

# KENNEBEC JOURNAL

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## BELGRADE State calls herbicide's risk minimal Residents worry about toxicity, 'collateral damage' in milfoil fight

BY CRAIG CROSBY

Staff Writer

KENNEBEC JOURNAL Morning Sentinel

08/18/2009

BELGRADE -- The chemical the state plans to use to control milfoil in Salmon Lake can pose a risk to people, plants and animals -- but when used according to guidelines, those risks are negligible.

That was the message from state officials Monday for residents crammed inside the steamy North Belgrade Community Center to ask questions about the state Department of Environmental Protection's plan to use chemicals against aggressive Eurasian milfoil, which has taken root in Salmon Lake.

The state plans to use the herbicide 2,4-Dichlorophenoxyacetic acid -- better known as 2,4-D -- to control Eurasian milfoil in Kozy Cove near the Salmon Lake outlet.

Eurasian milfoil, a highly aggressive aquatic plant that can form dense mats and congest waterways, was first discovered in Salmon Lake's Kozy Cove by a summer visitor last August. DEP divers began removing plants from the 6-acre cove within a week of the discovery, but the plant population continues to swell.

Since May, divers have removed 325 plants, more than twice the number removed last year.

Milfoil spreads readily by fragments often transferred via animals, boats and trailers.

Gary Fish of the Maine Board of Pesticides Control said 2,4-D can pose a risk to people, plants and animals but, when used according to guidelines, those risks are negligible and mostly involve drinking water.

The chemical does not absorb well through the skin, he said.

"We're not saying it does not have an effect on people," Fish said. "Two, four-D does have an affect on people. It's not a perfect science."

The DEP's Division of Water Quality Management has authorized a permit for the herbicide treatment. On July 28, the division approved a notice of intent, said John McPhedran, DEP invasive aquatic plants specialist.

The 30-day appeal period started July 28.

"We are not going to treat that cove during the appeal period," McPhedran said.

The Board of Environmental Protection will consider any appeal filed during the board's next regular session, scheduled for early September, McPhedran said.

DEP officials spent much of Monday's session explaining 2,4-D and its potential side effects.

Bruce Trumper -- who lives along Salmon Stream, which flows out of Kozy Cove -- cited research indicating the chemical is toxic at a 75 parts per billion. The level during the treatment could reach 3,500 parts per billion, according to DEP officials.

Roy Bouchard of the DEP's Lake Assessment Program said field studies show the chemical has a half-life of seven days and is undetectable in less than a month. Those Bouchard spoke to in other states who have used the herbicide reported no fish die-off or collateral plant devastation.

"Aquatic systems are extremely resilient and they have a large biomass to regenerate," Bouchard said.

Fish, of the Maine Board of Pesticides Control, said the U.S. Environmental Protection Agency re-registered 2,4-D for use in 2006 after exhaustive tests; but resident Terri Trumper said those tests are suspect because they are funded or conducted by chemical companies.

"I think that's why it's constantly re-registered," Trumper said.

Jim Wilber, who also owns property along Salmon Stream, said milfoil calls for drastic action; but he asked why the dam could not be closed to limit the herbicide from carrying into the stream.

"The collateral damage is what I'm worried about," Wilber said. "I think that's something that needs to be considered."

Craig Crosby -- 623-3811, ext. 433

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## Portland Press Herald    Maine Sunday Telegram

### Locally grown corn could have built-in pesticide

July 19, 2009

Did you know that the folks at Hannaford supermarkets are apparently willing to let you eat pesticide?

The Maine Board of Pesticide Control has recently approved Bt sweet corn for Maine growers. This means that when Hannaford purchases local sweet corn, it may be Bt sweet corn.

Bt sweet corn is a genetically modified crop that has some of the gene structure of the bacillus thuringiensis (Bt) bacteria spliced into the gene structure of the corn. Bt is a pesticide, and that means when you eat Bt sweet corn, you are ingesting the pesticide.

This also points out that the Maine Board of Pesticide Control doesn't seem to care if you eat this insecticide. There are no long-term studies that show the effects of human consumption of this pesticide. Do you want to be a guinea pig?

I contacted Hannaford, asking if they would be labeling the Bt sweet corn as such so that I could make an informed choice about what I would like to have on my dinner table. I received a form letter indicating receipt of my e-mail, but no answer. Subsequent requests for an answer have produced nothing from them.

Is this the way a "certified organic supermarket" should act? Is it even legal for them to sell an unlabeled pesticide dressed up as food? Be mindful of what you eat!

**Ken Horn**

*Hermon*

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## Portland Press Herald    Maine Sunday Telegram

### Don't be fearful of corn, it's only defending itself

July 26, 2009

Ken Horn's letter in the July 19 Telegram, "Locally grown corn could have built-in pesticide," seems intended to raise unreasonable fears about the safety of locally produced foods.

It is important to remember that our locally grown produce is among the safest in the world. We all know about the risk of foods imported from places such as China, which may contain melamines and other dangerous substances, or foods imported from much of the rest of the world, which may have been sprayed with pesticides long banned in this country.

Mr. Horn seems to be concerned that a gene present in the bacterium *B. thuringiensis* is also present in some varieties of sweet corn. Perhaps he doesn't realize that Bt is sprayed by many certified organic producers to protect corn and other crops from insect pests (yes, organic farmers use pesticides, too).

Perhaps he doesn't realize that when you inadvertently consume the spray residue from an organic Bt application, you ingest not only the same gene which confers protection to Bt corn, but every other gene present in the entire Bt bacterium as well.

All food plants are under assault from a variety of pests, and all have built-in genes to help combat these pests. When you eat food of any species, you consume all manner of genes for pest resistance. The alternative is eating no food.

Scientists have manipulated genes for pest resistance through hybridization and plant selection for years with no adverse health effects. We are scarcely "guinea pigs" when it comes to the technology used to produce Bt corn, as most of the corn and soybean varieties produced in this country already use similar technology, and therefore are already in everyone's diets, without adverse effects.

Hannaford food stores are leaders in supporting Maine agriculture through the marketing of wholesome and nutritious locally produced foods.

They deserve our support, as does the Board of Pesticide Control, which thoroughly investigated Bt corn before authorizing its cultivation and production here.

