VERMONT AGENCY OF AGRICULTURE, FOOD AND MARKETS (AAFM)
VERMONT PESTICIDE ADVISORY COUNCIL (VPAC)
FEBRUARY 28, 2017 MEETING MINUTES - FINAL

MEMBERS IN ATTENDANCE	MEMBERS ABSENT	GUESTS
Boccuzzo, Linda (for AAFM)	Bosworth, Sid	Mark Heilman
Hazelrigg, Ann	Darrow, Casey	Ann Bove
Hoffman-Contois, Razelle		Misha Cetner
LaValley, Jenn (Admin)		Perry Thomas
Levey, Rick		William Stevenson (via phone)
Palmer, Eric		
Schultz, Barbara		
Shively, Andy		

Meeting Called to Order	Meeting Adjourned
1:05 pm EST	3:55 pm EST

Announcements

- Introductions
- Minutes from January 17, 2017 meeting were reviewed and approved with edits made to statement from Nat Shambaugh regarding imidacloprid per his request and correction of minor typos (R. Levey moved, B. Schultz seconded). Final minutes will be posted on the VPAC SharePoint.
- Barbara Schultz updated the Council on assistance that the Department of Forest, Parks and Recreation has provided to maple sugar makers regarding the current outbreak of forest tent caterpillars. A survey of prevalence in sugar bushes was conducted and indicates that aerial spraying may need to be considered. Letters are being sent to property owners.
- Ann Hazelrigg made note of the upcoming Vermont Flower Show.

Public Comment – None

Business

Discussion of use of solid Sonar® herbicide products

Mark Heilman, Ph.D., Senior Aquatics Technology Leader with SePRO Corporation, provided a presentation on various aspects of solid Sonar® aquatic herbicide products. Extensive discussion ensued. According to Dr. Heilman, application with pellet formulations allows for maintenance of lower levels of the active ingredient fluridone [** 1.5-3ppb typically versus 4-8 ppb with liquid*] in treated waters for extended periods of time and provides greater localized control of invasive species with reduced impact to non-target species i.e., prolonged, slow release and maintenance of low concentrations. He noted that use of liquid formulations at higher concentrations may have broader spectrum impact. In response to Razelle's questions regarding use of pellet formulations in shallow waters, specifically if use in water 2 feet or less in depth is necessary in order to establish and maintain control of Eurasian watermilfoil (EWM), Dr. Heilman noted that while good physical coverage is important in order to get [** optimal*] control and that the greater the distance between the point of application and area where control is desired, the less likely it is to obtain [** optimal*] control, application in 2 feet or less of water is not a common scenario for control of Eurasian watermilfoil as the plants don't tend to grow there [** or treatment in such shallow water isn't logically feasible or necessary to achieve effective exposure to herbicide*]. He offered that in general, as the 2 foot depth zone tends to be a narrow band, it is likely that this area would receive diffusion from pellets applied to waters that are a bit deeper. He described how physical mechanisms, including scouring due to ice build-up and recession, can significantly disturb and impact weed growth in the shallower depths. Dr. Heilman noted that local flow and other site-specific factors dictate if use in depths of 2 feet or less should be considered. The special case of Cayuga Lake, New York where treatment occurred in 2012, was described. It was noted that the Council had previously asked the potential implications of no treatment in up to 4 feet of water. Dr. Heilman described how depths of 2-4 feet could support rather extensive plant growth and treatment farther away from this depth could result in decreased efficacy. Razelle shared concerns regarding dissolution if treatment were to occur in waters 2 feet or less in depth and noted that the Department of Environmental Conservation (DEC) Aquatic Nuisance Control (ANC) permit application 2240-ANC

