



Photo: Martin Neptune

Penobscot Indian Nation
Department of Natural Resources

Pəskehtək^wok

Joining of the Branches

Summer 2005 ~ Issue 1

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Lyme Disease in Maine: A Serious Threat

By Kristin Dilworth, *PIN Biologist*

I have often heard Mainers boast to people from "away" that among Maine's greatest attributes is the fact that we have "nothing poisonous here to worry about." Our walks through the woods have been worry-free, devoid of the constant vigilance Southerners have to take part in. Until now, our greatest fears in the woods have been avoiding mama and baby bears, and not confronting a moose during rut.

However, a very small arachnid has changed the outlook of thousands of New Englanders who are diagnosed annually with lyme disease. Lyme disease is caused by spirochete bacteria, and is transmitted to humans by the deer tick. Ticks have three growth stages in their life cycle: larva, nymph, and adult. Each stage requires a blood meal to progress to the next stage. Once a larva is hatched, it will wait for a host to

brush up against it, preferably something small such as a

bird or mouse. Deer ticks are not born with spirochete bacteria, they acquire it from their host, which has the bacteria from previous tick bites. Therefore, hosts (which are sometimes referred to as "reservoirs") are located in high numbers in lyme infested areas. Most larvae, after feeding, will drop off their hosts and molt into nymphs.

They will remain inactive throughout the fall and winter until early May. The nymphs will again search out a blood meal and morph into adults. When the adults are seeking their blood meal they prefer to attach to deer, but will feed on any warm



Adult deer tick searching for a suitable place to feed. (Continued on next page)
These are MUCH smaller than other tick species.

**COME LEARN
MORE ABOUT TICKS
AT A DNR-SPONSORED
LECTURE ON THE TOPIC!**

Where: Large conference room of DNR building

When: Tues
July 26th, 6pm



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bodied animal. The life cycle of deer ticks is therefore intricately tied to deer, mice, and other wildlife, which can cause a fluctuation in the presence of Lyme disease. For example, one year we may have a banner acorn crop, allowing the mice to feast like kings all summer. This ensures that the tick larvae will have plenty of hosts, causing an outbreak in Lyme disease the following year.

Lyme disease is named after Lyme, Connecticut, where it was discovered. An unusual outbreak of arthritis in children led to the detection of the disease in 1975, and identification of the bacteria that causes the disease in 1982. When caught early, Lyme can often be treated with antibiotics (to kill the bacteria). Symptoms of Lyme disease include a bull's eye rash (see image to left), joint aches, headaches, fever, Bell's palsy (paralysis on one side of the face), confusion, and exhaustion.

This is a very important issue that Mainers need to stay informed about. At the DNR lecture, "Tick Talk," on July 26th at 6:00 Dr. Szantyr will be coming from Lincoln to provide us with information on Lyme disease in Maine. She will have a 45 minute discussion on lyme prevalence and prevention in Maine, and her display includes educational pamphlets as well as hands-on ticks, tweezers and repellents. It will be a fun and informative evening, so mark your calendars!!

ADULT WOOD/DOG TICK

1/8 inch

PLEASE NOTE:
THE 1/8 INCH MEASUREMENT IS CORRECTED FROM THE PREVIOUS PRINTING OF THIS ISSUE!



ADULT DEER TICKS:
FEMALE IS LARGER

POSTAGE STAMP

It's That Time of Year: Dragonfly Emergence

You have probably seen many adult forms of these guys already - dragonflies in many different sizes and color! Spring and summer is the time of year when these guys emerge from the water where they have lived in larval form for various amounts of time depending on the species - anywhere from one to several years. The picture to the right, taken near the Meduxnekeag River in Maliseet territory, is a great view into the process of change these beautiful creatures go through to become very skilled hunters. Notice that the one to the right has its wings more fully expanded than the one on the left whose wings are still tightly packed in the form that they were in when in the larval form.

