



What's Bugging (and Biting) ME?: Addressing Ticks and Other Health-Risk Pests at School

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Maine School IPM Program

Maine Department of Agriculture, Conservation and Forestry



outline

- What is Integrated Pest Management and why must your schools use it?
- Nurses role
- Prevention and response protocols for health-impacting pests
- Resources



Pests Can Pose Health Risks

- Respiratory illness (mice, mold, roaches, caterpillars)
- Rashes and bites (caterpillars, bed bugs, ticks, fleas, lice)
- Vectored diseases (ticks, mosquitoes)
- Spread pathogens (roaches, mice, flies)
- Stings (ants, bees & wasps)

Pesticides Pose Risks Too

- 20,116 people treated in health care facilities/yr.
- 7385 ER visits/yr; 1419 hospitalizations/yr.
- US pesticide exposures cost nearly \$200 mill/yr (based on data from emergency department visits, hospitalizations, and deaths*)
- Pesticide exposures remain a significant public health issue.

Langley & Mort 2012 J of Agromedicine



*Excluding costs from lost work time, hospital physician fees, and pesticide-induced cancers

Pesticides May Not be Used in Maine Schools Except by Licensed Applicator

License required for:

- Insecticides, Herbicides, Rodenticides, Fungicides
- Weed&Feed Lawn Care Products
- Mouse poison
- Ant bait (including 'cups' and 'traps')
- Organic and natural pesticides

• Exemptions:

- Emergency use of wasp spray directed into a wasp nest.
- Disinfectants used for routine cleaning.
- Repellents for personal protection

Yes, Your School DOES Use Pesticides

- Bleach and Disinfectants
- Wasp Spray
- Repellents

- Weed-killers
- Organic and Natural Bug Sprays
- Mouse Poison
- Ant Cups

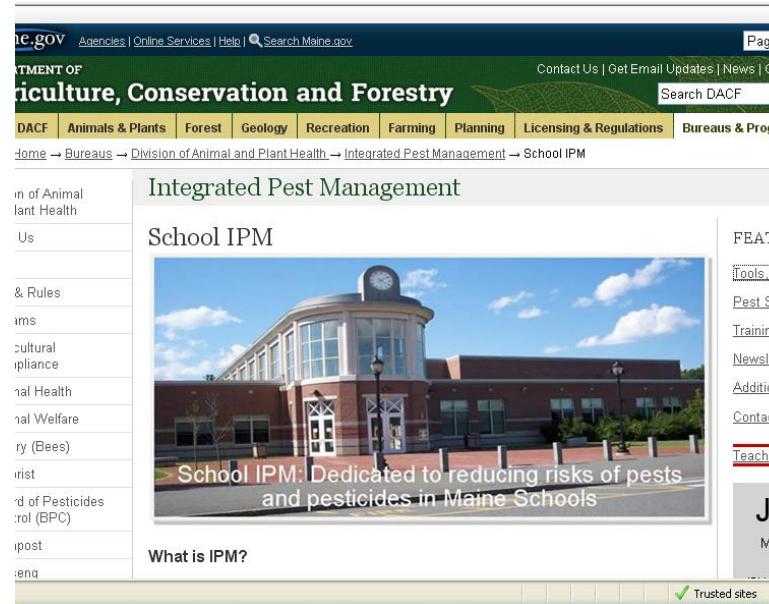
No License Needed

License Required



Maine Requires all K-12 Schools to Use Integrated Pest Management (IPM)

- IPM Universally Recognized as Best Management Practice
- Must Adopt IPM Policy
- Appoint IPM Coordinator
- Notify Parents and Staff of IPM Policy and Before Pesticide Use
- Keep Pest Monitoring and Management Records



The screenshot shows the website for the Maine Department of Agriculture, Conservation and Forestry. The page is titled "Integrated Pest Management" and "School IPM". It features a navigation menu with options like "DACF", "Animals & Plants", "Forest", "Geology", "Recreation", "Farming", "Planning", "Licensing & Regulations", and "Bureaus & Programs". A search bar is visible in the top right corner. The main content area includes a large image of a school building with the text "School IPM: Dedicated to reducing risks of pests and pesticides in Maine Schools". Below the image, there is a section titled "What is IPM?". The website footer includes a "Trusted sites" icon.

Everyone Plays an Active Role in IPM not just the pest control contractor)

**Health &
Wellness
Coordinator**

School Nurse

**Business
Manager:**
contracts,
budgeting

Contracted
pest
professional

**Students
&
Teachers:**
education,
sanitation,
monitoring



Custodians:
Sanitation,
monitoring,
pest
reporting

Maintenance Staff:
pest exclusion &
monitoring

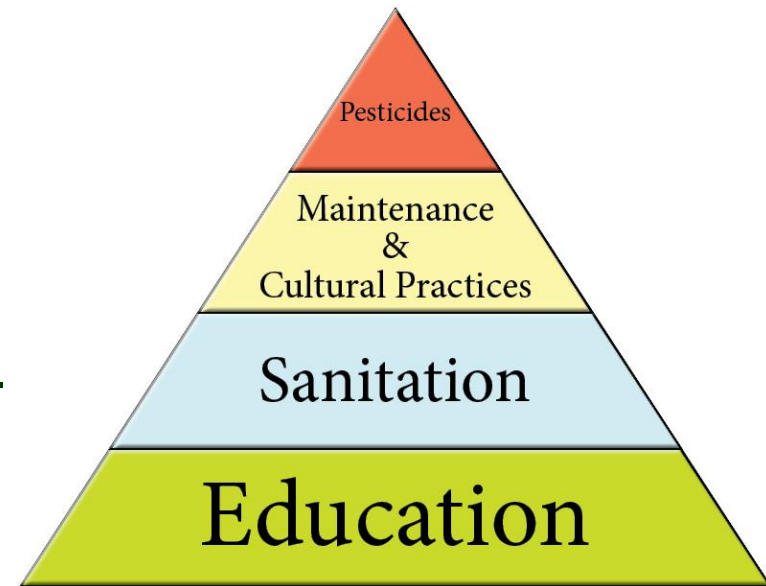
Sports Staff:
scheduling, turf
protection

Office Staff:
communication,
records, scheduling

Kitchen Staff:
pest prevention
& monitoring

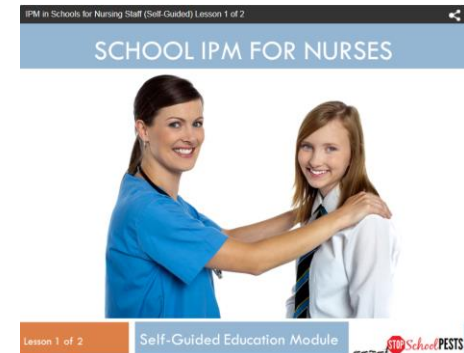
IPM Relies on:

- Education
- Monitoring for Pests and Pest-Friendly Conditions
- Communication
- Leadership
- Pest prevention (sanitation, seal entryways, landscaping)
- Biological, physical, cultural pest control methods
- Carefully selected pesticides used as last resort



Engaging School Nurses as Change Agents to Promote IPM Adoption in Northeast Schools

(<http://www.northeastipm.org/working-groups/schools/>)



Objectives

- Develop strategic communication plan
- Provide training for school nurses throughout the NE region
- Develop and distribute outreach materials to school nurses

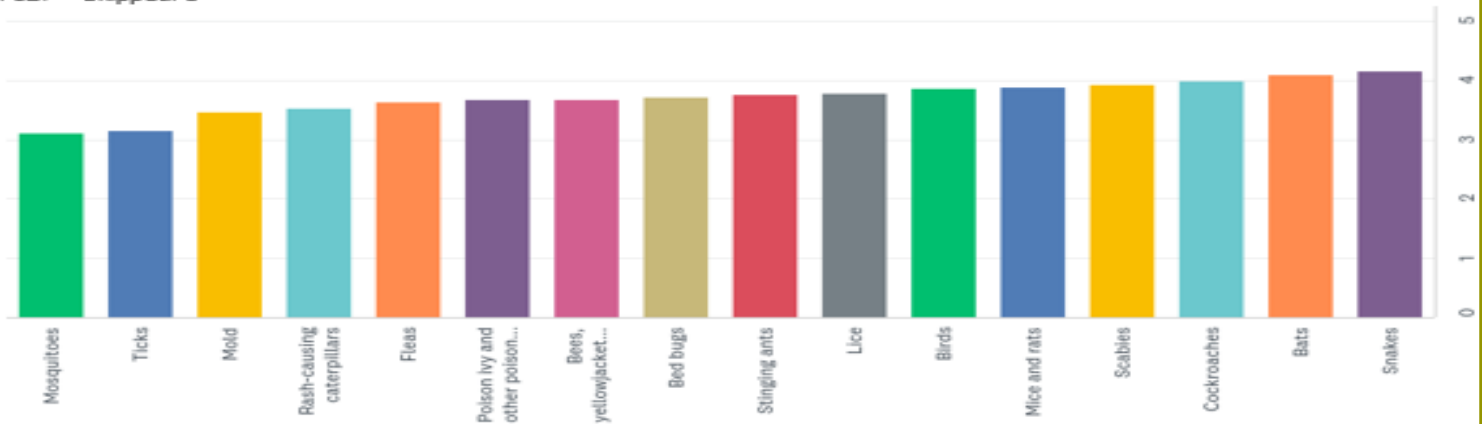
Anticipated Outcomes

- School nurses will learn how to access information needed to recognize health-impacting pests and pest-friendly conditions
- School nurses will be empowered to promote and support adoption of effective IPM policies and strategies in their schools

Results of NE School Nurse Survey

Q4: How effective are your school(s)' prevention and response protocols?

