Northwest Territories Health and Social Services

Last Reviewed: May 10, 2006
Office of the Chief Medical Health Officer

West Nile Virus: Fact Sheet #6

Mosquito Biology, Control and Protection

Mosquitoes are a natural part of the environment and there is an abundance of mosquito breeding areas in the Northwest Territories. There are no means to eliminate mosquitoes entirely in the NWT. You will need to take precautions to avoid mosquito bites and to reduce breeding areas for the insects.

Life Stages of the Mosquito

Mosquitoes go through four stages of development during their lifecycle - egg, larvae, pupae and adult. Stagnant waters are required for the first three stages.

Eggs: Each female mosquito lays from one to several hundred eggs at a time. Depending on the species, eggs are laid singly or in clusters called 'rafts' on the water surface or singly on moist soil where water is likely to collect.

Preferred breeding sites are stagnant pools of water high in organic matter. These could include swamps, temporary spring melt pools or along the weedy edges of lakes or lagoons. Mosquitoes can also develop in water that accumulates in or around culverts, catch basins, eaves troughs, discarded tires, tin cans, buckets and birdbaths.

Larvae: The larvae or 'wrigglers' hatch from the eggs and feed on organic matter in the waters. All larvae go through four larval stages called instars before reaching the pupal stage. In the early spring when water temperatures are low, the larvae may require up to 30 days to reach larval maturity. In midsummer when waters are warmer, larvae may reach maturity in four days.

Pupae: When fully mature, the larvae develop into pupae or 'tumblers'. This stage is non-feeding and lasts from one to four days depending upon water temperatures and the mosquito species.

Adult: The adults emerge through a split in the pupal skin. They pull themselves out onto the water surface to rest on the empty skin while their legs and wings stiffen and they can fly away. Mating usually takes place within a few days of emergence. During this time, both sexes feed on plant juices and nectars. The male dies shortly after mating. However, the female will go on to search out a blood meal, as blood is required to initiate egg development. Following engorgement, the female remains relatively inactive to allow egg development to be completed and to deposit her eggs.

Species: There are many species of mosquitoes in the NWT. They may differ in the details of their life stages such as the number of generations in a year, preferred sources of their blood meal and water temperature requirements for larval development. Some emerge in the spring while others emerge in the fall.

Eliminate Breeding Areas

You can eliminate mosquito-breeding areas near your home or cabin by following these simple steps:

- Fill in low areas to prevent standing water.
- Empty water that accumulates in stored boats.
- Remove old cans and buckets or up-end buckets and other containers left outdoors.
- Inspect eaves troughs and clean out any that are plugged.
- Make sure drainage ditches are not clogged with garbage.
- Make sure ditches and driveway gutters drain properly.
- Dispose of, or empty, old tires.
- Change water in birdbaths or wading pools every week.
- Make sure door and window screens fit tightly and have no holes that will allow mosquitoes indoors.
- Encourage insect-eating bird to use your property.
- Reduce mosquito cover by trimming hedges; mowing weeds and grass; and, removing unnecessary trees and shrubbery.

Personal Protection

- Wear appropriate clothing.
- Loose-fitting clothes are less easily bitten through.
- Light coloured clothing is less attractive to mosquitoes than dark clothing.
- Long sleeved shirts, pants, socks and hats are also helpful in preventing mosquito bites.
- Avoid using perfumes, aftershaves, etc. while outdoors.

Insect Repellents

Insect repellents provide some degree of protection. They generally contain diethyl toluamide or dimetheyl phthalate. The effectiveness of the repellents is related to the concentration of these chemicals. Solvents in most repellents can dissolve synthetic fabrics and plastics.

Apply repellents to all exposed skin and treat clothing particularly around the collar and cuffs.

Frequent applications of repellents may be required if you are perspiring heavily, the repellent is rubbed or washed off, or you are outdoors for longer than three hours at a time.

Use repellents safely. Always read the label and follow all instructions prior to use of the repellent.

Commercial Spraying

Any person or municipality considering a mosquito control program using commercial grade pesticides is required to have a permit from the Department of Environment and Natural Resources. For more information on commercial pesticide use in the NWT, contact Environmental Protection Services, Department of Environment and Natural Resources at (867) 873-7645.

Treating Insect Bites

Some people are highly sensitive to insect bites. To soothe itching and swelling, antihistamines and anaesthetics are available at your local drug store. A dilute solution of baking soda and water applied to the bite area also helps remove the itch and selling.

For further information:

Contact the Office of The Chief Medical Health Officer at (867) 920-8877.

Visit the following websites:

www.hlthss.gov.nt.ca – NWT Department of Health and Social Services (See Programs & Services Section)

http://www.hc-sc.gc.ca/dc-ma/wnv-vno/index_e.html – Health Canada