

Are pesticides killing Rhode Island lobsters?

By Sam Bari

Rhode Island lobstermen are concerned about the use of methoprene, a larvicide used to control the development of mosquito larvae, also impacting lobster larvae in Narragansett Bay and other Rhode Island Sound.

The product, sold under the trade name Altosid, is deposited in storm drains to control the mosquito population. Many of the storm drains empty directly into the bay.

Altosid is made of methoprene, a larvicide that when applied, reduces the number of adult mosquitoes and thus reduces human risk from mosquito borne diseases such as EEE and West Nile virus.

Rhode Island lobstermen and many environmentalists oppose the use of methoprene because the chemical also kills lobster larvae.

The lobstermen argue that Maine is the only East Coast fishery where the lobster population is at acceptable, sustainable levels because unlike other East Coast fisheries, Maine bans the use of methoprene and larvicides in its waters. Maine is also the only fishery where the lobster population does not suffer from shell disease. In all the other fisheries, Rhode Island included, lobster birth rates are noticeably below normal.

Lanny Dellinger, president of the Rhode Island Lobstermen's Association agrees that no conclusive scientific study is available that specifically names methoprene as the sole cause of decreasing lobster birth rates and/or shell disease in Rhode Island.

"That's the point," Dellinger said. "Nobody knows. Process of elimination tells us it certainly is possible that methoprene is the cause, but we don't have scientific proof either way.

We don't know if the concentration of methoprene in the bay is harming the lobster reproductive process, and we don't know if it isn't. However, it stands to reason that nothing should be introduced to any fishery without knowing the consequences."

Patrick Heaney, a Rhode Island lobsterman who has been fishing out of Newport for over 16 years agrees with Dellinger. In a letter to the editor of a local publication that was signed by 14 other local fishermen and people concerned about the welfare

of the industry, Heaney admonished the state DEM in conjunction with cities and towns across the state for dumping large amounts of highly toxic poison into the catch drains and sewers that empty into the bay.

"The long-term risks of this practice are becoming apparent to those who work in the lobster fishery in the state," Heaney said. "The ongoing incidence of shell disease and egg mortality, we believe, is a direct result of this environmentally questionable practice."

Rich Fuka, president of the Rhode Island Fishermen's Alliance, Chris Brown, President of Rhode Island Commercial Fishermen's Association, and Dennis Ingram, a board member of the Ocean State Fishermen's Association all agree. Rhode Island fishermen want the state to stop using larvicide pellets in catch basins and storm drains that empty into Rhode Island waters until conclusive scientific data is available declaring the chemicals safe.

Charles Y. Duncan, Councilman, First Ward, City of Newport, Rhode Island sent a FAX to the mayor's office asking for a resolution to be put on the next city council meeting agenda for the City of Newport to no longer use any of the toxic poisons such as methoprene in the mosquito abatement program. He suggested that the city look to less invasive methods of mosquito control. The results of the council's decision were not available at press time.

## **DEM**

Department of Environmental Management Associate Director of Natural Resources Larry Mouradjian, in an email sent by Gail Mastradi assistant to the director for public relations, answered questions about the mosquito abatement program and the use of methoprene.

Mouradjian said that every summer DEM and the Department of Health administers a comprehensive program aimed at mosquito control which began in 1999-2000. The program includes larvicide distribution to municipalities.

He also said, "Using mosquito larvicide reduces the possibility that mosquito adulticides would be needed. Mosquito adulticides do have environmental impacts as they can affect non-target organisms. Human health risks are also associated with the use of adulticides.

"Rhode Island DEM makes methoprene available to municipalities for mosquito control as well as BTI, a benign bacterium specific to killing mosquito larvae

aboveground.

"One half teaspoon of Methoprene pellets are distributed to most underground stormwater catchment basins monthly for four months by community department of public works workers that we train," Mouradjian said.

He explained that two identical training sessions are held each spring for municipal employees. Most employees who make the applications attend a session every two years and learn about any new developments. "All municipalities in total have been trained," Mouradjian said.

He also outlined the training program. "The training entails several speakers speaking on the topics of: Pesticide usage and safe pesticide handling, mosquito larval habitats and diseases, pesticide toxicology and modes of action, and laws, licensing, and regulatory issues.

"Each community has a mosquito control contact person that is to document to DEM's mosquito abatement office the monthly applications that are made in their community. Although documentation received back by DEM is incomplete, each community receives only that amount proportional to the number of catch basins in their community.

Mouradjian went on to explain that methoprene pellets sink, and are very unlikely to be flushed out of a basin, based on an experiment conducted by DEM in 2000. He said there was no evidence that methoprene affects lobsters in nature.

"Fish have a different structure and I know of no impacts on their developmental processes," he added.

Mouradjian's email also said, "Various research documents have raised questions on the potential offsite movement and impacts of methoprene and like products. Lab research has shown 'dosage' impacts on developing lobsters which demonstrates if unnaturally high concentrations of methoprene were to occur in the presence of developing lobsters damage could be observed. Lab tests only have documented this as far as I know.

"DEM has on two separate occasions in years past consulted with URI and other scientific partners to review the scientific literature and the possibilities of damage outside the catch basins.