Answered: 827 Skipped: 0



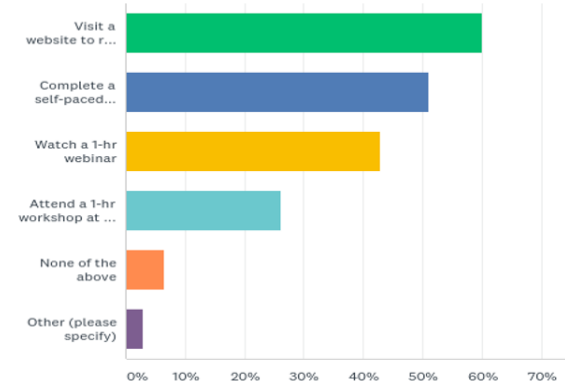
On a scale of 1 (not effective) to 5 (very effective) respondents feel their schools' practices are moderately to mostly effective, but a little less so for ticks and mosquitoes.

827 participants from 10 states

Find full report at:
maine.gov/schoolipm

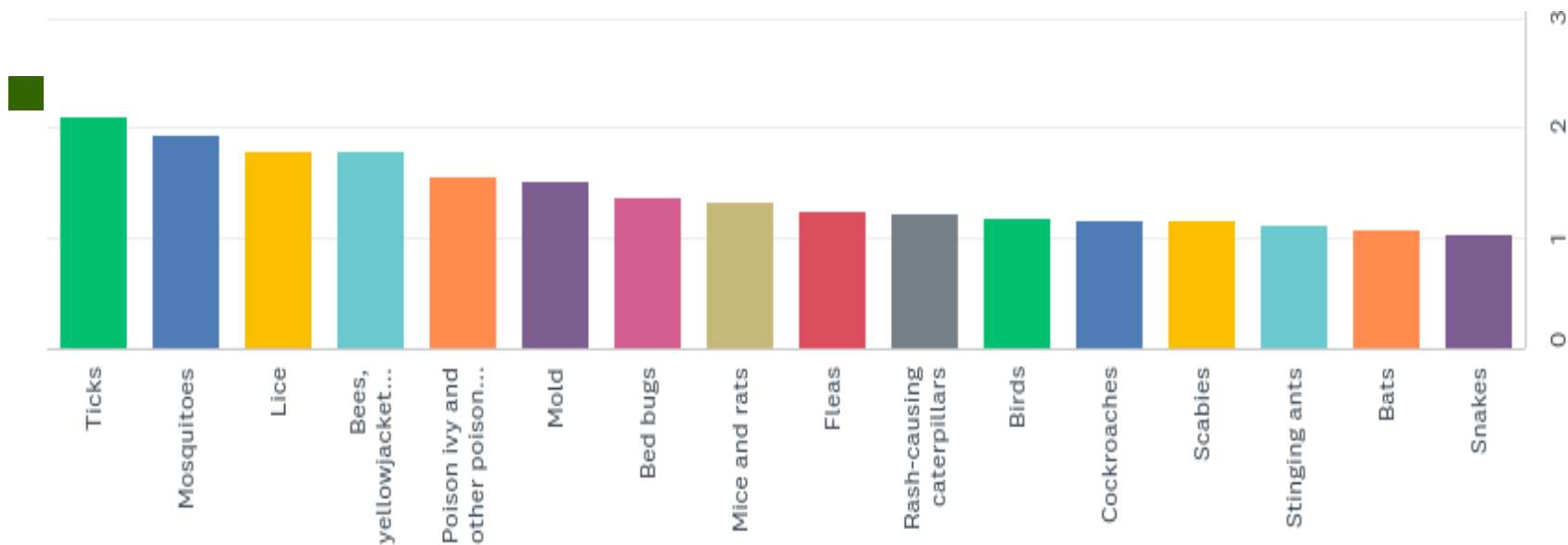
Q8: Which of the following learning opportunities would you be likely to utilize? (Check all that apply)

Answered: 827 Skipped: 0



- 60% want to get information from websites
- 50% favored self-paced learning modules
- 45% would watch a 1-hr webinar
- 28% would attend a workshop at a conference

Q3: How do you view pest risk concerns in your school(s)?



On a scale of 1 (low concern) to 3 (high concern) ticks and mosquitoes top the list, followed by lice, stinging insects, poisonous plants and mold. Rodents (mice and rats), bed bugs and fleas are of moderate concern. Cockroaches which are asthma-allergen producing pests, and bats (a rabies vector) were of relatively low concern.

Ticks Can Make us Sick!

Can transmit infectious diseases to people and pets

Tick-Vectored Diseases

- Lyme disease
- Anaplasmosis
- Babesiosis
- Spotted Fevers
- Powassan



LYME SYMPTOMS: PHYSICAL

Bull's-eye rash (Erythema Migrans) in approx. 40% of cases.

- Arthritis
- Flu-like symptoms
- General malaise
- Muscle pain
- Tendonitis
- Sensitivities
- Headaches
- Bell's Palsy
- Meningitis
- Seizures

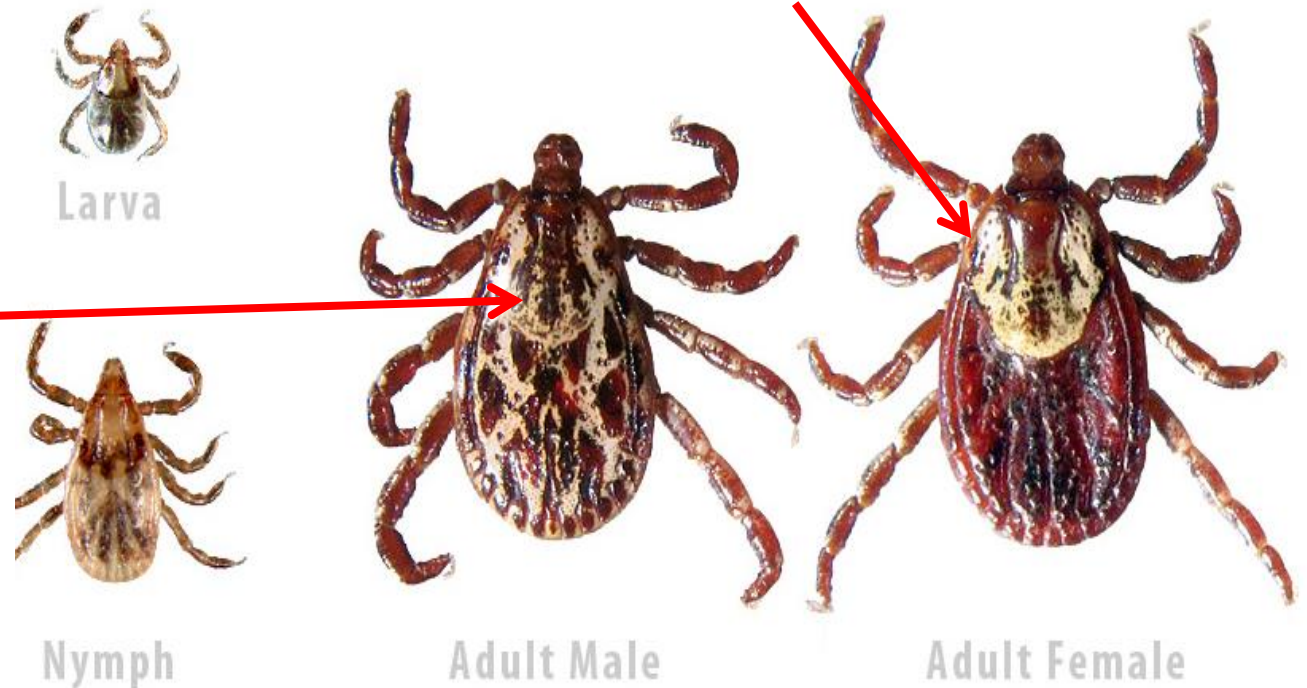
Deer Tick

Dark brown
'shield'



