

## 2004 SUMMER NEWSLETTER, WESTERN AQUATIC PLANT MANAGEMENT SOCIETY

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### President's Message

*George P. Forni, Current President 2004-2005*

The 2004 Western Aquatic Plant Management Society Annual Meeting has come and gone, and now I find myself now marveling at the following:

- How much time, talent and effort are required to put together a two-day event
- The generosity of our membership and corporate sponsors; all of which gave donations of time, money and Swag (this is apparently the new term for "freebies");
- The fact that persons traveled from all over the Western US to attend our Annual meeting, foregoing other time consuming concerns such as work and family life to be there...
- How soon the whole process must start all over again to get ready for 2005!

Overall, I felt that the meeting was an outstanding success and apparently, so did the rest of the attendees and vendors alike. With record turn out and no apparent lack of topics for the two days of presentations, we have set the bar significantly higher for the 2005 meeting. The question is: How do we do it again?

Judging by our newly elected board members and the energetic pace and steadfast determination at which all have taken on their new duties, I am certain that we are in good hands.

Jenifer Parsons, our new Vice President, already has the Denver site locked down and is working overtime to cut the costs and maximize the benefits for all who will attend. She dove into her work the week we returned and has tirelessly stayed with it, making sure that the 2005 event will be an "adventure" to remember.

Nate Dechoretz, the man who keeps the ship righted, has once again taken on the thankless, but ever-so-important dual role as Treasurer & Secretary. In the absence of his extensive experience and tight fisted finances, our Chapter would not have the ability to put on the First Class events and scholarships as we currently do.

Kathy Hamel, Webmaster Supreme, returns to the throne to maintain our cyber-presence and bounce all the questions to the appropriate persons. In this modern day, imagining not having an up-to-date and interactive website would be unheard of. If you have not stopped by [www.wapms.org](http://www.wapms.org) lately, do so and drop Kathy a note.

Mark Sytsma & the Scholarship Committee have the difficult task of sorting through the multitude of respondents for "best of the best" in terms of applicants. It is a difficult and tough job to do and we appreciate their continued efforts towards this massive undertaking. We recently received a

"Thank you" letter from Ms. Lily Verdone, our scholarship winner from Sonoma State. She mentioned that she appreciated the recognition of the importance of her research and that the award "has given me endless motivation".

Terry McNabb, Past President and valued advisor, who has never refused an assignment or position on this Board for the benefit of our Chapter. Thank you, Terry for a job well done.

Robert Leavitt, as the new Editor, will have some big shoes to fill (Thanks to outgoing Editor, Pablo Cortez) as he undertakes an assignment equivalent to that of herding cats.

Toni Pennington (2<sup>nd</sup> Term) & Kim Patten (1<sup>st</sup> Term), our esteemed Directors, are busily coordinating the upcoming schedule of presentations for the Denver meeting.

Roger Willemssen – Outgoing Continuing Education Credit Director, will be replaced by Dave Burch. Thank you Roger for many years of work and good luck to Dave!

As the torch is passed to a new generation of Board members, we can look forward to an exciting 2005 Annual meeting in Denver. As you have entrusted me with the honor of piloting this ship, I trust my efforts will fulfill the membership's expectations.

If not, I am sure you will let me know....

Thank you. George can be reached at: [gforni@aquamog.com](mailto:gforni@aquamog.com) or 925-521-0400

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### **Mark Your Calendars for the 2005 Meeting**

*Jenifer Parsons, Vice President and Program Chair for 2005 Annual Meeting*

Plans are in the works for the WAPMS annual meeting coming next March:

The place: Denver, Colorado. The contract with a hotel is still being worked out, but we are trying for a place not too far from the airport since many of our members will be flying in.

The dates: March 10-11, 2005

We will be working to put together an informative and fun conference. I hope to see you all there, and please start spreading the word!

Jenifer can be reached at: [jenp461@ecy.wa.gov](mailto:jenp461@ecy.wa.gov)

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### **2003/4 Scholarships Awarded**

*Mark Sytsma, Chair of Scholarship Committee*

We had four excellent applicants for the 2004 WAPMS scholarship. The quality of the applications made the decision by the judges (Kathy Hamel, David Spencer, and Stuart Perry) very difficult, but interestingly, the ranking was unanimous. The winning students were Steve Wells and Lily Verdone. Each will receive a \$1000 scholarship. All student applicants receive a complementary membership to WAPMS.