**Clark A. Granger**

*Woolwich*

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# KENNEBEC JOURNAL

KENNEBEC JOURNAL *Morning Sentinel*

## Officials offer advice against insect-borne diseases

BY MECHELE COOPER  
Staff Writer 08/16/2009

Following the three Cs just might be a lifesaver.

"Clean up, cover up and check daily" are simple strategies for enjoying the outdoors without a tick or mosquito bite.

Dora Ann Mills, Maine's public health director, said it's important to take these precautions to reduce the chance of contracting Lyme disease, Eastern Equine Encephalitis and West Nile virus -- all insect-transmitted infections.

A horse in Troy recently was euthanized after testing positive for Eastern Equine Encephalitis, often referred to as EEE. The disease is caused by a virus transmitted through the bite of a mosquito that had fed on an infected bird.

She said the disease was first detected in Maine in York County among horses, mosquitoes and birds in 2005.

In the fall of 2008, a man visiting Cumberland County died of the disease.

"The strategies are really pretty simple," Mills said. "A lot of people say why spend a lot of time or effort if it's a rare disease, but the good news is that it's the same strategy employed for preventing Lyme disease, which is a more common disease. Nine hundred people in Maine were reported with Lyme disease last year."

Lyme disease is carried by deer ticks. Although reports of Lyme disease have come from every Maine county, the southern, midcoast, Androscoggin and Kennebec counties account for more than 90 percent of the cases, she said.

West Nile virus was first detected in Maine in 2001 in birds and in mosquitoes. The risk of human infection appears to be present, she said, even though there are no reports of people contracting the infection in Maine.

Symptoms of West Nile virus and EEE include fever, vomiting, headaches and neurological signs such as stroke-like symptoms or coma. Symptoms typically appear several days after the bite of an infected mosquito.

The most common early symptoms of Lyme disease, she said is an expanding red rash that occurs at the site of the tick bite three to 32 days after a bite. Fever and joint and muscle pains may also occur. Although a few people report ongoing symptoms, the vast majority of people fully recover from Lyme disease after receiving antibiotics, she said.

Jim Dill, pest management specialist with the University of Maine Cooperative Extension, said there's no way to tell immediately after you've been bitten if you've been infected with EEE.

"It typically can take anywhere from 24 to 72 hours to manifest symptoms, which are usually similar to a mild flu," Dill said. "And unlike West Nile, which ordinarily is more deadly to the very young, the elderly, or those with compromised immune systems, EEE can prove fatal even to very healthy people."

Dill warns that EEE isn't limited to animals, and can be transmitted from animals to humans by mosquitoes.

With the wet summer Maine has experienced, pests are out with a vengeance, he said. Dill suggests using insect repellent to avoid mosquito bites, avoid strenuous outdoor activity at dawn and dusk, and wear a bug net when working outside.

Mills said people should use an effective insect repellent on skin and clothing that contains DEET or another repellent registered by the U.S. Environmental Protection Agency. She doesn't recommend using sunscreen with DEET.

"The sunscreen is put on different times of the day on different parts of the body," she said. "I usually use a concentration under 20 percent. I don't recommend a high percentage of DEET insect repellent. The thing about DEET is it's long lasting and you don't have to reapply it very much."

Protecting children is more difficult, she said -- especially babies younger than six months. She said at that age they absorb more of the insecticide and it could cause harm to their brain development.

"Under six months of age, cover them up with clothing or put netting over the infant carrier," she said. "Clean up your yard of standing water, in tires and rain gutters, and get rid of old leaf piles. Things like that also get rid of ticks."

According to the American Academy of Pediatrics, DEET is not recommended for use on children younger than two months of age. When it is used on babies, the academy said to use it sparingly and do not use it under clothing.

It should not be applied to the hands of young children and avoid applying it around the eyes and mouth.

Kieran Kammerer, a pediatrician with Kennebec Pediatrics in Augusta, said he is more conservative than the academy and recommends not using any DEET products on babies until they're older than six months old.

"We're worried about the increased absorption of the DEET and the neurotoxic thing," Kammerer said. "Their skin is more permeable and tends to absorb more. Who really knows what it would do, it's sort of a judgment decision. But it makes better sense to use preventative measures rather than put chemicals on the skin. Limit the exposure of insects with clothing and using proper netting. If they're in a playpen outdoors, put netting over it when there's a high count of mosquitoes."

Andy Fisk, director of the Maine Bureau of Land & Water Quality, said homeowners can learn how to reduce the risks of mosquito-borne illness at [www.maine.gov/dep/blwq/](http://www.maine.gov/dep/blwq/).

The site also provides information on licensing requirements for determining whether it is appropriate to allow the use of a pesticide in a natural water body.

"The way that the mosquito control works is by a general permit and it is directed at municipalities and other state entities," Fisk said. "(The Department of Environmental Protection) governs how any mosquito control is to be applied because they're waterborne critters. There's a lot that can be done to minimize exposure that doesn't require a herbicide, which is a common sense thing."

Mechele Cooper -- 623-3811, ext. 408

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Avoiding mosquito bites

- \* Use insect repellent
- \* Avoid strenuous outdoor activity at dawn and dusk
- \* Wear a bug net when working outdoors

Source: University of Maine Cooperative Extension

TRIPLE E

Eastern Equine Encephalitis (EEE) is a mosquito-borne viral disease. The virus occurs in the eastern half of the United States where it causes disease in humans, horses and some bird species. Because of the high mortality rate, it is regarded as one of the most serious mosquito-borne diseases in the United States. Many persons infected with EEE will have no obvious symptoms; other times, the symptoms range from mild-flu like illness to inflammation of the brain, coma and death. There is no specific treatment for the disease and it is best prevented by avoiding exposure to mosquitoes.

Source: Maine Center for Disease Control & Prevention Division of Infectious Disease



## NASDA e-News

A publication of the National Association of State Departments of Agriculture  
August 4, 2009, Issue XVII, Number 29

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### **LEGISLATIVE AND REGULATORY NEWS:**

6th Circuit denies pesticide case rehearing request \*\*\* Food safety legislation passes the House \*\*\*  
USDA increases dairy support prices \*\*\* Senate poised to leave MAP funding intact \*\*\* Administration  
conveys support for ethanol tariff \*\*\* Comments sought on free trade agreements \*\*\* Rural  
Development loan applications available \*\*\* FDA announces draft guidance documents for 3 crops \*\*\*  
Biomass Crop Assistance Program officially begins

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### **LEGISLATIVE AND REGULATORY NEWS:**

#### **6<sup>TH</sup> CIRCUIT DENIES PESTICIDE CASE REHEARING REQUEST**

The Sixth Circuit Court of Appeals yesterday rejected a request by a coalition of agriculture organizations for the entire Sixth Circuit to rehear an earlier decision by the Court regarding pesticide applications near water. A three-judge panel of the Sixth Circuit ruled in January that pesticide applications in, over, and near water require National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act.