Dog Tick

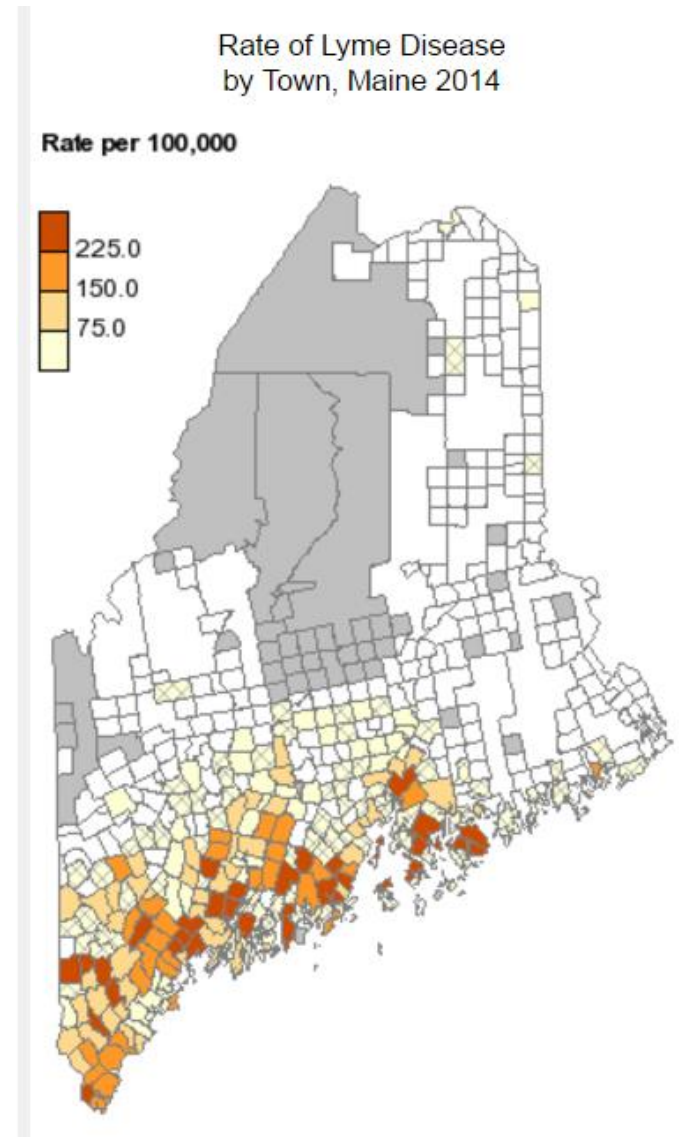
White
markings



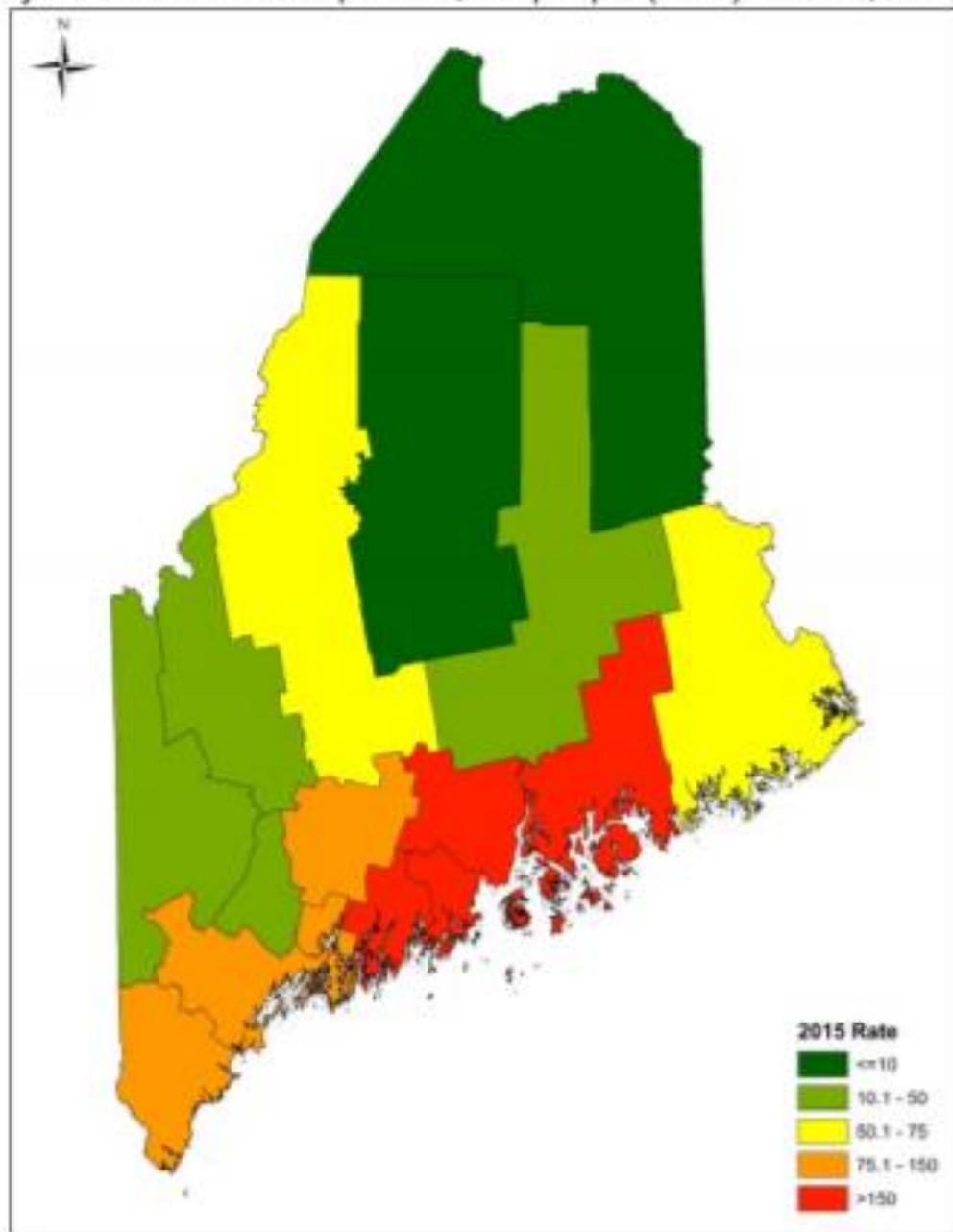
Lyme is the Most Prevalent Tick Borne Disease

Human Cases in Maine-2016

1473 Lyme
372 Anaplasmosis
82 Babesiosis
11 Erlichia
1 Powassan

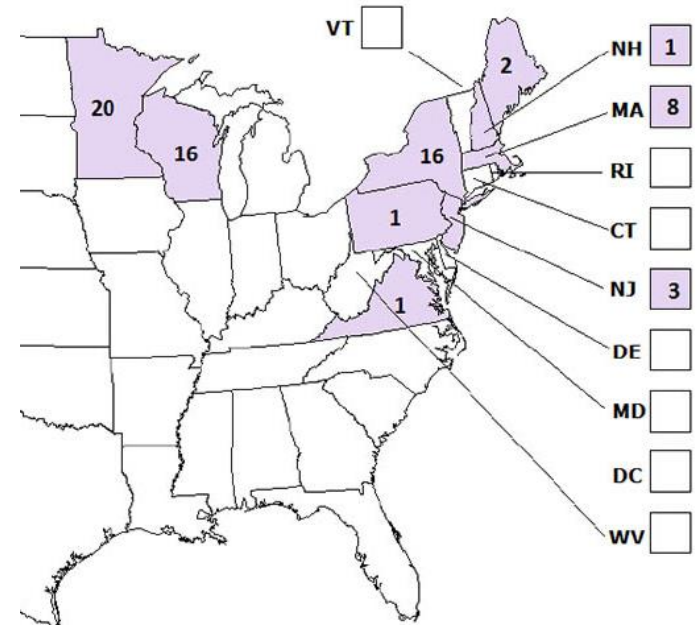


Lyme Disease Cases per 100,000 people (Rate) - Maine, 2015*



Powassan Virus

- Now found in York, Cumberland, Knox, Lincoln Counties.
- ~2% of deer ticks infected. Woodchuck tick is also a vector.
- Symptoms: range from none to brain and spinal cord swelling. Fever, headache, vomiting, weakness, loss of coordination, seizures.
- ~10% fatal. Half of survivors have permanent neurological damage.
- No vaccines or treatment