Steve is studying the biology of *Potamogeton crispus*. He is particularly interested in early season growth and the onset of turion formation. This information will be very useful for management of this plant because effective, long-term control is dependent upon stopping turion formation in the

spring. Steve is working on his masters degree at Portland State University. Lily is studying the biology and management of *Ludwigia hexapetala* in Laguna de Santa Rosa, a unique system of open water, wetland, riparian forest, oak woodland, grasslands, and vernal pools in Sonoma County. Her work includes evaluation of herbicides, shade, and manual removal for control of *Ludwigia*. She is also studying reproduction of the plant from seed and fragments. Lily is working on a masters at Sonoma State University.

The scholarship program continues to attract superb students to the field of aquatic plant management. In testament to that, four past student scholarship recipients were present at the meeting in Bellevue: Erin Harwood, Alison Fisher, Toni Pennington, and Mariana Tamayo. The Board voted to continue the scholarship program in 2005 and to also offer travel awards to students to attend the meeting. More on that in a later issue.

Mark can be reached at: [sytsmam@pdx.edu](mailto:sytsmam@pdx.edu) or 503-725-3833

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### **Tampa, Florida is the Site for the 44<sup>th</sup> Annual APMS Meeting**

*Linda Nelson, Secretary for the Aquatic Plant Management Society*

The 44<sup>th</sup> Annual Meeting of the Aquatic Plant Management Society (APMS) will be held July 11-14, 2004, at the Hyatt Regency Tampa in Tampa, Florida. Program Chair, Eric Barkemeyer, is in the process of arranging another exemplary agenda. Oral and poster presentations on the latest research and management strategies will be presented during the two and a half day meeting. A "Special Session" scheduled for Tuesday morning will focus on issues of herbicide resistance and tolerance, environmental factors that impact herbicide efficacy, and resistance management as it pertains to aquatics. You won't want to miss this important technical session!

The Meeting Planning Committee has arranged several social events for your enjoyment. The President's Reception on Sunday evening is a great opportunity to reacquaint with old friends and make new ones. The APMS Banquet on Tuesday evening will be a yacht cruise of Tampa Bay with dinner, dancing, and entertainment. Our meeting will conclude on Wednesday with the APMS Awards Luncheon.

For up-to-date information on special events, meeting registration, hotel reservations, registration forms, and exhibitor information, please visit the APMS web page at: <http://www.apms.org/>

A preliminary meeting agenda will be posted on the web page by June 1, 2004.

Linda can be reached at: [nelsonl@wes.army.mil](mailto:nelsonl@wes.army.mil) or 601-634-2656

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### **Renovate<sup>®</sup> Aquatic Herbicide – The New Selective Systemic Herbicide for Aquatic Ecosystem Restoration**

*Scott Shuler, SePRO Corporation*

Renovate<sup>®</sup> is the triethylamine salt formulation of triclopyr and was recently registered for use in aquatic sites for selective control of invasive aquatic and wetland weed species. The registration process was finalized in the two remaining western states, California and Washington, this spring. Renovate<sup>®</sup>'s favorable environmental fate profile along with the ability to selectively and effectively control exotic weedy species, makes Renovate a valuable tool for restoring and managing aquatic ecosystems.

Submersed dicot species control may be achieved between 0.75 and 2.5 ppm of Renovate®. It is recommended that trailing hoses be utilized and an aquatic labeled sinking agent when applying Renovate® to target plants growing in 8 feet of water or greater. The higher end of the rate range is recommended when treating dense and or mature infestations or for spot treatments of small areas or lake margins. A Renovate Test® assay is available to determine residue levels in the water for determining when the water may be used for irrigation, potable water, or for National Pollution Discharge Elimination System monitoring. Floating and emerged plants on the may be controlled using 2 to 8 quarts per acre. Making a surface application using 2 to 4 quarts of Renovate® with conventional high volume spray equipment will provide adequate efficacy in the majority of targeted floating plant management situations. An approved aquatic surfactant is recommended in most situations. Drift control agents should also be utilized depending on the weather and treatment site conditions.

