat access points to insure weed free areas for boat launching and retrieval.

Issue 9.0: Methods of control of Eurasian watermilfoil

As is the case in any large scale aquatic nuisance management program, there are questions, concerns and even uncertainty as to the best methods to operationally manage the infestation. Six principal methods of control of EWM were described to the panel:

1. Hand-pulling, especially by divers
2. Vacuum-assisted hand-pulling by divers
3. Bottom barriers
4. Treatment with herbicides
5. Grass carp
6. Drawdown

In addition, there was discussion of the use of milfoil weevils, *Euhrychiopsis lecontei*, and Solar Bee® circulators as possible approaches for controlling EWM.

Recommendation 9.1: Methods of control of Eurasian watermilfoil.

Useful overviews of the advantages and disadvantages of all of these approaches with the exception of the Solar Bee may be found in Madsen (2000) and Getsinger et al. (2002). The review panel recommends that ISDA conduct a literature review of the various control methods available for EWM control. ISDA should also assess these techniques in

light of the various uses and functions of Idaho water bodies of concern and compatibility of the available control techniques and strategies within these waters.

It should be noted that though the potential for milfoil weevils has been studied (see Getsinger et al. 2002:16-27), their effectiveness is difficult to predict and not necessarily sustainable. There is little evidence they will ever provide any level of acceptable control in large, open water systems particularly with flowing water. More research/evaluation on this approach would be useful but only in areas where there is a potential for adequate assessment. There are also various regulatory issues associated with the interstate transport of the weevils into Idaho from other states where the weevils are reared (the weevils are grown and transported as larvae on EWM populations from a different state).

The review panel is not aware of any published studies of the possible effects of the Solar Bee[®] circulators on milfoil or other submersed aquatic plants. Evaluation of this approach might be useful, particularly if conducted by an established “third party” research organization.

Issue 10.0: Expenditures for research.

Eurasian watermilfoil research is conducted in many states across the northern half of the US. Despite this wide occurrence and interest, most states continue to conduct short term operational research projects to determine the most feasible management options in each state’s waters. In Idaho, despite the relative recent concern over invasive aquatic plants, research programs are underway, prioritized by the Milfoil Task Force and funded by the ISDA and other sources. The major projects include mapping of milfoil infestations and genetic studies of milfoil and possible hybrid plants. However, expenditures for research are not permitted under current legislative appropriations. Additional operational studies such as these are needed to accomplish two objectives:

1. Develop expertise in the state, independent of financial interests, to identify best management practices (BMP’s) and gain experience predicting results of management activities in Idaho waters and,
2. To develop a group of BS/MS level students in Idaho with experience in invasive aquatic plants and various management programs.

Recommendation 10.1: Establishment of an applied research program.

The administration of the ISDA should meet with the Director of the Idaho Agricultural Experiment Station and Director of the Idaho Cooperative Extension Service to jointly seek methods to increase university research and extension programs in aquatic plant management. Essentially, all states that have active aquatic plant management programs work cooperatively with state universities, and particularly, with land grant institutions to leverage short term and long term research projects with existing university programs and funding. These cooperative projects include agency funding of applied research projects and public education programs. Also, some state agencies and universities have worked

together through legislative appropriations to attain additional faculty positions to support agency objectives and research priorities to benefit both institutions.

Recommendation 10.2: Allocation of research funding.

The ISDA should seek funding or change current statutes to allow limited, but critically needed applied aquatic weed research.

The amount of funding sufficient for necessary research is difficult to determine, but based upon other states' programs, would be in the area of 5% of management funding. The Florida DEP has historically provided approximately 5% of their operations budget (\$1 million of \$20 million) to short term (1-2 years) specific applied aquatic management research grants. Priority projects are developed by DEP staff, advertised and grant applications screened for funding.