Powassan Virus

Deer Tick (aka Black-legged Tick)



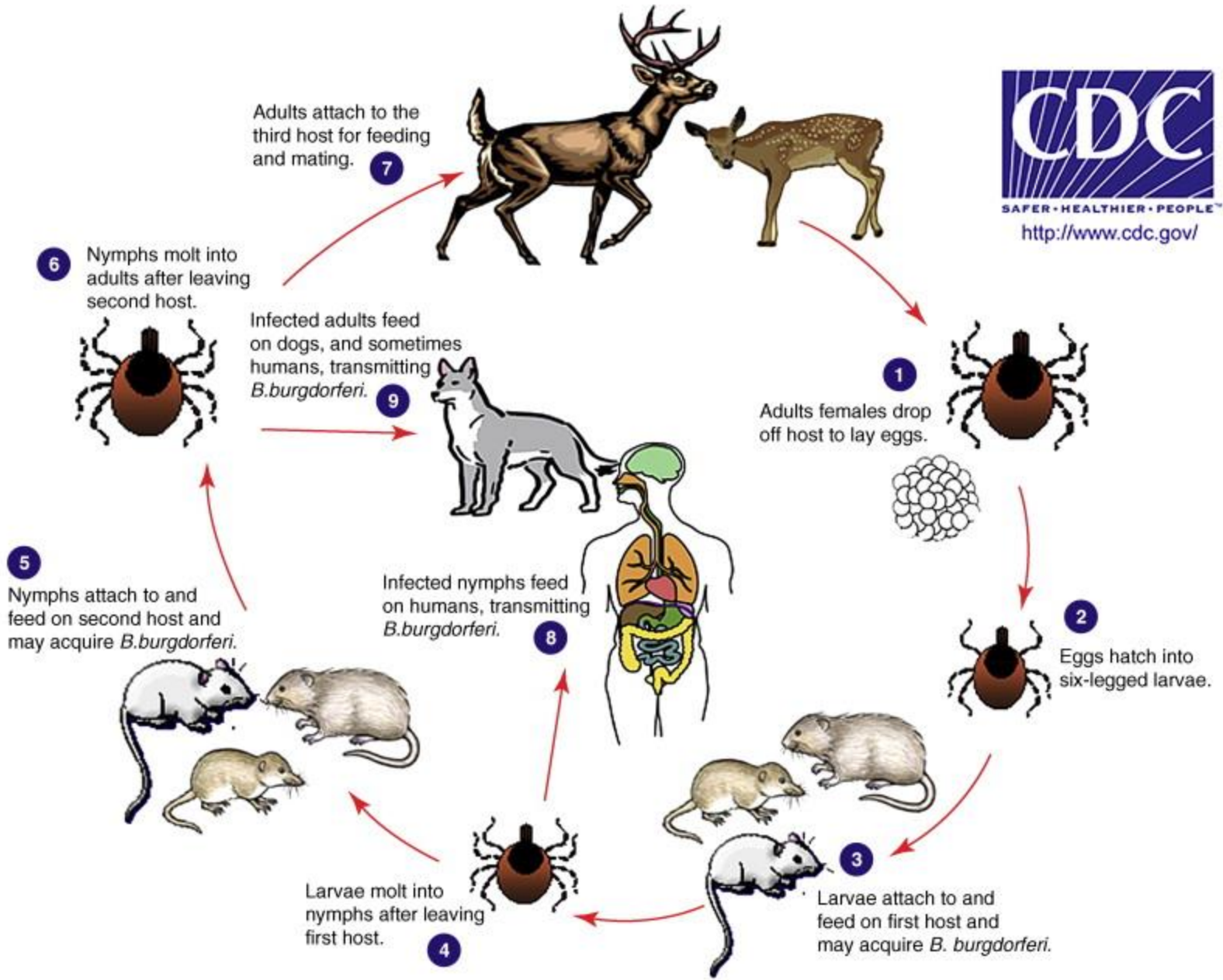
Woodchuck Tick



1/8"

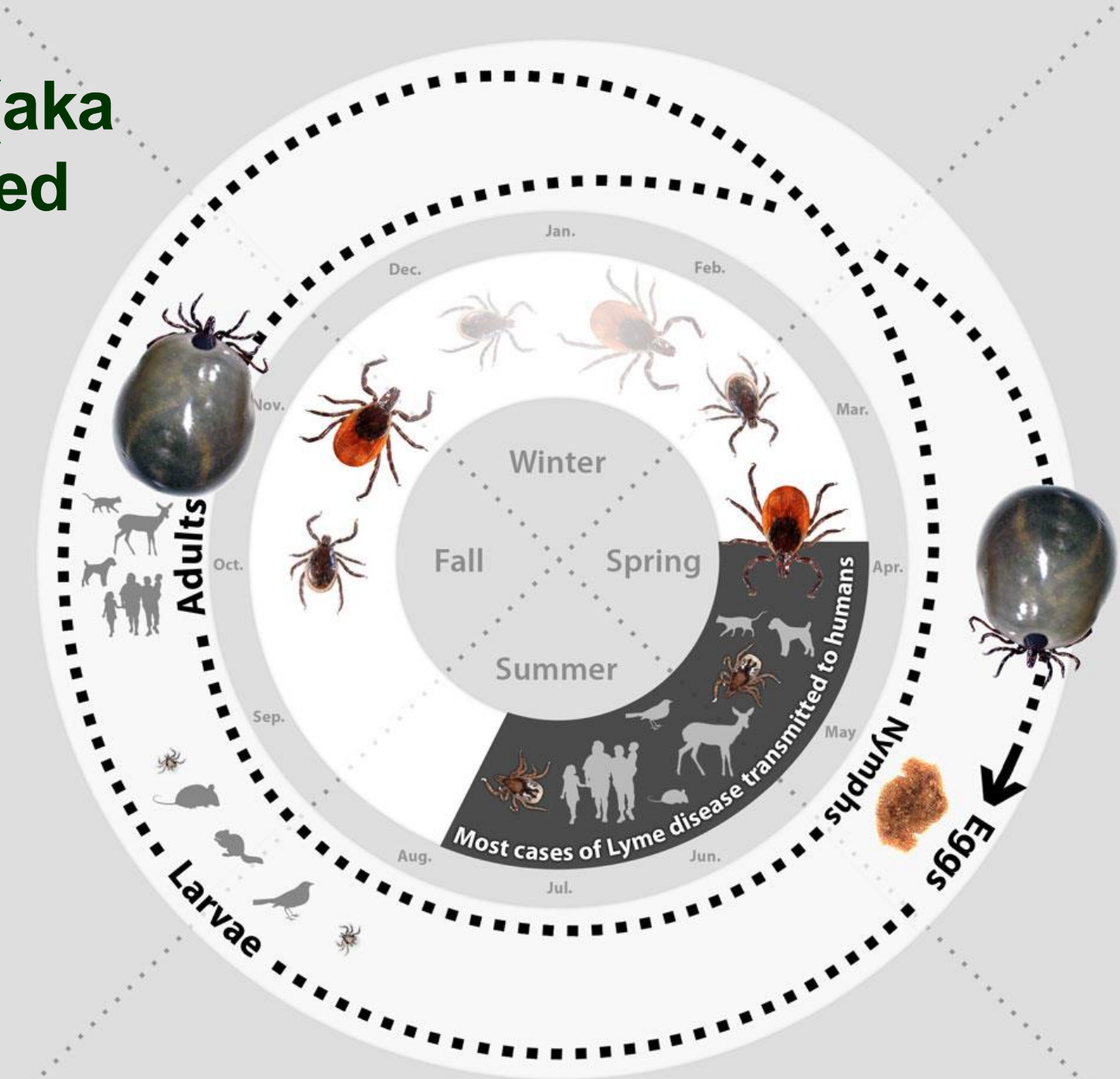


Size of
a
sesame
seed



Deer Tick (aka black-legged tick)

Life Cycle





Dress for Success

- Light colored clothing
- Long-sleeves with tight cuffs
- Pants tucked into socks
- Gaiters or duct tape to keep pants tucked into socks

For prolonged outdoor activity in tick-infested areas:

- Consider permethrin-treated clothing (purchase from sporting goods retailers or ship own clothing to InsectShield.com)



Repellents

- Parent permission required to apply to children
- Apply to exposed skin—wash off when come indoors at end of day.
- Picaridin, IR3535, DEET proven effective.
- Other devices and products not proven to be effective!