Renovate® is aquatics newest tool for control of emerged and submerged exotic and nuisance plant species. Information on this product is available at [www.sepro.com](http://www.sepro.com).

Scott can be reached at: [scotts@sepro.com](mailto:scotts@sepro.com) or 916-718-2596.

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## **San Francisco Estuary Institute Aquatic Pesticide Monitoring Program Year 2 (2003) Conclusions**

*Geoff Siemering, Program Manager, Aquatic Pesticide Monitoring Program, San Francisco Estuary Institute*

After two years of sampling the Aquatic Pesticide Monitoring Program (APMP) has gathered enough data to begin screening to identify where further risk characterization or research may be needed. However, the limited data gathered APMP is not yet of sufficient spatial or temporal extent to directly inform regulatory change and should not be construed otherwise. These findings are summarized below.

APMP generated chemical characterization, toxicity, and bioassessment data. Risk or hazard quotients were calculated using the chemical characterization data and published toxicity test data. These risk quotients were then compared to USEPA's Office of Pesticide Program published Levels of Concern (LOC). The chemical characterization and toxicity data can be used only for screening purposes. In complex field situations, bioassessments require multiple years of data before even preliminary conclusions can be drawn from them.

### **2,4-D**

Only one application of 2,4-D (in the 2,4-D dimethylamine salt formulation) with added surfactant was monitored. At this single application, no toxicity was observed nor did risk quotients indicate the need for further information. *Vitellogenin* induction experiments indicate that 2,4-D may possibly cause endocrine disruptor at application rates in the laboratory (the production of the enzyme *vitellogenin* is an indicator of endocrine disruption.)

The *vitellogenin* induction finding indicates the need for further study particularly under normal field conditions. This is a special study and not a routine monitoring recommendation.

### **Acrolein**

Because of acrolein's rapid volatilization, work in 2003 focused on development of a field sampling method that would allow for accurate determination of the pesticide in water. Current standard environmental sampling methods are inadequate for sampling of acrolein treated water. Due to acrolein's rapid volatilization, it is currently not possible to conduct standard water toxicity tests on it. Because of its' extremely low Lowest Observable Effect Concentration (LOEC)

values, the detectable presence of acrolein indicates that very high mortality to EPA water and sediment toxicity test species can be assumed.

Further refinement of the sampling methodology is warranted, as is investigation of 3-hydroxypropanal. It is recognized that residue values for this pesticide may be difficult to determine. Therefore, development of diagnostic response tests (i.e. phytomonitoring, sentinel bivalves and fish, etc.) should be explored.

#### Copper Sulfate

Copper sulfate applications were monitored in two reservoirs. In one reservoir treatment area treated with dissolved copper sulfate, toxicity (in the form of mortality) was observed for at least 24 hours after application in juvenile trout. Lethal (mortality) and sub lethal (reproduction) toxicity was observed in water flea (*Ceriodaphnia dubia*) up to one week after application. Peak concentration risk quotients showed acute and chronic U.S. EPA Office Pesticide Programs Levels-of-Concern (LOC) exceedances. At 24 hours post application, the risk quotients showed acute and chronic LOC exceedances. At one-week post application the risk quotients showed acute LOC exceedances.

In the reservoir treated with granular copper sulfate applications, significant mortality was observed in *Ceriodaphnia* and juvenile trout (*Oncorhynchus mykiss*) water toxicity tests immediately after application within the treatment area. Follow up water sampling was not conducted and the reservoir received only one application in 2003. Mortality and growth inhibition was also observed in a number of the sediment samples. Sediment copper concentrations exceeded National Oceanographic and Atmospheric Administration (NOAA) Effect Ratio Low and Medium values. However, the limited toxicity observed in the sediments indicates that the majority of the copper is not bioavailable.

These findings indicate the need for further risk characterization associated with copper sulfate applications.

#### Chelated Copper

Chelated copper pesticides were monitored during applications in two irrigation canal systems. One system used a product of mixed copper ethanolamines and the other the same product of mixed copper ethanolamines in an emulsified formulation. Chelated copper formulations are likely to have distinct behavior from copper sulfate and each other in aquatic environments based on the chelating agent and other adjuvants.