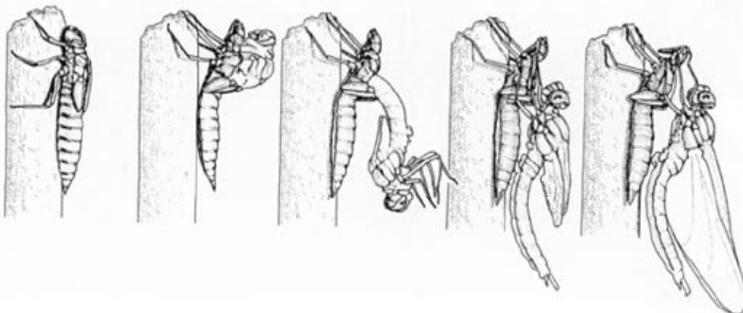
This process of emerging from their old form to the new one can be as fast as one hour or take several hours. Once the new skeleton is fully developed, muscular contractions and intake of air cause the dragonfly's body to swell until the old skeleton splits open. The dragonfly breaks through the old skeleton and works its way out until just the end of the abdomen remains inside the old skeleton (see the diagram below). The dragonfly then flips itself upward via a maneuver that is similar to an upside down sit-up/stomach crunch. It grabs onto the old skeleton and pulls out the remainder of its abdomen. The wings, when the dragonfly first emerges, are shriveled and opaque. The wings are pumped full of fluid to expand them and when fully expanded, they harden and eventually become transparent.



Old skeleton

Photo: Cara Ellis

There are 56 species of dragonflies documented in Maine, with new species potentially waiting to be seen. Factors contributing to wealth of Maine's dragonflies include the state's large size and its diversity of landforms and unspoiled wetland ecosystems. Additionally, Maine holds a unique geographic position, providing habitats for species with both boreal forest preferences and more southerly Appalachian and coastal plain associations. Lots of data and GREAT photos can be found on the Maine Dragonfly and Damselfly Survey website at: mdds.umf.maine.edu/



On this website you might be able to find some of the species that are seen around the Island. In last year's article (Issue 1 of Summer 2004) we highlighted the Twelve-spotted skimmer (latin name of *Libellula pulchella* - under the skimmer family Libellulidae) and got the image from this website. Both the male and female are very colorful so be on the lookout for them - and others!



Minimal Indoor Mold Problems in Penobscot Homes: Air Quality Program Works to Maintain That Status

By: Eric Nicolar

In 2002, many Native communities across the country were experiencing significant levels of mold in homes; mostly due to poor planning and inadequate materials used during building phases. In some cases, highly toxic molds, such as black mold (*Stachbotrys chartarum*), were being found and creating health problems in native households. The Penobscot Nation Air Program implemented a pilot scoping project to assess if mold was a problem on Indian Island as well. The project was budgeted for FY 2003 using \$6000 of EPA funds from our Clean Air Act §103 grant money. Testing started during the summer of 2003. Residential testing was subsequently expanded to Penobscot homes within the local service area.

Initially homes were tested upon request of home occupants. As the original scoping study neared completion, the staff decided to continue monitoring on a priority basis to help residents pinpoint severe problem areas. We also wanted to expand the overall representative sampling of the Island to use for possible future funding requests. The criteria used to warrant testing was modified as a result. The results and future plans of the Indoor Mold Scoping Assessment and Indoor Ambient Continuation Project are discussed below.

Analysis Process

Indoor mold testing consists of monitoring three potential hot spot areas at a home using an Aerotech™ Single-stage Impaction Monitor <see photo below> using potato alger media plates <see: www.aerotechlabs.com/Aero/>. Ambient indoor air is passed through a multi-holed Teflon tube apparatus to garner a culture sample. The plates are then shipped rush order to a lab in Arizona, where a heat tempered acculturation process measures for 33 different mold types. Categories include soil, vegetative, toxin and anti-toxin mold sporges. Results are generally returned to us for inter-departmental analysis 10 to 14



days after monitor testing. We then write a detailed evaluation and offer possible remediation or preventative recommendations to the homeowner. Monitoring and analysis are the only functions covered by the Air staff. The Air Quality Manager, Eric Nicolar, has attended various training seminars, and keeps updated on indoor mold science and trends, to provide technical analysis and evaluation of indoor mold issues. Since coming aboard, Air Quality Technician William Thompson has also been trained, and has become acclimated on indoor mold media as well. As a result, we provide information based on generally accepted principles of indoor mold issues. Further remediation has to be done by an appropriate authority though, usually through the help of the Housing Authority, and the Air staff is more than happy to direct residents to alternative resources. We will advocate for people who request our support.