- Thus, due to the interest shown by some stakeholders in Idaho, it is suggested that short term research and /or extensive literature reviews be conducted by independent third parties on such subjects as the effects of aeration (such as, Solar Bee's) and possible biocontrol insects on EWM. Additional short term research projects should include evaluation of old and new herbicides by Idaho regulatory staff or scientists to develop expertise within the state over a short time to allow development of optimum management programs or best management practices not only for milfoil, but also for potentially new invasive aquatic species.
- Additional applied research and demonstration projects are needed to refine control methodologies for Idaho waters including:
 - Economic impacts of invasive aquatic plants
 - Current knowledge of effects of newer herbicides
 - Survey techniques and continued survey needed
 - EWM hybridization issues
 - Comprehensive bibliography of EWM publications
 - Effectiveness and past extent of the use of the sterile grass carp

Issue 11.0: Lack of experienced state/county staff in aquatic weed management.

Idaho has well trained and experienced weed staff/county superintendents for terrestrial weeds, but aquatic weed management is significantly different. Compared to terrestrial weed control,

- Aquatic weed control is usually more costly
- Public has great concern over pesticides in water
- Public can contact pesticides in water
- Control options are usually very limited
- Visibility of plants is poor and often weeds are undetected
- Identification and taxonomy of plants are difficult and often not clear
- Herbicides can move off site due to various weather events

- Monitoring success or failure of treatments is much more difficult
- Control failures do occur.

It appears that in Idaho, there is currently more aquatic weed management experience/knowledge vested in commercial and public applicators than in state regulatory staff. Most weed control superintendents have little experience in aquatics and all those the panel met with requested training programs. The future success of the Idaho aquatic plant management program will only occur as the regional biologists and county weed personnel become better trained. This lack of unbiased agency expertise has raised public concerns over the conduct and evaluation of success/failure on some of the treatment areas. Differences in opinion also exist in some areas as to whether weeds were actually present or if the plants in question were native plants.

Recommendation 11.1: Agency staff expertise

Knowledgeable staff must be hired or trained to assume the new responsibilities of an expanded aquatic plant management program (See Recommendation 2.2: Staffing). There are not a large number of people with extensive aquatic weed control experience in the US with most of the expertise found in warmer climates. The situation in Idaho is somewhat unique due to the fact that historically there have been limited need and thus aquatic plant control funds. Therefore, limited opportunities for weed control personnel to gain aquatic weed experience is available locally. In a specialized field like aquatic plant management, there is a continuing need for additional and updated training.

There are, however, numerous educational opportunities available to individuals through meetings, symposia and training courses. The website at <http://plants.ifas.ufl.edu> lists educational opportunities in which staff can participate to gather technical knowledge. ISDA should cooperate with regional aquatic plant management societies and other professional groups to offer at least annual aquatic training short courses. In addition, most applicators will allow people to accompany or even assist with operational projects. Examples of such training and professional development activities include:

- University of Florida, IFAS Aquatic Plant Short Course - Spring every year, Ft. Lauderdale, FL
- University of California, Davis - Fall every other year, Davis, CA
- Midwest Aquatic Plant Management Society, Annual meetings
- Florida Aquatic Plant Management Society, Annual meetings - Fall
- Aquatic Plant Management Society, Annual meetings, Summer
- Interagency visits to various states with established programs

Recommendation 11.2: Regional Biologists:

The regional aquatic biologists that the panel has most strongly encouraged Idaho to hire will be the key element in all programmatic aspects of aquatic weed management. Background and training of these biologists is critical if the ISDA noxious aquatic weed

program is to be successfully coordinated. These biologists, BS/MS degrees have much information available for their use. Training courses, symposia, websites and meetings occur regularly in various parts of the country (see recommendation 11.1). A four day aquatic weed short course will be held in Florida May 14-18, 2007 and will cover many of these same issues and herbicides used in Idaho (<http://Conference.ifas.ufl.edu/aw>). There are numerous opportunities for specialized training of biologists, but these people will become well trained by simply working with applicators and gaining experience on the job.