<http://npic.orst.edu/>

npic National Pesticide Information Center
1.800.858.7378 npic@ace.orst.edu



Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Search

Home Health and Safety Pest Control Pesticide Ingredients Regulations Environment Emergency Report a Problem A A

You are here: NPIC Home Page -> Pest Control Information -> Insect Repellent Locator

Insect Repellent Locator

Insect repellents can help reduce your risk of getting a disease caused by **mosquitoes** or **ticks**. **Repellents** can be used when you are planning to be outdoors, whether you are within the United States or **traveling in another country**. EPA guidelines for applying repellents to adults and children can be found **here** or by calling NPIC at 1-800-858-7378. Some diseases that are spread by mosquitoes and ticks include:

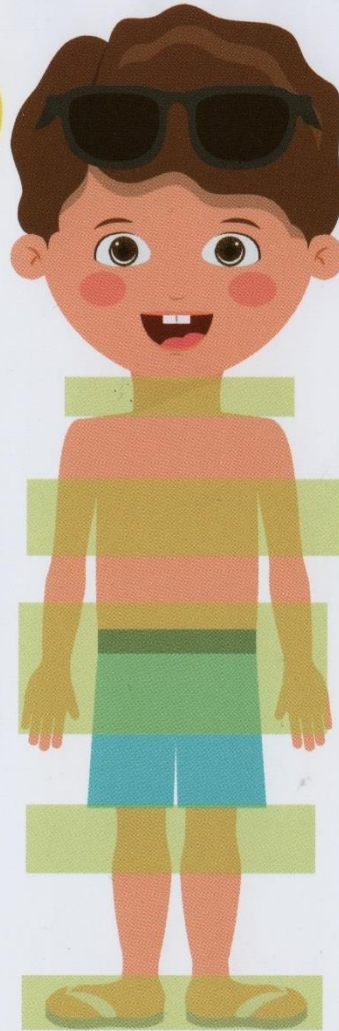
<p>Mosquitoes spread:</p>  <ul style="list-style-type: none"> • Zika • West Nile Virus • Malaria • Dengue Fever 	<p>Ticks spread:</p>  <ul style="list-style-type: none"> • Lyme Disease • Rocky Mountain Spotted Fever
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Choose among the following items to display products with the desired properties, or **click here** to show all products. You may also search for products by their attributes using the search boxes in the column headings of the product list.

1) Choose the target pest:	2) Pick a protection time:	Note: will the product be used on a child?
<input type="radio"/> Both mosquitoes and ticks <input type="radio"/> Mosquitoes <input checked="" type="radio"/> Ticks	<input type="radio"/> Any time <input type="radio"/> 2 hours or less <input type="radio"/> 2 to 4 hours <input type="radio"/> 4 to 6 hours <input type="radio"/> 6 to 8 hours <input checked="" type="radio"/> 8 to 10 hours <input type="radio"/> 10 hours or more	<p>If you plan to use an insect repellent on a child, please review the section about children in our Choosing And Using Insect Repellents page. Several additional resources are provided there to help make an informed decision about the use of repellents on children.</p>

Time for a Tick Check!

Check Daily!
Remember ticks like to
hide where the sun
don't shine!



Scalp
In and behind ears
Behind neck

Underarms
Belly button
Pelvic & groin area

Waist and back
Between fingers, legs,
and toes

Behind knees

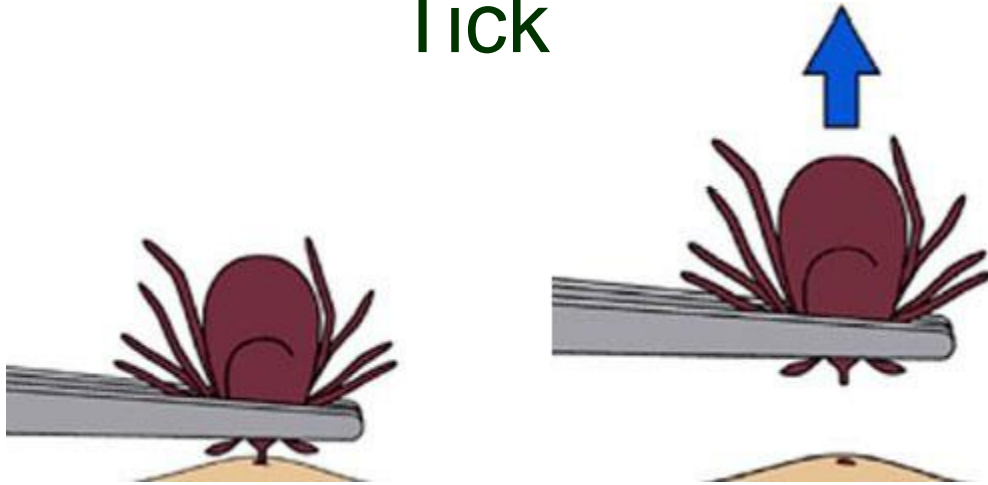


GLOBAL
LYME
ALLIANCE

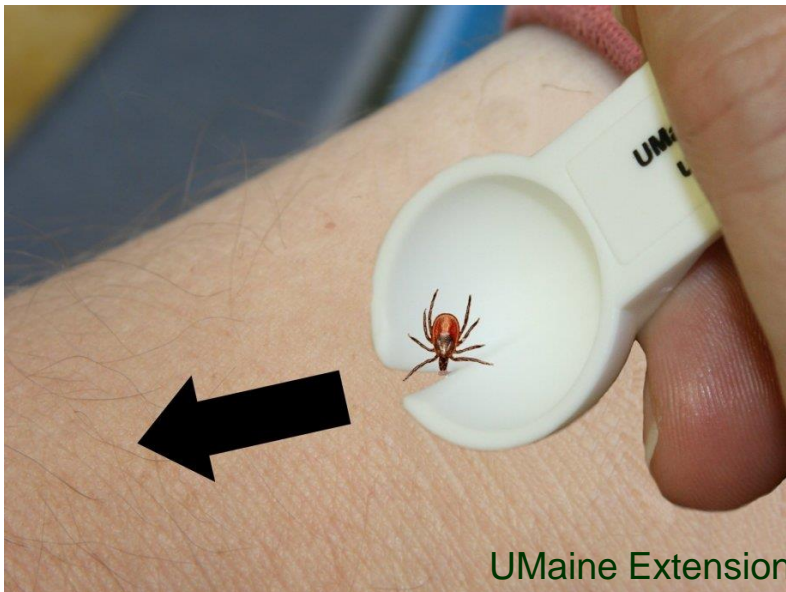
GLA.org

Check crevices like the crotch and groin.
Feel for bumps and look for tiny dark spots.

How to Remove an Attached Tick



<http://www.cdc.gov/ticks/>



tick removal

Remove ticks immediately. They usually need to attach for 24 hours to transmit Lyme disease. Consult a physician if you remove an engorged deer tick.

Using a tick spoon:

- Place the wide part of the notch on the skin near the tick (hold skin taut if necessary)
- Applying slight pressure downward on the skin, slide the remover forward so the small part of the notch is framing the tick
- Continuous sliding motion of the remover detaches the tick

Using tweezers:

- Grasp the tick close to the skin with tweezers
- Pull gently until the tick lets go

1-800-821-5821
www.mainepublichealth.gov



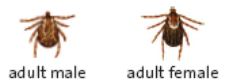
Deer Tick (Black-Legged Tick)



(actual size)



Dog Tick



(examples are not actual size, dog tick nymphs are rarely found on humans or their pets)



Tick-Proof your School Grounds

- Mow and weed-whack to keep grass mown
- Rake leaves
- Trim shrubs and low branches
- Mow around woodpiles, stone walls & sheds
- No bird feeders
- Widen wooded pathways
- Install border of wood chips or crushed stone at wooded edges.





Great! Bike path separates playground from wooded tick habitat



Room For
Improvement
Here...