NASDA strongly opposed the Court's decision and petitioned the Court for a hearing. In a letter filed with the Court in May, NASDA argued that the decision significantly undermines NASDA members' authority under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The decision will also result in a significant increase in the number of NPDES permits issued, creating strain on the permitting system. NASDA also expressed concerns with the financial impacts the decision will have on agriculture producers and their exposure to citizen action suits under the Clean Water Act.

The agriculture petitioners will have 90 days to decide whether to appeal the decision to the U.S. Supreme Court.

Separately, EPA sought—and received—a two-year stay of the decision in order to allow for time to develop a permit. EPA is currently developing a narrow general permit to comply with the decision. Reports indicate a prototype could be circulated to stakeholders by the end of this month for input and discussion. *(Contact: Nathan Bowen)*

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**From:** Putnam.Raymond@epamail.epa.gov [mailto:Putnam.Raymond@epamail.epa.gov]  
**Sent:** Monday, July 27, 2009 1:58 PM  
**To:** Wijnja, Hotze (AGR); rwoff@agr.state.nh.us; jeff.comstock@agr.state.vt.us; judith.singer@po.state.ct.us; Fish, Gary  
**Subject:** Pyrethroids sources in Sacramento-San Joaquin River Delta

Greetings Water Quality folks (apologies to those of you who received this on another distribution list)

### **Significant Levels of Pyrethroid Pesticides Coming from Urban Areas**

UC Berkeley researcher Don Weston recently reported to the Urban Pesticide Committee (UPC) results of a study on sources of pyrethroid pesticides in the Sacramento-San Joaquin Delta. The study measured pyrethroid concentrations and invertebrate toxicity in samples collected from agricultural pump stations, urban storm drains, municipal wastewater outfalls, as well as several streams and creeks throughout the Sacramento and San Joaquin River system. Urban run-off from all areas tested (Sacramento, Stockton and Vacaville) contained pyrethroids at levels toxic to invertebrates. The Sacramento wastewater treatment plant was found to be the largest single discharger of pyrethroids among all Delta dischargers. Agricultural discharges were relatively minor contributors to pyrethroids in the Delta, with detections in just 30% of samples. About 10% of samples from agricultural discharges were toxic to invertebrates, with toxicity attributed to both pyrethroids and organophosphates. The study also showed contamination of several creeks and streams as they passed through Delta urban areas during storms that washed pyrethroids into surface waters. Pyrethroids are insecticides used in agricultural and urban areas, and they are commonly found in lawn and garden products and pet products, for example.

There are many interesting aspects to this, but a big one is that this is all based on water column (not sediment) toxicity. Also surprising is how much pyrethroid is passing through wastewater treatment. I'm attaching Dr. Weston's 2-page summary in case you'd like to read further. For you wastewater people out there, the Sacramento treatment plant has secondary treatment; the Stockton plant has tertiary.

# Pyrethroid Pesticides in the Sacramento-San Joaquin Delta: Sources and impacts on Delta waters

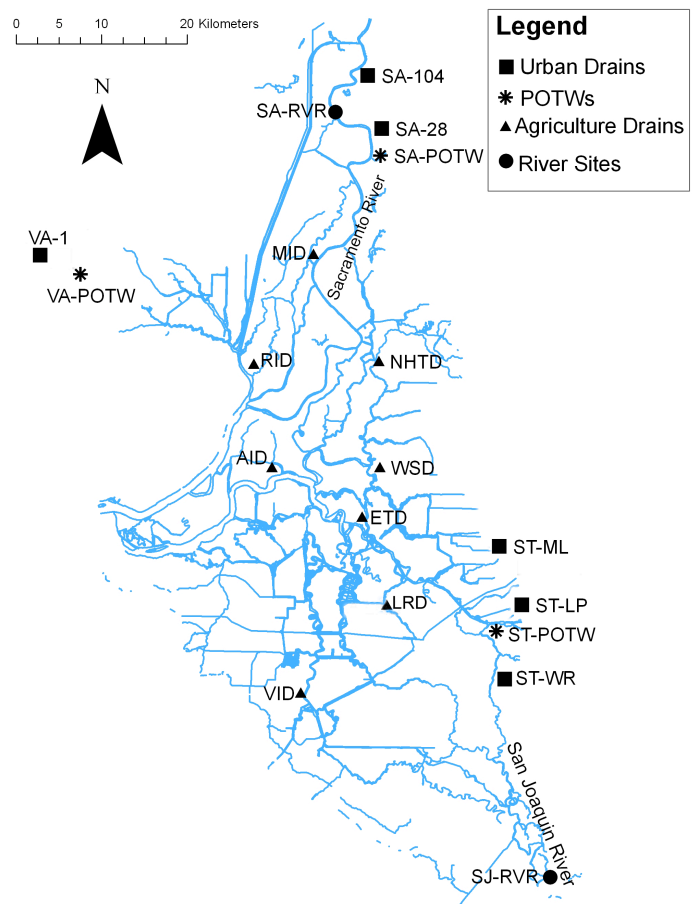
Donald Weston, University of California, Berkeley  
Michael Lydy, Southern Illinois University  
Contact: [dweston@berkeley.edu](mailto:dweston@berkeley.edu)

Support for this work was provided by the Central Valley Regional Water Quality Control Board through the Surface Water Ambient Monitoring Program (SWAMP).

**OBJECTIVE:** To better understand sources of pyrethroid insecticides to the Delta, and to examine their effects on the water bodies in to which they are released.

