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Maine Board of Pesticides Control (BPC) Environmental Risk Advisory Committee Meeting

April 18, 2014  
AMHI Complex, Deering Building, Room 319, Augusta, Maine  
1:00 pm – 4:30 pm

MINUTES  
(Meeting notes are identified by bullets.)

Topic: Potential Impact of Pesticides in Sediment and Surface Water on Lobster Health

Committee members present: Curtis Bohlen, Chair, Kohl Kanwit, Carl Wilson, Leon Tsomides, Jim Dill, Larry LeBlanc, Michael Horst (via conference call); Absent John Wise, James Stahlnecker

Staff present: Henry Jennings, Lebel Hicks, Mary Tomlinson, Megan Patterson

- 1) Introductions
- 2) Updates or changes to the agenda – None
- 3) Review of Charge from the BPC and the Letter from Joint Standing Committee on Agriculture, Conservation and Forestry
  - a) Interest From Joint Standing Committee on Marine Resources
    - Jennings stated that the Joint Standing Committee on Marine Resources had also expressed an interest in the work of ERAC. Consequently, the staff will file reports with both the Joint Standing Committee on Agriculture, Conservation and Forestry and the Joint Standing Committee on Marine Resources. Reports are due in January of 2015 and 2016.
  - b) Final framing of the question in front of the Committee
    - Charge from the BPC: To examine whether current pesticide residues have the potential to affect the lobster resource in Maine directly or via impact on other marine organisms.
    - The letter from the Joint Standing Committee on Agriculture, Conservation and Forestry acknowledges that the Board will evaluate Maine pesticide use and assess potential adverse impacts of pesticides on the lobster resource.
    - Representative Dill, committee member and co-chair of the Legislature's Joint Committee on Agriculture, Forestry and Conservation (ACF), signatory on the ACF committee's letter, stated that the committee was specifically interested in the impact of synthetic pyrethroids and methoprene on lobsters. During the work session, the Committee expanded its request to include a more comprehensive evaluation of potential pesticide impacts.
    - Comments expressed regarding the charge:
      - The scope of pesticides used in Maine and all marine organisms and a limited budget is problematic. This effort will require strategic use of resources.
      - EPA only tests small vertebrates and invertebrates. From a risk perspective, look at aquatic invertebrates in marine environment.
      - A focus only on lobsters is a disservice to other organisms and fisheries.

- In addition to direct impacts on lobster, impacts may occur via impacts on their food supply (ie bioconcentration in finfish and other aquatic species)
- Pesticide load should be primary focus, impact on organisms is secondary.
- The committee can assess aquatic risks in absence of sediment monitoring results.

c) Budget (Henry Jennings)

- Grant money is available due to accumulation of funds over a five year EPA grant period.
- A total of \$125,000 has been reallocated for environmental monitoring purposes through federal fiscal year 2015. \$26,000 has been spent to date for the ground water monitoring program with same amount dedicated for 2015 ground water sampling.
- Analysis of sediment samples costs \$500 for pyrethroid screen. Shipping via FedEx overnight, analyses for other analytes, toxicity testing, sediment classification, total organic carbon, etc. will be additional costs.
- Should analysis of storm water and lobster tissue be included this year?
- Discussion: Standard test organisms are used for toxicity testing throughout the country. Unknown if lobsters have been used for toxicity tests.

4) Overview of Lobster Biology with Emphasis on the Near Shore Environment (Carl Wilson)

- Maine lobsters are the dominant resource in Gulf of Maine. Landings doubled since 2008. Seventy percent of landings are within three miles of shore.
- Lobsters are most vulnerable during molting.
- Habitat use:
  - Pre-larvae – water column
  - 4<sup>th</sup> stage planktonic post larvae
  - Settling post-larvae
  - Shelter restricted juveniles – cobble mixed with sediment, filter feeders, short foraging forays, burrow in sediments of grass beds
  - Vagile (able to move about) juvenile – rocks, peat marshes, adults – move up to one mile/day, miles over a year
- Discussion: Uptake of contaminants is via flow of water through gills which is significant in terms of mercury. Consider water analysis. Bioconcentration is compound specific. Pyrethroids adsorb to organic material and are suspended in runoff.

5) Information Required to Address the Question

a) Pesticide Use Data (difficult) (Henry Jennings)

- BPC does not collect pesticide use data. Best source of information is annual summary reports submitted by licensed applicators.
- The quality of pesticides sales reports submitted to the BPC has always been problematic.
- Residential use of pesticides, including pyrethroids and neonicotinoids, is highest on high value real estate, and high value real estate is often associated with the near coast environment.

b) Monitoring data (Mary Tomlinson and/or Henry Jennings)

i) Historical

1) In state

- Detections from storm water monitoring conducted years ago were minimal.
- Targeted sediment sampling was conducted in residential and industrial areas in Portland/South Portland, from 2008-2010. Sites included Capisic Brook, Trout Brook, Long Creek, and Back Cove. Several pyrethroids and PBO were detected. Sampling protocol has evolved and is supported by national studies.