Swings too
close to woods

Gap in fence
invites kids to
enter tick
habitat



Identify and Monitor Tick Habitat



- Drag square of corduroy or flannel over ground. Examine for ticks.
- ID tick species, know where and when ticks are active

If Considering Pesticide Treatment..



- **Hire a qualified professional** applicator
- **Treat wooded edges only** (perimeter treatment)—do not treat lawns.
- **Timing is critical.** One application in mid-late May. Second application in fall may be helpful.
- Contact Maine Board of Pesticides Control for list of companies or pesticide information (207-287-2731)



Learn More...upcoming webinar

Be a sTICKler for Healthy Schools: Managing Ticks in Your School District

Tuesday, October 24, 2017 | 2:00 –3:30 p.m. ET

Join listserv to receive announcements, news, free webinars & more: www.epa.gov/managing-pests-schools



**School Integrated Pest Management
Network**



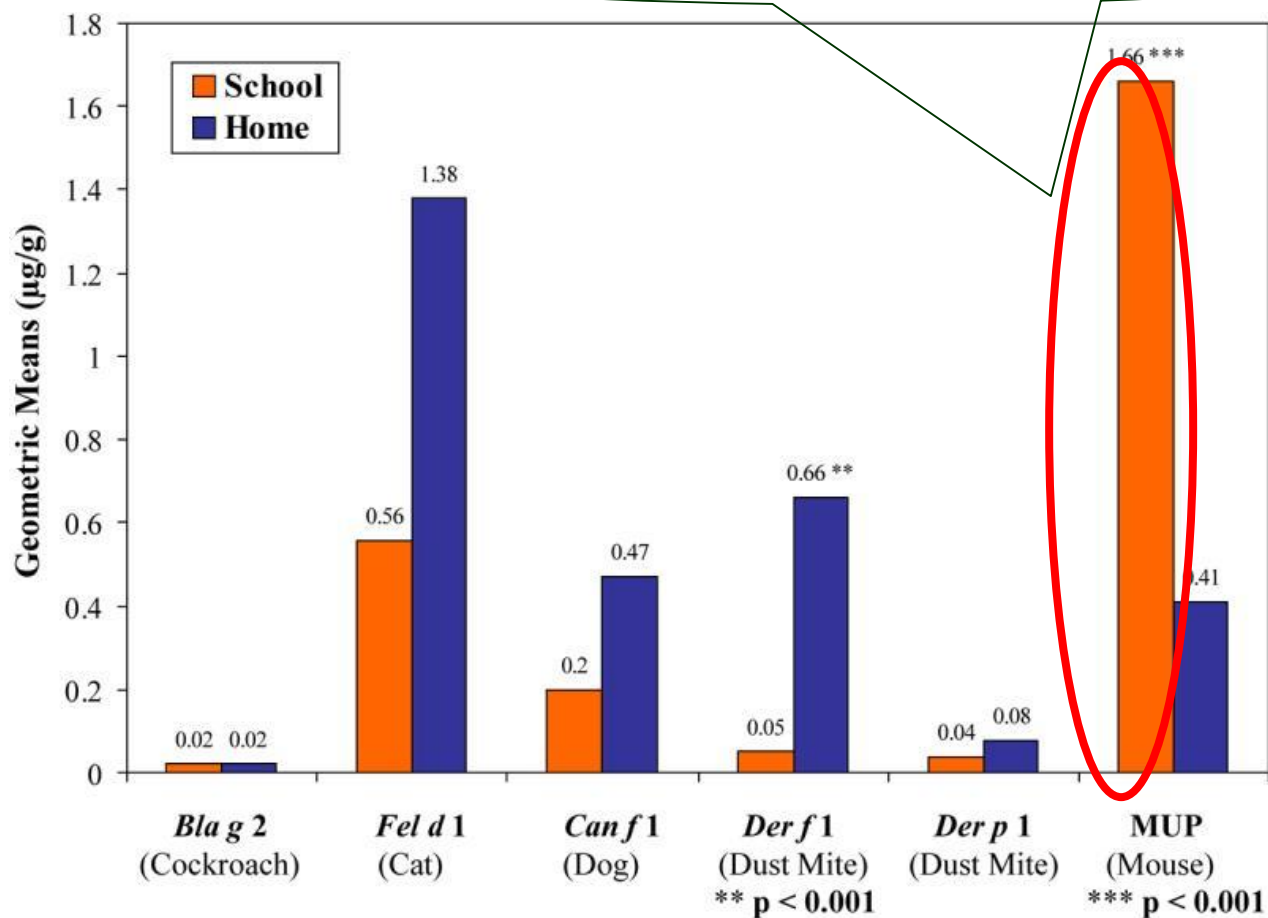
Pests are Important Sources of Asthma Allergens

- Mice
- Cockroaches
- Dust mites



Pests and Asthma in Schools

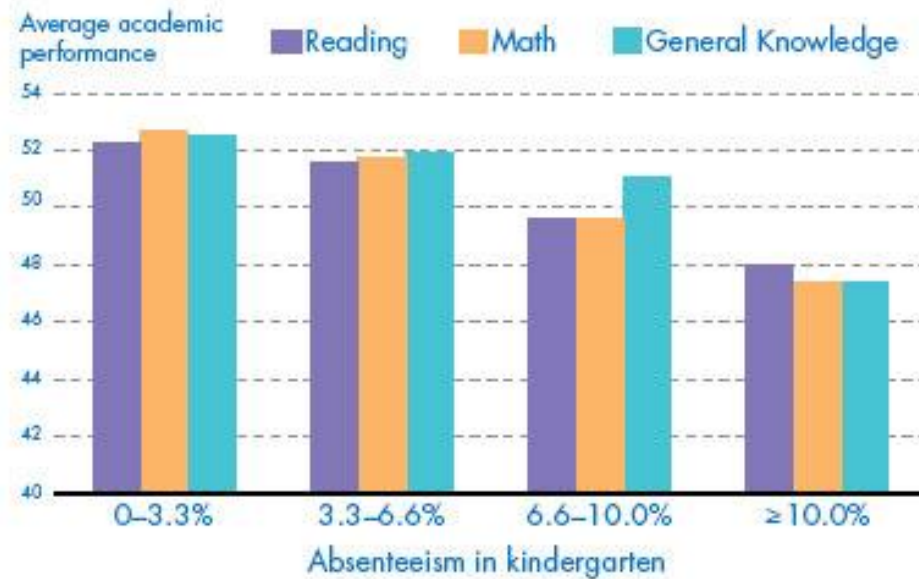
Average concentrations of mouse allergens are 4-5x higher in schools than in homes of children with asthma**



** Permaul, et al. 2012. Pediatr Allergy Immunol. 2012. Allergens in Urban Schools and Homes of Children with Asthma.

Chronic Absenteeism Affects Academic Performance

Chronic absentees in kindergarten have the lowest academic performance in first grade



© National Center for Children in Poverty (www.nccp.org)
Present, Engaged, and Accounted For: The Critical Importance of Addressing
Chronic Absence in the Early Grades



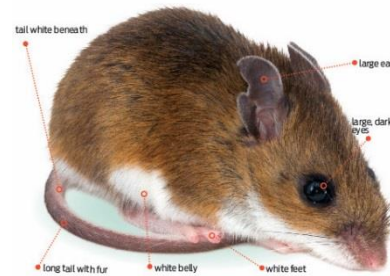
Chang & Romero, 2008

J. School Health, 2008. Moonie et al.
J. Pediatrics, 2001. Silverstein and Mair

Keep Schools Rodent-free

- House mouse urine triggers asthma
- Deer mouse feces carries hantavirus (hemorrhagic fever).
- Rats: carry diseases. Bite humans. Chew wires.