Recommendation 11.3 Applicator training programs:

As soon as possible, devote 1.5 to 2.0 days to aquatic weed management training in Idaho, in conjunction with annual weed superintendents meetings. Funds for this educational program can come from existing appropriations. Panel members, as well as the Aquatic Ecosystem Restoration Foundation (AERF) have volunteered to assist in this effort. Topics to include would be: toxicity, selectivity, degradation and label reviews of each registered aquatic herbicide, EPA registration requirements, biological, mechanical and drawdown control, risk assessment, public relations, plant identification, and contract monitoring/plant surveying. The Idaho Cooperative Extension Service could perhaps take the lead in organizing this event annually.

Issue 12.0: Public coordination and education

Education is essential for public acceptance of any aquatic plant management program. We live in a society that has many fears associated with pesticide use, which have developed over many years of misinformation perpetuated through mass media. It is understandable that a misinformed populace can have concerns over application of pesticides to water systems for which they depend on for potable water, in which they swim, and consume fish from. Concerns also arise over potential and perceived detrimental effects to wildlife. These concerns can turn to alarm and reach panic proportions at the will of only a small number of vocal activists.

Environmental and health concerns were expressed in Northern Idaho, in particular, Bonner County, by several respected environmental groups, e.g. Kootenai Environmental Alliance, Idaho Conservation League, Panhandle Environmental League, Idaho Native Plant Society. Their greatest concern was for potential health related effects, particularly children, from swimming in herbicide treated water. It was stated that individuals avoided swimming during the 2006 summer for this reason. One resident stated concerns over a report she had read “more herbicide was absorbed by swimmers wearing sun screen.” Similarly, residents expressed concern they learned different information from various sources, suggesting the Internet, newsletters, and newspaper among their sources of information. This is clear indication of the need to provide factual, science-based information in printed format, such as fact sheets and newsletters, and public meetings via a respected source of information such the Cooperative Extension Service.

Concerns were expressed by citizens relative to adverse effects of weed control on wildlife. Again, residents expressed concern based upon what they learned from various sources. A concern was expressed over whether consultation with USFWS occurred in a timely manner prior to herbicide application, and application of herbicide to Denton Slough, an area heavily used by wildlife and popular to passive recreation such as birding and kayaking. The density of Eurasian milfoil, and consequently the need to treat this area reported by County staff and the aquatic weed control contractor, was disputed by environmental groups. It was learned by the panel that the decision was made to treat this area to eliminate the source upstream of plant fragments in such a way to minimize harm to non-target vegetation. Whether this area should have been treated in 2006 is beyond the scope of the panel but the confusion could have been eliminated by better communication with the public prior to treatment. Citizens also disputed the level of control reported by County staff in certain areas and this may have resulted from confusion between the two over where treatment areas were located.

Recommendation 12.2: Public coordination of management programs.

It is recommended that public information meetings be organized by ISDA in the north and south regions of the Idaho, and include all agencies involved in planning and implementing EWM management following development of a preliminary, seasonal management plan for the purpose of receiving public comment and a second meeting to respond to public comment and explain the final management plan. The preliminary meeting should include a report of success of the previous year's management program.

Recommendation 12.3: Public education.

During the site visit by the review panel we received several educational brochures on invasive watermilfoil and other invasive species. The Idaho Weed Awareness Campaign is very active in providing educational materials and messages through radio, television and other media. These programs are largely targeted to educate people about the dangers and costs (environmental and economic) of invasive species. This message needs to be continuously distributed, but there is an additional public education need identified by the panel. An example of this need is concerns, rumors and public fear of management programs, particularly chemical applications. Current herbicide use is usually linked in popular media to Agent Orange (Vietnam), "Silent Spring" (insecticides), Love Canal (PCB, Dioxin) or other emotional issues. Our experience has been that information needs to be provided to the public on herbicide registration procedures, degradation times and products, issues regarding exposure/risk and other topics of concern. There is a feeling among the public that nothing is known about these herbicides, when in fact they have been in use for at least 30 years and some over 50 years, and much has been published/written about them. The often non-chalant attitude of applicators/regulators and weed scientists towards herbicides due to familiarity with them simply add to these concerns. Education is the key element in utilizing herbicides which are very important components with other control methods in an aquatic plant management program.

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