In both systems where monitoring occurred, the water samples were almost uniformly toxic preapplication and post application. Therefore, no definitive conclusions can be drawn about the toxicity of mixed copper ethanolamines. Risk quotients showed some LOC exceedances depending on species sensitivity. It should be noted that copper carbonate is the active ingredient in other chelated copper products and no monitoring of copper carbonate based pesticides was conducted.

Based on the lack of definitive data, further risk characterization associated with chelated copper applications is warranted.

#### Glyphosate

Glyphosate was monitored at several locations. No toxicity was found to be associated with glyphosate applications. Risk quotients for *Selenastrum* (a freshwater green alga) indicate that immediately after application, when glyphosate concentrations are highest, Levels of Concern are exceeded. Glyphosate is often applied with a surfactant, which may have much higher toxicity than the active ingredient.

Based on risk quotient calculations and toxicity data, no further risk characterization associated with glyphosate applications alone is warranted. Risk characterizations may be warranted to further investigate a surfactant used in conjunction with the glyphosate.

#### Diquat Dibromide

Diquat dibromide was sampled at two locations (one small pond and one Delta slough). At both sites, 100% mortality was observed in the acute and chronic *Ceriodaphnia* toxicity tests one hour after application. Twenty-four hours after application to the Delta slough, no toxicity was observed in the treatment area. Additional samples were not gathered from the pond site. Risk quotients almost uniformly exceeded Levels of Concern at all sampling periods in the Delta slough (including preapplication) and at one hour after application in the pond. Diquat may be applied with a surfactant, which may have much higher toxicity than the active ingredient. Diquat sediment concentrations were not considered as diquat is irreversibly adsorbed to sediments and thereafter not bioavailable.

Toxicity test and risk quotient results indicate the need for further risk characterization.

#### Fluridone

Fluridone (applied in pellet or liquid form) was not found to be definitively toxic in USEPA three species water or sediment amphipod toxicity tests. The peak concentration risk quotient for Stonewort (anchored green alga) did exceed an Acute LOC. Risk quotients for other species did not exceed LOCs. Fluridone was found to cause sub lethal toxicity (decreased shoot and root length) to cattail (*Typha* spp.). This would indicate a potential for impacts on nontarget plants.

Further risk characterization of impacts on nontarget plants is warranted. There is also cause for concern over development of genetic resistance to fluridone, which is emerging in plant populations in Florida.

#### Triclopyr

Triclopyr (in the triclopyr, triethylamine salt formulation) was monitored at one application only. Due to sampling error, the toxicity tests were rendered inconclusive and therefore no conclusions can be drawn as to the toxicity of triclopyr. Triclopyr peak concentration risk quotients show no LOC exceedances. Triclopyr is often applied with a surfactant, which may have much higher toxicity than the active ingredient.

Limited further risk characterization is warranted to conduct toxicity testing. Risk characterizations may be warranted to further investigate a surfactant used with triclopyr.

#### Nonionic surfactants

The most commonly used surfactants at APMP monitoring sites were Target Prospreader Activator<sup>®</sup> and R-1<sup>®</sup>1. Both are nonylphenoethoxylate surfactants. Peak concentration risk quotients indicate exceedances of LOCs for a wide range of animal species including Delta smelt (*Hypomesus transpacificus*) and Sacramento splittail (*Pogonichthys macrolepidotus*). *Vitellogenin* induction experiments in Rainbow trout indicate that these nonylphenol surfactants can be an endocrine disruptor at application rates. There is a wide range of surfactants available, each one having a different toxicological profile. There is only limited data available on surfactants.

Based on risk quotient calculations, endocrine disruption studies, and the general lack of data on them, further risk characterization of surfactant applications is warranted.

#### APMP Year 3 Plans

In year 3, the APMP will focus on a more limited range of herbicides (fluridone, copper sulfate, chelated copper and acrolein), where year 2 results indicated the greatest need of further risk

characterization. The sampling focus will also shift from 'worst-case' application based monitoring to looking at impacts outside of the treatment zone or treatment time period.

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For suggestions, critiques, or contributions to this newsletter, contact Robert Leavitt at: [rleavitt@cdfa.ca.gov](mailto:rleavitt@cdfa.ca.gov) or 916-654-0768