House
Mouse



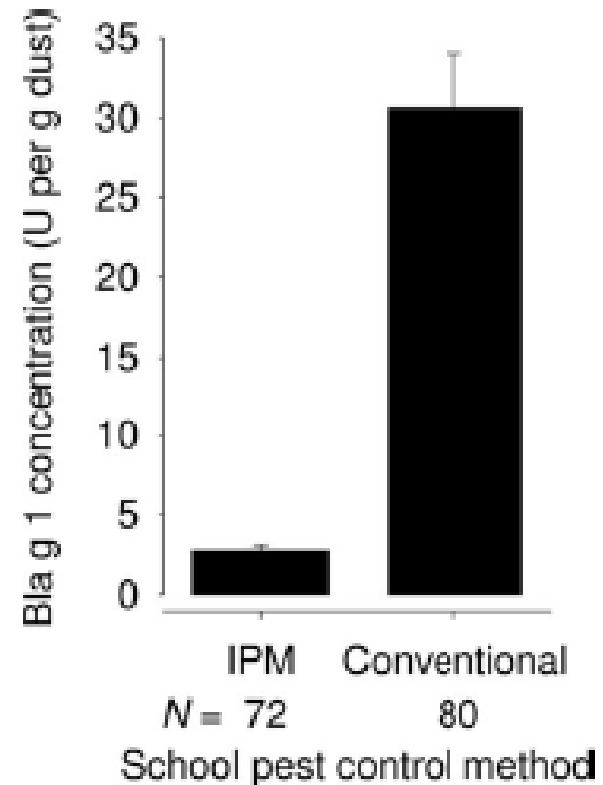
Deer Mouse

Norway Rat



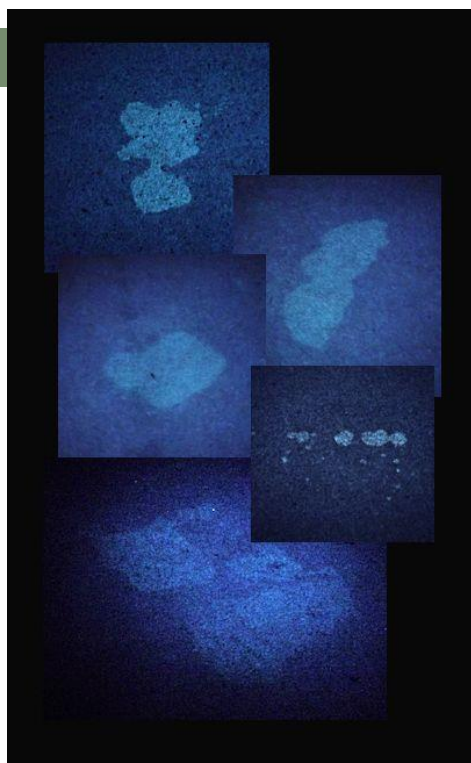
Integrated Pest Management (IPM) Reduces Pests and Pest Allergens

- 30% decline in mouse allergen after 3 mo
- 70% reduction in cockroach allergen



J. Med. Ent. 2009. Nalyanya et al

Mouse urine is detectable with black light.



What we see and what we don't see (except with a black light) poses risk of human disease!



Excellent Cleaning is Essential

- Keep equipment well maintained
- Use microfiber dust cloths, dry and wet mop heads.
- All surfaces scrupulously clean
- Inspect regularly



Inspect Thoroughly and Often

- Use flashlight, checklist and clipboard
- Look under, around, over equipment
- Focus where pests find food, water, hiding places
- Look for food, spills, soda cans, garbage, clutter, droppings, unfilled crevices, gaps, moisture



Find, Report and Seal Pest Entryways



Install and maintain door-sweeps to keep mice and insects out



Install and Monitor Mouse Traps in Kitchen, Food Storage, Inside Doorways

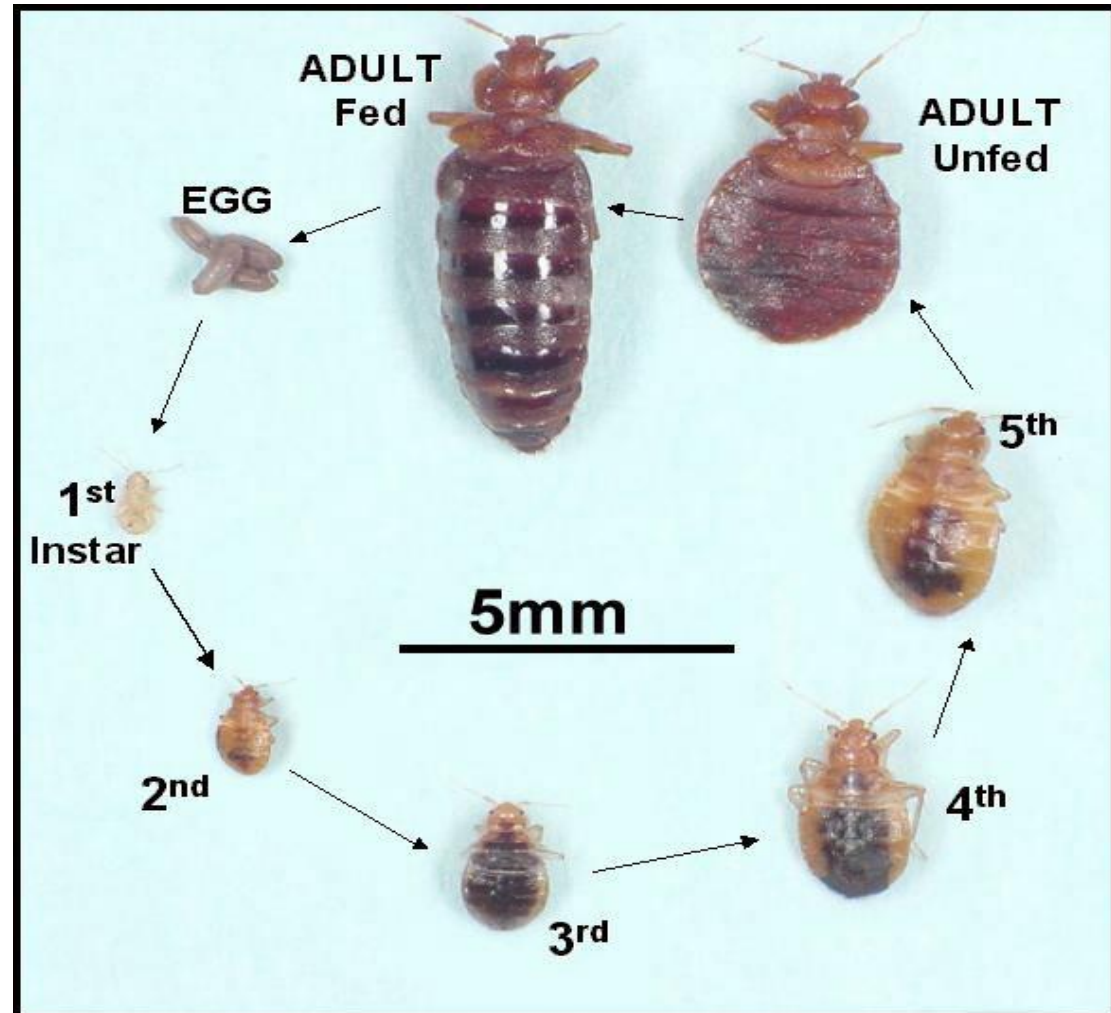




Bed Bugs

Female lays ~ 10 eggs/day up to 200-500 total, glued to rough surfaces (eg. wood, fabric)

Completes life cycle in 5 weeks to 4 months depending on temperature and availability of food



Recognizing Bed Bugs



Adult bed bug

Bed bug fecal spots

Eggs and exoskeletons
on backpack



Is it Really a Bed Bug? Get Expert Help!

- Cooperative Extension (free pest identification)

1-800-287-0279

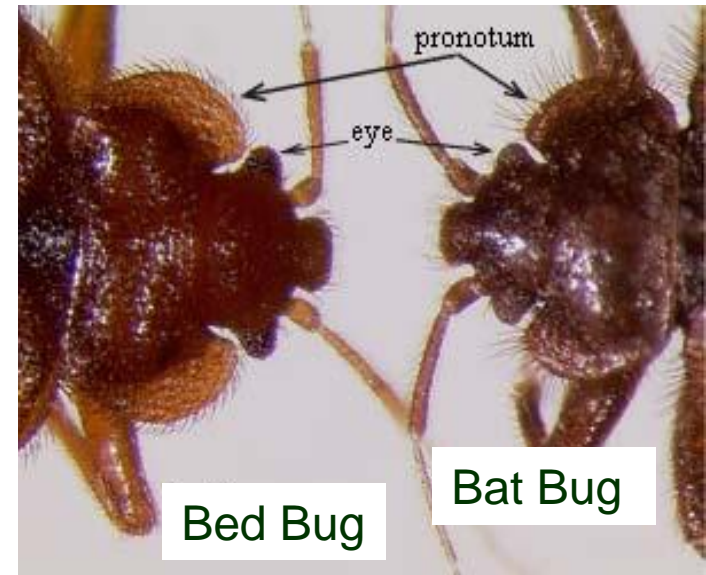
www.umaine.edu/ipm or
County Extension Office