## STUDY APPROACH

- Pyrethroid insecticides are widely used in agricultural and urban settings. California agriculture uses 355,000 lb/yr, and non-agricultural uses comprise another 567,000 lb/yr. Retail sales are not included but would be added to the non-agricultural use.
- To better understand sources of pyrethroids to the Delta, we sampled 8 agricultural pump stations, 6 urban runoff pump stations or storm drains, 3 municipal wastewater treatment plants, and the Sacramento and San Joaquin Rivers as they enter the Delta.
- Potential sources were sampled on 3-5 occasions in the dry season of 2008, and 3 occasions in the wet seasons of 2008 or 2009.
- Transects were sampled along Ulatis Creek, Alamo Creek, American River, San Joaquin River, and Sacramento River as they passed through urban areas, after 2-4 rain events.
- Samples were analyzed for pyrethroids and water toxicity testing was done with a native crustacean, *Hyalella azteca*. For several of the pyrethroids, a concentration of only 2 parts pyrethroid in a trillion parts water (2 ng/L) is sufficient to cause paralysis in *Hyalella*.



## RESULTS: URBAN RUNOFF

- Virtually all urban runoff contained pyrethroids, typically at about 4 times the concentration that would paralyze *Hyalella*.
- Not surprisingly given these pyrethroid concentrations, nearly all urban runoff samples caused toxicity when *Hyalella* was exposed to the water.
- A Toxicity Identification Evaluation (TIE) was done on 7 runoff samples to help determine the cause of toxicity. Results were consistent with pyrethroids as the cause of toxicity in every case.
- Bifenthrin and cyfluthrin are the pyrethroids of greatest toxicological concern in urban runoff. Both are used by professional pest control firms and are also available in retail stores.
- Urban runoff quality was comparable in all communities studied (Sacramento, Stockton, Vacaville), suggesting the conclusions can be extrapolated to urban runoff in general.

## RESULTS: MUNICIPAL WASTEWATER

- Pyrethroids were present in about 2/3 of the final effluent samples from wastewater treatment plants.
- They were found most often, and in highest concentration, at the Sacramento treatment plant, followed by Vacaville, and then Stockton.
- The typical wastewater treatment plant effluent contains pyrethroids at about 0.5-1.5 times the concentrations that cause *Hyalella* paralysis.
- Toxicity was seen in every sample from the Sacramento facility and never seen at Stockton. TIE results were not always definitive, but in general, indicate pyrethroids were a significant cause of toxicity.
- The Sacramento plant was the largest single discharger of pyrethroids among all Delta discharges studied, usually releasing at least 10 g/day. A storm water pumping station releases about 3 g/d.

## RESULTS: AGRICULTURE

- Agricultural discharges occasionally contained detectable pyrethroids (about 30% of samples).
- Toxicity to *Hyalella* was seen in about 10% of the agricultural samples, and in every case, could be linked to the pyrethroid lambda-cyhalothrin or the organophosphate insecticide, chlorpyrifos.
- Input of pyrethroids from the agricultural pump stations is difficult to quantify, but is probably well under that of an urban pump station in most cases.

## RESULTS: RECEIVING WATERS

- Ulatis Creek and Alamo Creek were sampled following two storms. Before entering Vacaville, there were no detectable pyrethroids in either creek and only one sample (of 6) had slight toxicity. As the creeks left the city, they contained 4-10 times the concentration of pyrethroids that cause paralysis in *Hyalella*, and all samples caused high toxicity.
- The American River was sampled from Folsom Lake to the Sacramento River confluence after several storms. Toxicity to *Hyalella* was found repeatedly, extending over 20 miles of the river on one occasion and intermittently over 30 miles on another. The pyrethroid bifenthrin appeared responsible.
- Toxicity in the American River was compounded by the low flows maintained in the river by low releases from Folsom Dam during February and March (800 cfs). Thus, there was less water in the river to dilute the bifenthrin-containing runoff. There was no toxicity following a May rain when flows were over 4000 cfs.
- In the San Joaquin River, one sample on the downstream edge of Stockton was toxic to *Hyalella*, probably due to bifenthrin. We have no data to determine how far down the river the effect extended.
- Pyrethroids (most often bifenthrin) were found in the Sacramento River as it passed through the city of Sacramento. Concentrations peaked near the threshold of causing toxicity. No toxicity was seen, probably because the times of elevated bifenthrin concentrations occurred concurrently with high suspended sediments that reduced its availability to organisms.
- Release of pyrethroid insecticides from urban centers is sufficient to adversely affect water quality over considerable lengths of small to moderate size water bodies (up to the American River in size). In the larger water bodies (Sacramento and San Joaquin Rivers), localized impacts are possible after a typical storm event.

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-----Original Message-----

From: Koethe.Robert@epamail.epa.gov [mailto:Koethe.Robert@epamail.epa.gov]  
Sent: Tuesday, August 18, 2009 8:34 AM  
To: jim.leland@agr.state.vt.us; cary.giguere@state.vt.us;  
bradford.robinson@po.state.ct.us; Lee.Corte-real@state.ma.us; Jennings, Henry;  
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Subject: DEET Studies

TO: SLA Directors

SUBJ: Recently published study from France on DEET

The attached information, forwarded to me and others including state representatives, organizations and others, by a colleague in Region 5, is about a recently published study from France that addresses DEET's possible effects on the human nervous system. The authors question the safety of DEET, especially when used with other chemicals that also block acetylcholinesterase.

This information may be useful when you get questions about DEET's safety.

Sincerely,

- Rob

Check out the links as below.

Common insect repellent affects nervous system

One of the world's most common insect repellents acts on the central nervous system in the same way as some insecticides and nerve gases, according to a study released on Wednesday.

Agence France-Presse

<http://www.google.com/hostednews/afp/article/ALeqM5jV4LJyAmzdrqcQFwHocR3Y7NxUMg>

News article is about the scientific study below.

Evidence for inhibition of cholinesterases in insect and mammalian nervous systems by the insect repellent deet

Vincent Corbel , Maria Stankiewicz , Cedric Pennetier , Didier Fournier , Jure Stojan , Emmanuelle Girard , Mitko Dimitrov , Jordi

#### Background

N,N-Diethyl-3-methylbenzamide (deet) remains the gold standard for insect repellents. About 200 million people use it every year and over 8 billion doses have been applied over the past 50 years. Despite the widespread and increased interest in the use of deetin public health programmes, controversies remain concerning both the identification of its target sites at the olfactory system and its mechanism of toxicity in insects, mammals and humans. Here, we investigated the molecular target site for deet and the consequences of its interactions with carbamate insecticides on the cholinergic system.