PIN AIR QUALITY PROGRAM ASSESSED A LARGE PERCENTAGE OF RESIDENTIAL HOMES IN THE COMMUNITY

Indian Island Assessment

Since 2003, 39 homes have been tested, including both Down Street homes and HUD houses in all phases. Four off-Island homes have been tested. The 35 homes on the Island represented 25% of the total units. The Health Center, Daycare, Human Services, and Community Building facilities were also tested at some point over the past two years. The 25% of residential represents a larger percentage of overall units than most other Native communities have had the ability and expertise to monitor. Surprisingly, we found there is no widespread pattern of indoor mold on Indian Island. The staff thought we would initially find higher levels of mold counts based on our being a river tribe with the slow running drainage patterns. The few cases that were problematic were the result of broken water pipes that

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weren't properly fixed and had leaked for extended periods. Units with moderately high mold counts were usually the result of soil and vegetative piles existing in basements.

Another problem area is the use of plastic sheets being laid down as liners. Molds result from the right combination of moisture and temperature. If the moisture underneath these liners doesn't evaporate, different molds can grow. In many cases water had seeped into areas and developed mildew odors. Mildew is a precursor for mold but doesn't pose the same health threats that widespread molds can.

RISK TO PEOPLE

- Persons with allergies or asthma may react to the presence of any mold
- Infants and young children, individuals with reduced immune function and people with pre-existing lung disorders may have a more severe reaction to infectious or toxic molds
- Maintenance, renovation, and agricultural workers may experience very high exposures during disturbance of contaminated building surfaces

As the project funding ran down, the staff implemented a priority system to determine if lab analysis testing was warranted. If units had minimal mold signals, we would generally proffer remediation advice and materials first off, with a standing offer to test if these trace elements worsened over time. Units that had visibly significant levels of mold were asked to remediate beforehand and then a post-remediation analysis would be performed. This priority system resulted in a more efficient use of Air resources. Since FY2003, we have had to use other § 103 funds to service our population based on need.

Health Issues

Many residents that requested testing expressed they felt that mold was potentially causing existing adverse health conditions. Who Is At Risk? Persons with allergies or asthma may react to the presence of any mold. Infants and young children, individuals with reduced immune function, or those with pre-existing lung disorders, may have a more severe reaction to infectious or toxic molds. Maintenance, renovation, and agricultural workers may experience very high exposures during disturbance of contaminated building surfaces. Certain highly toxic molds can cause health pathologies, but we have found no presence of these types in any Island residence or administrative building that we've

tested. In any case, there is insufficient research at this time to establish "safe" or no-effect exposure levels for the toxigenic molds. The soil and vegetative types commonly found on the Island can worsen existing respiratory ailments but cannot

cause them unless found at extremely high levels. We found no such extreme levels of these mold types that would warrant emergency action.

We also found that once residents were educated more on the complexities of indoor mold, they were more satisfied with the results they received and the remediation plans we presented them. If any Penobscot wants further information, regardless if we test or not, we can provide

informational materials and provide other resources. If you do have specific health concerns, we will specifically ask that you contact your health care provider, because we do not make medical diagnosis or offer any treatments. In the past, we have had health professionals follow up with us on household conditions and test results. Residents can rest assured that we maintain the same stringent rules of confidentiality that all other departments uphold.

Inter-tribal Cooperation, Assessments, & Conclusion

As part of the our EPA Region I Air Quality Model Program status, we have provided inter-tribal training, conferencing, information sessions, and equipment loans to some of the other Wabanaki tribes. During these exchanges, we have found that there are indeed some significant mold problems at some of the other reservations. Based on our assessments, it is our goal to provide our residents with timely inspections, information, and resources so that our community doesn't experience some of the conditions we've seen elsewhere. We hope to prevent indoor molds from becoming a problem for our people. We've also dedicated our resources and expertise to help other Native people. Currently there are no funds for mold testing. Based on this ultimate mission though, we hope to maintain some level of an indoor mold component as part of the Air Quality Program here at the Nation for the future.