appears to request use in such areas. She asked "when is a pellet no longer a pellet?" Dr. Heilman stated that SonarOne® is the most commonly used pellet formulation today. The Council asked why this is the case. Slides of different pellet formulations and dissolution over time in controlled studies were presented. It was explained that different pellet formulations have different clay carriers and different dissolution rates. For example, Sonar Q® was noted to break apart comparatively rapidly and while it may last a few weeks (i.e., continue to release active ingredient) it may be unrecognizable as a pellet after 24 hours. The proprietary formulation known as Sonar One® was noted to have greater integrity but will still break apart. It was explained that [**the unique release profile of Sonar One makes it multi-purpose for most use conditions and is therefore the most commonly utilized pellet formulation today*]. Eric and Rick both asked about target concentration and duration. Dr. Heilman described that the desire is to maintain a target concentration of 4-8 ppb [**liquid typical range - often in the low end of that range*] in the water over 60-120 days with the ideal duration closer to 90 days. With pellets, the target concentration is 1.5-3 ppb maintained over a 4-5 month period (i.e., entire growing season). With the liquid formulation, a target concentration in the range of 4-8 ppb will impact Eurasian watermilfoil with limited non-target impact. In response to an inquiry from Ann Hazelrigg, Dr. Heilman explained that the target concentration is maintained via the use of booster treatment(s). He noted that field monitoring indicates post application concentrations do not [**reach the level because product does not release*] the active ingredient all at once but over time. He described how they are finding initial treatment yields 2-2.5 ppb lake-wide within the first 3-4 weeks. A booster treatment 4-6 week post initial treatment is used to maintain a concentration of 1.5-3 ppb. Misha Cetner, (Permit Analyst in DEC Lake and Shoreland Permitting), asked for clarification of information provided to him in a letter dated February 7, 2017 from Marc Bellaud, president of SOLitude Lake Management. Of particular interest was a summary table of pellet application and concentrations in treated beds and lake-wide. Dr. Heilman described that while there may be a calculated application rate in a specific area (i.e., bed), as the active ingredient is released slowly over time and not in one short burst, high concentrations are not seen in treated waters in such areas. He described the specific case of Clear Lake, California where product was applied in an effort to control hydrilla and noted the difference between the calculated application rate and how at the sediment/water interface [**an average of 6-7 ppb*] active ingredient was detected. The pellet products are designed to deliver localized active ingredient right in the immediate area of submersed weed growth. Ann Bove (DEC, Aquatic Invasive Species Management), inquired regarding use of FasTEST in Clear Lake. Perry Thomas, Ph.D. (Program Manager of the DEC Lakes and Ponds Program), asked if the release rate is temperature sensitive. Dr. Heilman explained that site-specific conditions will have an influence and that with regard to release of active ingredient, there may be faster release in warmer waters as compared to cooler environments. The 2016 treatment of Silver Lake, Wisconsin was noted as a case in point. This area was noted to have had some difficult experiences during the early days of their treatment program in the 1990s. Wisconsin is currently re-evaluating ways to manage hybrid watermilfoil including potential use of fluridone pellet formulations. Hybrid watermilfoil was noted to have become resistant to the active ingredient triclopyr (i.e., tolerant to auxin mimic herbicides). A description of how high application rate with Sonar ®pellet products doesn't necessarily result in highly elevated concentrations in the water column was provided. Dr. Thomas asked several questions regarding the potential impact of a thermocline on treatment plan and efficacy. Extensive discussion ensued. Dr. Heilman described many aspects of treatment in such situations, including but not limited to, the need to tailor treatment to site-specific conditions, how milfoil tends to grown above the thermocline early in the season and growth is influenced by water clarity, how depth of the thermocline tends to increase as the growing season progresses and how treatment early in the growing season before the thermocline sets up and when the plant is actively growing can provide good control. In response to a question from Ann Hazelrigg, Dr. Heilman noted good control of milfoil has been noted in years subsequent to Year of Treatment. He described that duration of exposure to active ingredient and site-specific factors significantly influence efficacy. Examples of treatments in Michigan and Wisconsin were provided. Use of SonarOne® was noted to provide longer lasting control of milfoil but may take longer to achieve than with use of liquid product, however, the amount of product used with pellets is less than with liquid formulation. In response to an inquiry from Barbara, he stressed that treatment plans are adaptive and must be adjusted based on what is seen as the general conditions of the lake. It was noted that Lake Iroquois has shallower areas and may be prone to dissipation. Thus, monitoring on a biweekly basis and adjusting timing and magnitude of re-application based on results would be reasonable. Rick reiterated that 2240-ANC proposes an initial and potentially 2 booster treatments during a 4-5 month period. Dr. Heilman noted the need for booster treatments will depend on dissipation. As the objective is to hold steady at 1.5-2+ ppb and it is unlikely that a single application could maintain this concentration, monitoring and potential booster treatment as necessary every 4-6 weeks is part of