#### Results

By using toxicological, biochemical and electrophysiological techniques, we show that deet is not simply a behaviour-modifying chemical but that it also inhibits cholinesterase activity, in both insect and mammalian neuronal preparations. Deet is commonly used in combination with insecticides and we show that deet has the capacity to strengthen the toxicity of carbamates, a class of insecticides known to block acetylcholinesterase.

#### Conclusion

These findings question the safety of deet, particularly in combination with other chemicals, and they highlight the importance of a multidisciplinary approach to the development of safer insect repellents for use in public health.

Complete article is available at  
<http://www.biomedcentral.com/content/pdf/1741-7007-7-47.pdf>

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# Common insect repellent affects nervous system: study

By Marlowe Hood (AFP) – Aug 4, 2009

PARIS — One of the world's most common insect repellents acts on the central nervous system in the same way as some insecticides and nerve gases, according to a study released on Wednesday.

Moderate use of the chemical compound, called deet, is most likely safe, the researchers say.

But experiments on insects, as well as on enzymes extracted from mice and human neurons, showed for the first time that it can interfere with the proper functioning of the nervous system.

The researchers say further studies are "urgently needed" to assess deet's potential toxicity to humans, especially when combined with other chemical compounds.

Their findings may also shed some light on the so-called "Gulf War Syndrome," the name given to a complex and variable mix of neurological symptoms reported by tens of thousands of US military veterans who served in the first Gulf War against Iraq in 1990-1991.

Developed by US Department of Agriculture scientists just after World War II, deet has been available as a bug repellent for more than five decades.

Sold as lotions, creams and sprays in concentrations from five to 100 percent, it has been widely used not just by weekend campers but as a frontline barrier against malaria, dengue fever and other mosquito-borne diseases.

Some 200 million people use deet-based products every years, according to the study, published in the British-based open-access journal BMC Biology.

Scientists still don't know exactly how the compound works on blood-seeking insects. Some say it blocks the sensory neurons that would be titillated by a potential meal, while others hypothesise that bugs are simply put off by the smell.

More surprising still, there is relatively little research on the effects of deet in humans.

"It has been used for many years, but there are recent studies now that show a potential toxicity," said Vincent Corbel, a researcher at the Institute for Development Research in Montpellier, France, and lead author of the study.

"What we have done is identify a neurological target for this compound," he told AFP by phone.

In experiments, Corbel and a team of scientists co-led by Bruno Lapied of the University of Angers discovered that deet interferes with the normal breaking down of acetylcholine (ACh), the most common neurotransmitter in the central nervous system.

It does so by blocking the enzyme that normally degrades ACh, acetylcholinesterase, or AChE. The result is a toxic build-up of ACh that ultimately prevents the transmission of signals across the neuron synapse, the study found.

A class of insecticides called carbamates, as well as the nerve gas sarin, work in the same way, only the effects are stronger and last much longer.

Which is where the Gulf War Syndrome comes in.

"Many of the pesticides used in the Gulf War, as well as PB and nerve agents, exert toxic effects on the brain and nervous system by altering levels of ACh," a US government report issued last November concluded.

PB, or pyridostigmine bromide, was widely used to protect against nerve gas exposure.

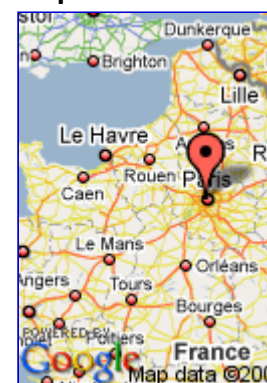
The 450-page report, entitled "Gulf War Illness and the Health of Gulf War Veterans," points to earlier evidence that overexposure to deet may be toxic for the nervous system, but fails to recognize its potential role as a booster for the more potent chemicals to which soldiers had been exposed.

"For US soldiers, the cocktail of high doses of PB and insect repellents to protect against mosquito bites may have caused symptoms, as both act on the central nervous system in the



One of the world's most common insect repellents acts on the nervous system in the same way as some insecticides and nerve gases.

## Map



same way," said Corbel.

Fortunately, deet is "reversible," meaning its impact is short-lived. But further studies are needed to determine at what concentration it may become dangerous to people, especially small children and pregnant women, he added.

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TG Daily - Aug 5, 2009

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United Press International - Aug 5, 2009

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#### [Safe for the Whole Family](#)

Natrapel 8 Hour Deet Free Insect Repellent - Recommended by the CDC  
[www.tendercorp.com/natrapelCoupon/](http://www.tendercorp.com/natrapelCoupon/)

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**July 11, 2009**

PATIENT MONEY

## Sleeping With the Enemy (Bed Bugs)

By WALECIA KONRAD

AFTER virtually disappearing for decades, bed bugs have made a comeback throughout the nation, with particularly bad infestations in densely populated apartment buildings.

Encouraged in part by the banning of DDT, the insects have become so prevalent that the [Environmental Protection Agency](#) held a National Bed Bug Summit in April.

Rather than wait for a Washington task force to do something, though, people with an infestation probably want to take immediate action. So this column is all about what consumers can do to avoid being bitten twice — first by the vermin and then by a venal exterminator.

While in most cases an infestation is more a skin-crawling nuisance than serious [health problem](#), in some people severe reactions to bed bug bites can include [asthma](#), generalized [hives](#) and even a life-threatening allergy attack that requires emergency treatment. Regardless of the medical consequences, though, bed bugs can be expensive to banish.

It's not unusual for the typical afflicted family to spend \$5,000 or more on inspections, exterminator fees, cleaning and storage, according to Jody L. Gangloff-Kaufmann, an urban entomologist with the New York State Integrated Pest Management program at [Cornell University](#). Landlords of large apartment buildings have been known to spend as much as \$80,000 to get rid of the pests, she said.

The insects, which are about the size of an apple seed and resemble [ticks](#), are hard to detect and even harder to kill. The most successful efforts include a combination of a thorough cleaning and sorting, along with repeated professional applications of [pesticides](#) and other bed bug treatments.

But the bed bug boom has attracted fraudulent exterminators peddling money-[wasting](#) treatments that do not work. And because even reputable exterminators charge a wide range in prices and offer a variety of services, it can be hard to know what's worth the money and what's hype.