"Tests were done to measure the chemical concentrations seen outside the basins and all concluded with the results that no detection was determined beyond very short distances so the 'risk' was judged negligible to organisms beyond the mosquitoes in the catch basins. DEM provides very clear and definitive directions for use by the communities so that the impact work and the use are in alignment."

When asked if the DEM is doing anything to assure that the health of the fishery is not at risk, he said: "DEM will again be reviewing methoprene use to understand the alternatives products, advances in scientific data and cost/benefit to the program."

"We will provide improved directions, alternative products or other program enhancements as deemed best. Disease monitoring continues to document presence of EEE, West Nile and other critical pathogens as present in our communities and this too must be factored."

When asked about the chances of an EEE or West Nile Virus epidemic if the mosquito population isn't controlled, he said that EEE and WNV risks are higher with higher mosquito populations and added that the risk is difficult to quantify.

### **Known scientific data**

Dr. David A. Bengtson, Professor and Chair, Department of Fisheries, Animal & Veterinary Science at the University of Rhode Island said that Mari Butler, a URI graduate student wrote a thesis published in 2006 on methoprene effects in RI. He said the study was done in conjunction with RIDEM and Dr. Al Gettman, the mosquito control coordinator.

Bengtson said, "The key experiment that Butler did involved putting 3.5 grams of methoprene pellets into each of two catch basins that drained into Pt. Judith Pond. One week later, when the dissolved methoprene concentrations in the water should have been the highest, Butler added about 1,200 gallons of water to the system that flushed both catch basins to simulate a strong rain event."

"The experiment was intended to introduce the maximum amount of methoprene into the pond's waters in a single event. Butler then sampled the pond waters immediately afterward at the outflow site and at 30 meters away. She then re-sampled an hour later."

"The results showed that of the twelve samples taken (replicate samples were taken at each time and place), two samples collected at the outflow showed methoprene concentrations of 0.05 and 0.06 parts per billion"

(ppb). All the rest, including others taken at the outflow, showed no detectable methoprene."

Dr. Bengston went on to say that to put this information in some context relating to lobster larvae, a published laboratory study in 2005 indicated methoprene to be toxic to stage II lobster larvae at a concentration of one part per billion (ppb).

He also said that methoprene causes molting difficulties to stage IV lobster larvae at 5 ppb. According to Dr. Bengston, in cases like these, scientists do something called Ecological Risk Assessment. In simple terms, one compares the concentrations that have an effect on organisms, known as the Effect Concentration, in this case, one or five ppb, with the actual concentrations out in the environment, known as the Exposure Concentration. The best guess we have for the worst-case scenario that Butler tested is maximum 0.06 parts per million (ppm), but those minuscule amounts are essentially undetectable, Bengston said. The conclusion, based on Butler's study is that the amount of methoprene that gets out into the water is not enough to harm lobster larvae.

According to the DEM, the amount of methoprene (3.5 grams) used in the experiment is substantially more than the half teaspoon per treatment put into catch basins. Consequently, the dilution per treatment would be substantially less.

Dr. Bengston agreed that the experiment had limitations. He said that although there was conclusive evidence that one treatment did not produce a high enough concentration to harm lobster larvae, the experiment did not study the results of prolonged or repeated applications. He also said that the experiment did not study the effects of methoprene on shell disease.

Dr. Bengston continued to explain that under the Toxic Substance Control Act (TSCA), the Environmental Protection Agency regulates the introduction of new chemicals and puts the burden of proof on the manufacturer to demonstrate that the chemical will not harm the environment or human health. Companies are required to give EPA minimal information on the chemical without disclosing any proprietary information like the actual chemical structure, and EPA scientists have to decide what level of testing will be required on that chemical.

These studies are paid for by the company marketing the product, Bengston said, and EPA examines the data to determine whether to proceed to the next level of testing or allow the chemical to be produced and sold. EPA works from a cost-benefit perspective, weighing the potential environmental or human health impacts

against the potential benefits.

In conclusion, Dr. Bengston said, "The problem is that there are so many new chemicals being submitted to EPA every year that we, the American people via EPA, cannot fully study every possible thing that could happen over the long term. EPA does the best it can with the limited resources provided by the American people, in this case, the administration and Congress." He also said, "I think I'm safe in saying that DEM does not have the resources to carry out these kinds of studies either. My position, like everyone else's, is that we should proceed with caution. I've tried to point out that EPA does, to the degree that it can by law, public opinion, and resources.

### **Rhode Island Sea Grant**

Dr. Kathy Castro, of the URI-based Rhode Island Sea Grant program said, "There are many things that each of us contributes to the environment. Just look in your cabinet of products that ultimately end up in the rivers, streams and oceans - even our antibiotics. The real question here is how do we live on this planet doing the least amount of harm?"

"Earth Day is coming up and we have long forgotten why that was even made into a day of its own. It's a good time to go back and read Rachael Carson's Silent Spring, and then all of us sit down together and find other ways and options.

"We have alternatives to pesticides if it is done in a comprehensive fashion. The key is public education. Would each household buy a mosquito magnet? Or, should our tax dollars go to DEM to put in Altosid tablets? That is a societal decision. Here is a platform we can all stand together on to make a difference instead of blaming someone else. Making someone else wrong does not make us right."