the plan. Rick asked if treatment has been found to result in any impact to fish spawning beds. According to Dr. Heilman, impacts have not been seen in fish. Rick asked if fish could potentially eat the pellets. While Dr. Heilman had not heard of such incidents, he offered to search for related information. It was surmised that this may not be a concern as any such reports should be well documented and well known by now. Eric asked if there have been any broader studies on habitat changes post treatment. Dr. Heilman described how it works regarding to scale. There is lake-wide impact/influence on the macrophyte community but reduced from what would be seen if use higher application rates such as with liquid formulations with fluridone. More eutrophic systems with elodea have been found to be more sensitive. [**Past treatment programs utilizing higher rates have been noted to shift a]* macrophyte dominated community to one dominated by algae. Key focus is to reduce that kind of impact. Eric asked if there have been any studies of fish populations before and after treatment. Dr. Heilman stated he'd recently provided pertinent information to Mr. Cetner. Mr. Cetner agreed to share this with Razelle for distribution to the Council. Dr. Heilman noted that, in general, there have been selective management projects conducted based on a history of invasive weeds and that treatment has led to development of a more complex habitat dominated by native plants. The 2007 treatment of Saratoga Lake, New York (stated to be mildly eutrophic) with a pellet formulation was noted to contain some fisheries data. Eric asked if pellets were generally being using to treat the littoral zone or if spot treatments are being conducted in bays. It was explained that a mix of approaches is currently employed: some are managing lake-wide and there are also examples of where only part of the invasive Eurasian watermilfoil community is treated. Cost/benefit (i.e., efficiency) is an important consideration. Razelle raised questions regarding language pertaining to potable water on the Sonar® A.S. and SonarOne® labels, in particular, reference to a potable water value on one and different phrasing of label restrictions with respect to potable water intakes. Dr. Heilman noted that the potable water intake value is a bit of a relic, was probably based on consideration of both economics and human health, and that they are always working on label language. As registration review is currently underway by the US Environmental Protection Agency, he expects there will be additional label language revisions within the next couple of years [**]. Eric asked if there are any recreational use restrictions on lakes where such products have been applied. Restrictions for irrigation and potable water intakes were noted. The treatment strategy with pellets is to keep below 5 ppb as plants in the Solanaceae Family are very sensitive. The example of greenhouses and hydroponically grown tomatoes and potential liability was provided. Eric asked about the relationship between expressing pellet application in pounds and as concentration in water when referring to greenhouses. Dr. Heilman noted pellet rates are described in different ways. It is rare to discuss Sonar® pellets in pounds of active ingredient per acre, generally, it is based on water concentration. For the purposes of calculation, [**full instant release is not assumed but pellet application rates are generally described in total ppb active ingredient applied*]. Once the product is applied, the concentration of active ingredient in water is what's relevant to the label. In reality, pellets are designed to provide gradual or slow release of active ingredient. Rick asked regarding the 2015 FasTEST monitoring results that were provided for review. Active ingredient was detected out to 140 days after treatment. Dr. Heilman noted there was one reapplication before the highest peak reported. Rick asked if for 2240-ANC the plan was to reapply when water concentration dropped to around 2 ppb. Dr. Heilman noted that as this is an adaptive program, if plants were responding well to initial treatment, booster treatment could be delayed, but he believes 2 treatments at a minimum would be warranted with a third contingent on site-specific conditions. Per Eric's request, he described how pellet formulations are applied via a blower/spreader with blower seeming to be the easiest method to achieve even coverage. Discussion of application and how treatment path is tracked ensued. William Stevenson (SOLitude Lake Management) offered that treatment is designed with the goals of achieving good, even, horizontal spread without overlapping treatment tracks. Razelle questioned use in depths 2 feet or less and shared information provided by New York state regarding their experience and regulatory requirements. Dr. Heilman offered that treatment in shallow areas could remove this zone as a potential refuge area. He also noted that application via airboat [**may often*] be needed to treat such shallow areas. He reiterated that treatment in such shallows would be dictated by site-specific conditions and that in his experience, in most cases, it is not super critical to treat in this shallow zone. Rick raised several questions regarding information provided in 2240-ANC. The permit application indicates initial application is based on a whole lake concentration of 4-5 ppb based on a reported lake volume of 4636 ac-ft.; however, product is proposed to be applied only in EWM infested areas of the littoral zone which are expected to be less than 100 acres. Members of the Council expressed concern that the proposed application rate was calculated based on the volume of the entire lake, whereas product is proposed to be applied essentially as a spot treatment to only an approximately 100 acre area which likely represents only about one-quarter of the total lake volume. There were concerns that concentrations within the littoral zone could be much

greater than the target of dose of 4-5 ppb, since application in this zone would include enough product to treat the entire lake. Dr. Heilman shared data from other similar lake treatments (i.e., spot treatments) using SonarOne® illustrating that concentrations in treated areas remained low, even when the application was based on whole lake dose. Concerns continued to be expressed regarding the level that could be present in the treated areas given that release of active ingredient from pellets is influenced by many site-specific factors (i.e., sunlight, turbidity, organics). As noted during the January 2017 meeting, Council members reiterated that much of the data available for review is based on laboratory release studies. Rick pointed out that based on the materials provided for review, release of active ingredient can still be seen 10-16 weeks post treatment. Dr. Heilman reiterated that use of pellet formulations is designed to provide a gradual form of weed management and shift in the system. At the invitation of the Council, Dr. Heilman presented a brief summary of major points about PROCELLACOR, a candidate aquatic herbicide not currently registered or offered for sale, developed for potential use in aquatic weed control. He briefly described the mode of action, intended use pattern, unique aspects, human health and ecological profile. The newly proposed active ingredient is slated for US EPA Section Aquatic Use decision early in April 2017. Dr. Heilman, Dr. Thomas, Ms. Bove and Mr. Cetner exited the meeting at approximately 3:30 pm.

Next Meeting Date: To Be Determined

*Reflects additional information or comments provided in writing by M. Heilman 3/28/17. Included here as is.
**Minutes reflect as stated at meeting. 3/28/17 M. Heilman provided following in writing "The Sonar A.S. label language in this area is older. Sonar One language is more newly approved and reflects an effort on that label to clarify that measured levels up to maximum label rate of 150 ppm are acceptable in potable water."