Here, then, is some calm advice from experts on what you can expect to spend and what you should — and shouldn't — pay for.

**IDENTIFYING THE PROBLEM** Simply determining whether you have bed bugs can cost you money.

Small and nocturnal, the insects are hard to spot. They love to hide in mattresses and box springs, of course, but they also burrow in woodwork, night tables, picture frames, cushions and even behind outlet and light-switch covers. They come out only to feed on sleeping humans.

The most common way people discover they have bed bugs is when they wake up with bites. But only about a third of people react to bed bug bites, and many of those who do have reactions mistake them for mosquito bites. You may also get the same kind of bites from bird mites, says Gil Bloom, who is vice president of Standard Pest Management, an exterminating company in Queens, and director of public affairs for the New York State Pest Management Association. You can sometimes detect other evidence like bed bug feces, which look like tiny black specks, or blood stains from a bug that has just had a full meal.

If you suspect bed bugs, you'll probably need a visual inspection from an exterminator to make sure. Many pest control companies do this free, hoping that if you have the bugs, you'll hire them to do removal. Other companies may charge \$50 to \$200 to do a visual inspection.

Some companies use specially trained dogs that can sniff out bed bugs and their eggs. Well-trained dogs can be amazingly accurate, letting you know exactly where the bugs are so you can concentrate your efforts in those problem areas, says Jennifer Erdogan of Bell Environmental Services, a pest control company in Parsippany, N.J., that uses two trained dogs, including Roscoe, a bug-sniffing beagle.

But the dogs' services are expensive. You'll pay \$300 to \$600 for a home inspection. If you go this route, ask about the dog's credentials. You want to hear that the animal was trained at a certified facility that prepares dogs for jobs that include bomb and drug sniffing. **FINDING AN EXTERMINATOR** Counterintuitive as it may sound, you probably want to steer clear of pest control companies that emphasize their bed bug expertise. These may be one-person outfits or unqualified shops that have popped up in response to the epidemic.

Ms. Gangloff-Kaufmann advises finding an established company that has been in business at least five years and routinely battles all types of pests, including bed bugs.

Exterminators charge \$250 to \$900 a room to get rid of bed bugs, depending on the level of infestation and the types of treatments used. Some companies may charge by the bed if there are multiple people sleeping in the same room. Most exterminators use a combination of pesticides and steam heat.

Exposure to high temperatures is the only sure way to kill bed bugs, Ms. Gangloff-Kaufmann said. Cryonite, a freezing agent that kills bed bugs on contact, can add considerably to the cost of an exterminator visit, she said, and isn't 100 percent effective against bed bugs.

Whatever an exterminator uses, it must directly contact a bed bug to kill it. Pesticides have no residual effect on bed bugs. That's why you or your exterminator should never use bug bombs or foggers, which are completely ineffective with bed bugs.

Be sure your exterminator makes at least one follow-up visit. It's virtually impossible to kill all the bugs in

a given area with one treatment. Ask if any repeat treatments are included in the price quoted to you.

Check to see that the company you hire and the technician who is coming to your home are licensed in your state. To find your state's licensing agency, check with the National Pesticide Information Center's Web site, <http://npic.orst.edu/state1.htm>.

Also check the Better Business Bureau for any complaints filed against the exterminators you are considering.

**ENCASE YOUR MATTRESS** All bed bug experts agree that you must encase your mattress and box spring with a durable, leak-proof cover that will trap existing bugs inside the bedding and prevent new bugs from entering. (Even if you don't currently suspect bed bugs, you might want to do this preventively, if you live in a highly infested area.)

The best covers are made from tightly woven cloth and have enclosed zippers and zipper locks to ensure there are no openings anywhere on the covering. A good cover will cost \$70 to \$150, depending on the size of your bed. Don't bother with cheaper covers made of vinyl, which is uncomfortable to sleep on and is likely to crack and tear over time.

**BEFORE YOU TOSS ...** Often, the first response to bed bugs is to throw stuff out. But replacing contaminated furniture, clothes and other possessions can be one of the biggest unnecessary bed bug expenses.

"Nothing kills bed bugs and their eggs better than high temperatures," said Mr. Bloom, "so the dryer is your new best friend."

Bedding, clothes, stuffed animals, backpacks and anything else you can fit into the clothes dryer can be decontaminated by 20 minutes on the high setting. Carry the items to the dryer in a cloth laundry bag that you can throw into the machine. If you use a plastic bag, discard it immediately; bed bugs or eggs might be lurking.

For items that can't go in the dryer, consider packing them in plastic bins or bags and storing them for a year to make sure any hidden insects die.

For furniture and other large items, you may want to consider a professional fumigation service that will decontaminate the items away from your home and return them within a week or so. This can easily add \$1,000 to your bed bug bill. But for antiques, heirlooms and other hard-to-replace items, it may well be worth the cost.

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**From:** NANCY ODEN [mailto:cleaneearth@myfairpoint.net]  
**Sent:** Sunday, June 28, 2009 3:06 PM  
**To:** Jennings, Henry  
**Cc:** Bradstreet, Seth; Governor  
**Subject:** Pesticide Control Board Agenda item, please

Henry - I have been telling you, and occasionally the entire Board, about the below information - frustrating as it is to be ignored and ridiculed - for over ten years now. The NYT is just now getting around to reporting it, but better late than never.

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People have been reporting deformed frogs and cases of boy babies' hypospadias to me here in Washington County - thanks to blueberry growers spraying poisons willy-nilly over all and sundry - for many years now.

I've been reporting these cases to you or the entire Maine Pesticide Control Board [sic] for all that time, as you well know, Henry. No action ever taken, of course, nor even a show of interest.

And why should they show an interest in the harm their approved pesticides are doing? Well, all honest science would call for an end to using endocrine-disrupting chemicals, which includes dioxins which are in practically all (if not all) pesticides and industrial chemicals.

Genuine control of pesticides so they don't get into our waters or bodies would mean few of your poisons left standing. Then where would your nice government jobs be? Remove pesticides and lots of grant and consultant money to UMM staff would disappear.

Absolutely unconscionable to ignore stuff like this and just let it continue to harm the human and all other life forms' gene pools.