2) National

- USGS national water quality assessment – showing a percentage of streams with detectable pesticide residues – is likely representative of Maine. However, most of the monitoring was done more than ten years ago.

ii. Sampling directed

- The committee discussed different sampling approaches that might be undertaken by the state.
- There was general consensus that near-shore sediment sampling is probably the top priority based on the current literature.
- There was some support for pairing stormwater samples with the sediment sample sites in order to assess the presence of more soluble pesticides.
- There was no consensus around the value of tissue sampling, especially in the first year. Some committee members proposed reconsidering tissue sampling once the sediment sampling results are evaluated.

c) Scientific Research Papers/Literature Review (to be done)

i) Discuss the scope of the literature review

- Review of available literature will be important for sampling design/protocol. Other examples of useful literature might include EPA toxicity studies, toxicity thresholds/benchmarks. EPA literature for primary research tends to be less current.
- Knowing the analytes of interest would streamline literature search.
- Lebelle is compiling a list of active ingredients and CAS numbers.

ii) How to perform the review

- Contractor – If more than \$5000 must go out to bid.
- Internship
- Other – AmeriCorp may be an option (9 months for \$10,000).

6) List of Potential Analytes

a) Process for narrowing the selection (Lebelle Hicks)

- Identify all active ingredients in currently registered products (as of Feb 2014, 726 active ingredients).
- Group the active ingredients by chemical class and mode of action (MOA).
- Identify MOAs common to the target pests and to aquatic invertebrates (lobster).
- Use EPA-Syracuse Research Corporation's EPISUITE model to identify the environmental fate parameters: water partition coefficient,  $\log K_{ow}$ , and organic carbon partition coefficient ( $K_{oc}$ ).
- Use the  $\log K_{ow}$  and  $K_{oc}$  to select compounds which may persist in sediments and result in exposure to juvenile lobsters.
- Identify compounds that may be quantified in sediment by an EPA approved laboratory. EPA sediment studies may also provide insight

b) Analytical capabilities (Mary Tomlinson)

i. Montana Analytical Laboratory

- The lab offers full pyrethroid screen with PBO and can analyze for fipronil, but not its degradates.
- The lab does not analyze grain size, normalize carbon, or tissue.
- Surface water analysis is only available for fresh water.

ii. Mississippi State University Laboratory: The lab offers analysis for methoprene, fipronil, and some fipronil degradates in sediment and storm water as well as analysis of lobster tissue.

iii. Narragansett Laboratory (Atlantic Ecology Division of the EPA): Can do tissue analysis.

## 7) Sampling Protocols

### a) Focus on 2014 Sediment Sampling(Curtis Bohlen)

#### i) Propose and discuss goals of sediment sampling program

- The Joint Standing Committee is interested in methoprene and resmethrin because of the proposed bill. The directive to identify “which pesticides are most prevalent in the marine environment” was based on the impression that the BPC was willing to conduct a more comprehensive assessment of potential pesticide impacts.
- Filters: Is the pesticide used in Maine, is it reasonably likely to be present, is the concentration great enough to be detected, is it likely to bioaccumulate in lobster tissue?
- Tissue testing is not a measure of exposure. Methoprene accumulates in hepatopancreas and gonads of lobsters. If stressed, a lower dose may be more toxic. Most pervasive use of methoprene is on east coast, but use data is not tracked. Methoprene has not yet been used in Maine for mosquito larvae control; however, methoprene is a common component in pet products.
- The committee consensus is to sample over a two year period.

#### b) Proposed sample locations

##### i. Casco Bay and Penobscot Bay

- Include other areas of coast such as blueberry agricultural areas?
- DMR has established sampling locations along entire coast.

##### ii. How to select sample locations:

- 1) Sites most likely to have detectable levels of contaminants: locations of direct runoff, e.g. stormwater outfalls, drainage ditches, mouth of streams, rivers. DMR has established sampling locations along entire coast.
- 2) Sites most likely to harbor juvenile lobsters – cobble/mud interface
- 3) Randomized locations (e.g. Generalized Random Tessellation Stratified (GRTS) sampling of tidal flats) – targeted sampling is preferable.

##### iii. Sample size and replication

- Quart paint cans are required by the Montana lab for the pyrethroid screen of sediment.
- Sediments should be collected as composites for each sampling site.

##### iv. Propose sample site selection criteria

- 1) Near sources of pesticides of concern (suburban/urban/institutional): Based on 2008-2010 sampling, likely areas of detection are drainages from dense residential areas and golf courses.
- 2) Data on lobster presence – DMR sources
- 3) Fine sediment deposition environments? Any constraints on grain size distribution?
  - Fine sediment preferable, but mixed grain size acceptable.
  - Collect the top 1-3 cm.
- 4) Intertidal only, or intertidal and sub-tidal?
  - First field season should concentrate on intertidal as more likely to obtain detections and is less costly.
  - Second field season may include ponar grab sampling for subtidal sites.

#### c) Who is going to do the sampling?

- i) BPC staff: Staff has sampling experience and will oversee project and provide training as needed.
- ii) DMR: Already conducts sampling for shellfish contamination.
- iii) Volunteers: Several groups have offered to sample. A concern was expressed regarding public perception. Volunteers participate as assistants to staff.

#### d) Chain of custody issues - BPC has protocol.

## 8) Other types of Samples (back to lab capabilities) (Committee)

- Water - Stormwater? Ambient water?
- Tissue

9) Public Input 3:15 to 3:30

- Ron Huber, Friends of Penobscot Bay: Members participate in the intertidal lobster survey. Could those lobsters be sampled? C. Wilson said they could be boxed up and frozen.
- Patrice McCarron, Executive Director, Maine Lobsterman's Association: Not sure what to advocate for.
- Mark Newberg of Central Garden and Pet Company: The company produces mosquito larvicides with methoprene.

10) Next Steps 3:30 to 4:30

- Draft sampling plan/protocol.
- Complete review of active ingredients.
- Identify sampling locations.