- ME Dept of Agriculture, Conservation and Forestry (photos and factsheets)

www.gotpests.org

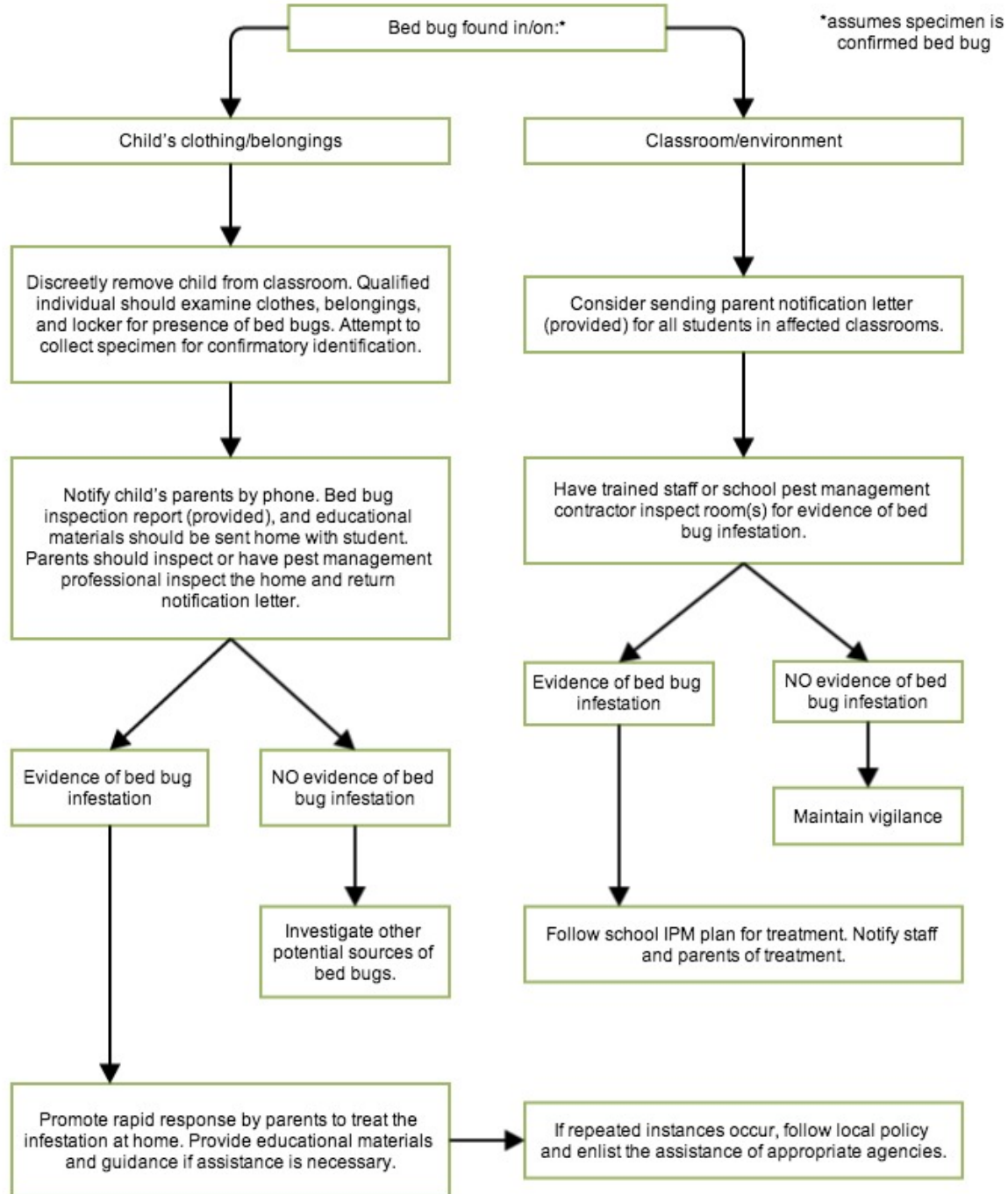


Spider
Beetle



Bed Bug

Bat Bug



Until Bedbugs are Eliminated at Home...



- Students may bring or be provided with clean clothing and a back-pack for use in school
- Items from home should be double-bagged, or in large capacity zip-lock bags or similar air-tight containers

- ❑ Discourage bedding and articles from home
- ❑ Students change at school in an area that is cleaned daily
- ❑ Washing does not kill bed bugs
- ❑ Drying in a clothes dryer does
- ❑ Items can be placed in a freezer for 4 days
- ❑ Hard surface cleaning and vacuuming



Bed bugs, head lice and scabies mites are all killed in a clothes dryer



Maine's Landlord Law



Landlord is responsible for providing pest-free housing

- Tenant must inform landlord if bed bugs are suspected.
- Landlord must inspect within 5 days and,
- If unit is infested, the landlord must contact a pest control professional within 10 days, and take reasonable measures to effectively identify and treat the bedbug infestation as determined by a pest control agent.

Classrooms

- Limit upholstered furniture.
- Limit rugs or establish cleaning protocols for them
- Provide space and sealed containers to separate children's belongings to prevent pest spread



Stinging Insects

- Inspect eaves, playgrounds, sheds, etc, 2x/mo May-Oct.
- Destroy wasp nests if location poses risk of stings
- Seal openings on buildings & playgrounds **before** warm weather or after nest destroyed
- Control food, beverages, trash outdoors that attract wasps and bees.



Underground Yellow Jacket Nests (late summer-fall)

- Spray entrance holes with over-the-counter wasp spray **or**
- Hire professional **or**
- Cordon-off until hard frost



Inspect Building Exterior Regularly

Check for:

- Wasp nests
- Unscreened vents
- Gaps around utility penetrations
- Water damage
- Damaged/disconnected gutters and downspouts
- Poor drainage
- Damaged/missing window screens
- Bird roosting





How Good is YOUR School IPM Program?

Maine School IPM Checklists (maine.gov/schoolipm):

- Maine School IPM Compliance Checklist
- School IPM Inspection Checklist
- Job-Specific Checklists (School IPM Toolkit)



EPA Tools for Schools (epa.gov/iaq/schools):

- Walkthrough Checklist, Problem-Solvers, Guidance, More

School IPM Cost/Risk Calculator:

www.ipmcalculator.com/



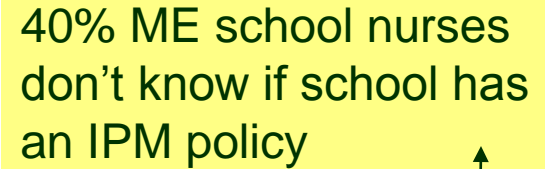
Key Elements for Success

- **Establish a written IPM Plan**
- **Collaborate and Communicate with** administrators, custodial/maintenance staff, teachers, students, contractors, community.
- **Provide Good Training for staff.**
- **No unauthorized pesticide use.**
- **Regularly Inspect and Monitor for Pests and Pest Prevention Needs**
- **Keep Records and Track Complaints**
- **When Pest Control is Needed: Select least-risk IPM solutions.**
- **Recognize and Reward** staff, classrooms for job well done



What Can YOU Do?

40% ME school nurses don't know if school has an IPM policy



- **Get Involved!** Join your school's IPM committee or invite IPM Coordinator to join the wellness committee
- **Review IPM policy and procedures** with IPM Coordinator. Review the pest sighting logs and pest management records
- **Set goals for improvement** and metrics to measure progress
- **Provide a communication link** among teachers, administrators, IPM Coordinator, facilities program, nutrition program, etc
- **Advocate for IPM!** Be the catalyst for improving your school's IPM program

Maine School IPM Program

ME Department of Agriculture, Conservation and Forestry

- Templates
- Training
- Tools
- Guidelines
- Newsletter
- Consultation
- Pest Identification

schoolipm@maine.gov

[207-215-4793](tel:207-215-4793)

The screenshot shows a Windows Internet Explorer browser window displaying the website www.maine.gov/schoolipm. The browser's address bar and title bar are visible at the top. The website header includes the Maine.gov logo and navigation links for Agencies, Online Services, and Help. Below the header is a banner with the text "Maine School IPM Program" and several small images related to the program. A sidebar on the left lists various resources under the heading "SCHOOL IPM", including "What is School IPM?", "Tools, Templates and Tips", "Maine School IPM Manuals", "Got Pests?", "Workshops", "Newsletters", "Web Resources", and "Contact Us". The main content area features a large photograph of a school building with a clock tower. Below the photo is the text: "School IPM: Dedicated to reducing risks of pests and pesticides in Maine Schools". The browser's status bar at the bottom indicates "Done" and "Trusted sites".