I want this on the next Board meeting agenda. Please tell me when they will be meeting and read this article so you know what I'm talking about.

- Nancy Oden

<http://www.nytimes.com/2009/06/28/opinion/28kristof.html?th&emc=th>

NY Times  
June 28, 2009

## It's Time to Learn From Frogs

By NICHOLAS D. KRISTOF

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Some of the first eerie signs of a potential health catastrophe came as bizarre deformities in water animals, often in their sexual organs.

Frogs, salamanders and other amphibians began to sprout extra legs. In [heavily polluted Lake Apopka](#), one of the largest lakes in Florida, male alligators developed stunted genitals.

In the Potomac watershed near Washington, male smallmouth bass have rapidly transformed into “intersex fish” that display female characteristics. This was discovered only in 2003, but [the latest survey found](#) that more than 80 percent of the male smallmouth bass in the Potomac are producing eggs.

Now scientists are connecting the dots with evidence of increasing abnormalities among humans, particularly large increases in numbers of genital deformities among newborn boys. For example, up to 7 percent of boys are now born with undescended testicles, although this often self-corrects over time. And up to 1 percent of boys in the United States are now born with hypospadias, in which the urethra exits the penis improperly, such as at the base rather than the tip.

Apprehension is growing among many scientists that the cause of all this may be a class of chemicals [called endocrine disruptors](#). They are very widely used in agriculture, industry and consumer products. Some also enter the water supply when estrogens in human urine — compounded when a woman is on the pill — pass through sewage systems and then through water treatment plants.

These endocrine disruptors have complex effects on the human body, particularly during fetal development of males.

“A lot of these compounds act as weak estrogen, so that’s why developing males — whether smallmouth bass or humans — tend to be more sensitive,” said Robert Lawrence, a professor of environmental health sciences at the Johns Hopkins Bloomberg School of Public Health. “It’s scary, very scary.”

The scientific case is still far from proven, as chemical companies emphasize, and the uncertainties for humans are vast. But there is accumulating evidence that male sperm count is dropping and that genital abnormalities in newborn boys are increasing. Some studies show correlations between these abnormalities and mothers who have greater exposure to these chemicals during pregnancy, through everything from hair spray to the water they drink.

Endocrine disruptors also affect females. It is now well established [that DES](#), a synthetic estrogen given to many pregnant women from the 1930s to the 1970s to prevent miscarriages, caused abnormalities in the children. They seemed fine at birth, but girls born to those women have been more likely to develop misshaped sexual organs and cancer.

There is also some evidence from both humans and monkeys that endometriosis, a gynecological disorder, is linked to exposure to endocrine disruptors. Researchers also suspect that the disruptors can cause early puberty in girls.

A rush of new research has also tied endocrine disruptors to obesity, insulin resistance and diabetes, in both animals and humans. For example, mice exposed in utero even to low doses of endocrine disruptors appear normal at first but develop excess abdominal body fat as adults.

Among some scientists, there is real apprehension at the new findings — nothing is more terrifying than reading *The Journal of Pediatric Urology* — but there hasn’t been much public notice or government action.

This month, the Endocrine Society, an organization of scientists specializing in this field, issued a landmark 50-page statement. It should be a wake-up call.

“We present the evidence that endocrine disruptors have effects on male and female reproduction, breast development and cancer, prostate cancer, neuroendocrinology, thyroid, metabolism and obesity, and cardiovascular endocrinology,” [the society declared](#).

“The rise in the incidence in obesity,” it added, “matches the rise in the use and distribution of industrial chemicals that may be playing a role in generation of obesity.”

The Environmental Protection Agency [is moving toward screening](#) endocrine disrupting chemicals, but at a glacial pace. For now, these chemicals continue to be widely used in agricultural pesticides and industrial compounds. Everybody is exposed.

“We should be concerned,” said Dr. Ted Schettler of [the Science and Environmental Health Network](#). “This can influence brain development, sperm counts or susceptibility to cancer, even where the animal at birth seems perfectly normal.”

The most notorious example of water pollution occurred in 1969, when [the Cuyahoga River](#) in Ohio caught fire and helped shock America into adopting the Clean Water Act. Since then, complacency has taken hold.

Those deformed frogs and intersex fish — not to mention the growing number of deformities in newborn boys — should jolt us

once again.

I invite you to comment on this column on my blog, [On the Ground](#). Please also join me on [Facebook](#), watch my [YouTube videos](#) and follow me on [Twitter](#).



# Intersex fish

## *Endocrine disruption in smallmouth bass*

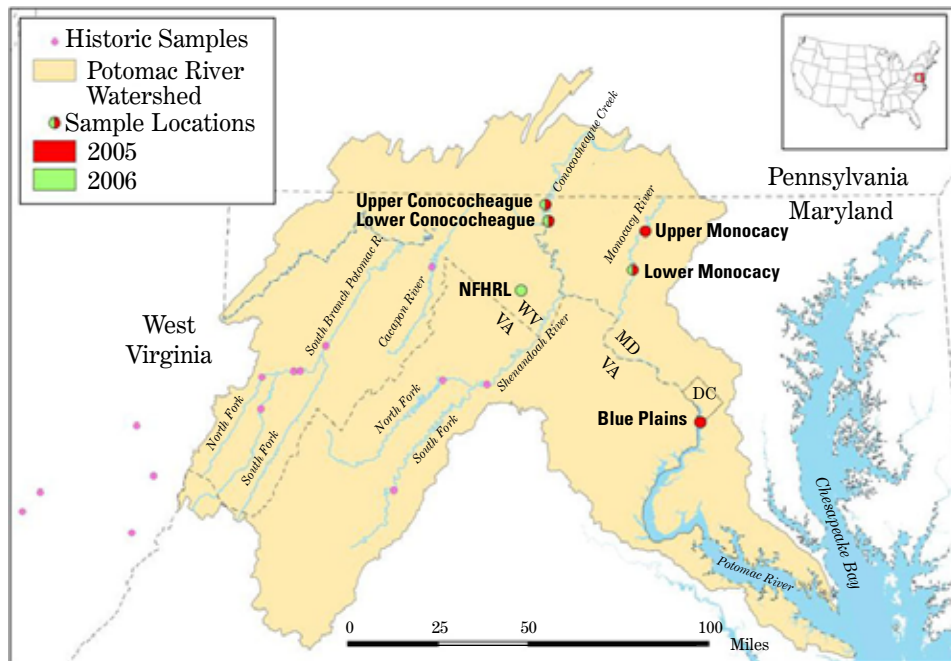
### Background

Since 2003, scientists at the U.S. Geological Survey's National Fish Health Research Laboratory (NFHRL) in Kearneysville, WV have been evaluating the reproductive health of smallmouth bass in the upper Potomac River and its tributaries, including the Shenandoah River. They noted the presence of immature female germ cells (oocytes) in the testes of some of the male fish. This condition, a type of intersex, is evidence of a disturbance in the hormonal system of the fish (i.e., endocrine disruption). Further evidence of endocrine disruption occurs when we detect the presence of vitellogenin in the blood of male fish. Vitellogenin is a protein produced by female fish to form egg yolk and is normally absent in males. In addition to the effects on male fish, a substantial decrease of vitellogenin in females also suggests endocrine disruption.

### The Problem

Intersex and abnormal vitellogenin in smallmouth bass from portions of the Potomac watershed pose a threat to fish resources. The USGS studies led to several research questions:

- Is there a relationship between intersex and abnormal vitellogenin and nearness to wastewater treatment plant discharges?
- How widespread are these problems within the Potomac watershed?
- What chemicals can be detected at fish sampling locations; which ones are considered to be endocrine disruptors; and do the concentrations relate to land use?



Map of sampling locations.

### The Team

To try to answer these questions, a collaborative partnership of scientists from many organizations was formed. Toxicologists from the U.S. Fish and Wildlife Service's Environmental Contaminants Program at the Chesapeake Bay Field Office identified the sampling sites, coordinated the field work, and gathered the land use information. Biologists from the USGS NFHRL directed the field necropsies and performed the biological laboratory analyses. USGS chemists at the Columbia Environmental Research Center (Columbia, MO) estimated water concentrations of organic contaminants at the collection sites using long-term sampling devices. Fisheries biologists from the Maryland Department of Natural Resources provided local expertise on smallmouth bass populations and directed the collections. Biologists from the District of Columbia's Department of the Environment provided additional help

with collections and those from the University of Florida performed the vitellogenin analyses. The U.S. Fish and Wildlife Service and the U.S. Geological Survey funded the work through a jointly prepared proposal submitted in 2004.

### The Survey

In the fall of 2005, biologists collected male and female smallmouth bass from two Potomac River tributaries in Maryland, the Monocacy River and Conococheague Creek. For each river, we identified one sampling location immediately downstream of a wastewater treatment plant discharge and one about 10 miles upstream. We collected about 10 males and 10 females from each location. We also collected largemouth bass near the discharge of the Blue Plains Wastewater Plant in Washington, DC. Fish blood and tissue samples were taken for analysis. Microscope slides were prepared of testes and ovaries.

In the fall of 2005 and in the spring of 2006, we installed passive water sampling devices at sampling sites for one to two months. These devices accumulate different types of organic contaminants, including both legacy and “emerging” compounds, allowing scientists to identify contaminants at very low concentrations.

### The Results

We found female germ cells (oocytes) in the testes of 82% to 100% of the male smallmouth bass and in 23% of the males from the single largemouth bass collection near the Blue Plains Wastewater Plant in Washington, DC. The baseline prevalence of testicular oocytes in male smallmouth is uncertain but may be in the range of 14% to 22%; baseline for male largemouth may be closer to 0%. We found vitellogenin in the blood of 33% to 90% of the male smallmouth and 85% of the male largemouth. In Conococheague Creek, there was more than a tenfold decrease in the concentration of vitellogenin in the females collected downstream from the treatment plant vs. those collected from the upstream location.

Multiple environmental contaminants were found in the sampling devices, often with higher concentrations of wastewater chemicals (near the treatment plant outfalls). Pesticides currently used in agriculture were detected at all locations. Hormones were not detected in the passive water samplers. However, laboratory tests (yeast screening assays) suggested that estrogenic endocrine-disrupting chemicals were present at all locations. These tests do not identify single compounds, rather an overall response.

Based on the results of these samples, we cannot identify a single chemical or sources that may be causing the intersex and vitellogenin induction. Multiple chemical stressors that are not solely associated with agriculture or wastewater treatment plant effluent may be responsible.

**U.S. Fish & Wildlife Service  
Chesapeake Bay Field Office  
177 Admiral Cochrane Drive  
Annapolis, MD 21401**

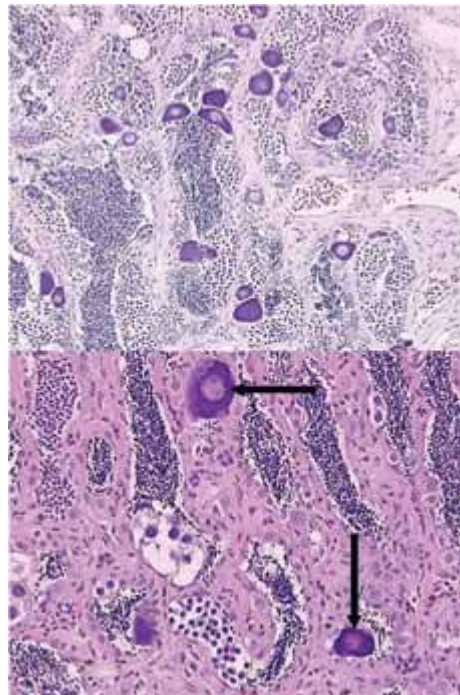
<http://www.fws.gov/chesapeakebay/>

### Ongoing Research

To gain a greater understanding of the reproductive health of bass and the implications to the ecosystem in the Northeast U.S., sampling of fish from rivers near National Wildlife Refuges (from Virginia north to Maine) using a similar upstream/downstream design is ongoing. Further sampling is also being conducted in the mainstream upper Potomac River and in the tidal area downriver of Washington, DC.



*Smallmouth bass. Illustration by Timothy Knepp, USFWS*



*Intersex (testicular oocytes). Most often observed as immature oocytes (arrows) within testes. Suggested as a biological indicator of endocrine disruption.*



*Barge electroshocking for smallmouth bass in Conococheague Creek*

### For More Information

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*Monocacy River below wastewater treatment plant outfall.*