MOSQUITOES

INTRODUCTION

New Zealand has 15 species of mosquito species. They can be divided into Native and Introduced.

One of the most commonly asked questions about mosquitoes that is, "How do I kill them?" The adults do the biting so most people think if they kill the adults they won't be bitten. This is true, but more adults are usually only a hatch away.
Mosquito control in and around your home can be achieved by getting rid of the habitat they like to live and breed in. Larvae are aquatic so they need water to survive. The adult female will usually lay her eggs on the surface of water (in an egg raft), or on the dirt or soil just above the waters edge. If you get rid of the habitat where the larvae hatch from the eggs, then you'll have fewer adults around and less chance of being bitten. Mosquito prefer a warmer ambient temperature so they are at their highest numbers from spring through to late summer and warmer autumns.

This link below contains a mosquito profile and photographs for each mosquito species present in New Zealand.

https://www.smsl.co.nz/NZBEL/New+Zealand+Mosquitoes.html

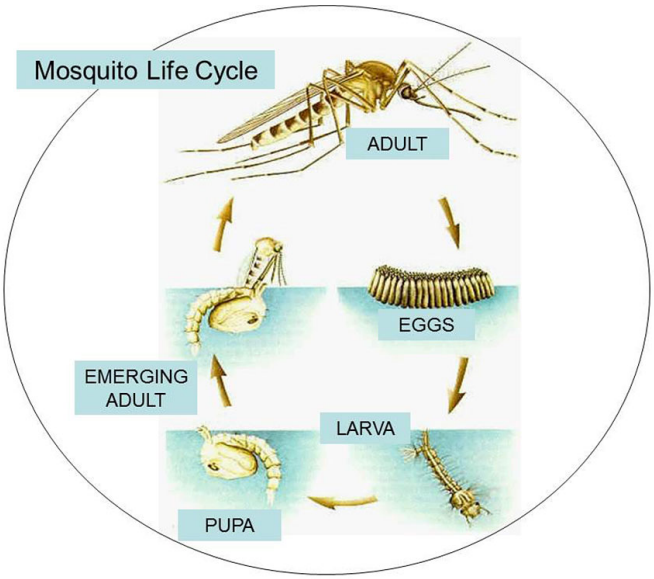
RECOGNITION

It would be nice if all mosquito species simply breed in nice clean fresh water. Unfortunately each species is different, some like salty water, some like fresh water, some like brackish, some like high organics in the water, some like it very clean. In your backyard there are usually two culprits - *Culex pervigilans* and *Aedes notoscriptus*. There are a few more species that we have in New Zealand that do bite humans, but generally if you control the habitat on your property with these two species in mind, then the others are unlikely to be a problem.

Culex pervigilans is the most common domestic pest mosquito in New Zealand and is found throughout the country. Its primary host is birds but it will happily bite larger mammals including humans and cattle. This species is able to breed in a wide variety of habitats, almost anywhere where water is collecting, which is why it is so wide spread. Larvae have been found in fresh, brackish, and polluted water, in temporary and permanent ground pools, natural and artificial containers and slow moving streams. They thrive in both urban and rural environments and will breed in troughs, tanks, vases, toilet cisterns, gutters, jars, tins, pot plant drip trays, bottles, tyres, buckets and almost any other type of container left lying around to collect water. It lays its eggs on the surface of the water in rafts. It can lay up to 300 eggs in as little as 15 minutes! *Culex pervigilans* is a noctural or night time biter. It doesn't have very distinctive markings.

Aedes notoscriptus is an introduced species, but it has been in New Zealand since at least the 1920's when first discovered. It is very common in the North Island, but is also found as far south as Canterbury and it's range appears to be on the increase. It is a fresh water container breeding mosquito, preferring vegetated containers in well shaded areas, found in tree holes and fresh water rock pools. It has also adapted to artificial containers including pot plant drip trays, gutters, jars, tins and other similar items. It is very common around back yards particularly where bush and vegetation is present. The female lays her eggs at the water level around the edges of containers, they are laid as individual eggs. Aedes notoscriptus is a day and night time biter, coming out of the shade during the day to bite is very common. This mosquito is readily recognised by its distinctive markings, being black and white with white stripes on the legs and proboscis.

Breeding Cycle



HABITS

Adult mosquitoes are small and fragile insects, with a slender abdomen, narrow wings and long legs. The proboscis projects downward in females mosquitoes. It is used to penetrate the skin of the host animal. It forms a duct through which saliva (to act as anticoagulant) is first injected below the skin, and then blood is withdrawn into the mouth and stomach. Many mosquito species feed on birds, some on cattle, horses, and other domesticated animals. Several species prefer to feed on humans.

Flight habits

Female Culex and Anopheles species typically begin feeding at dusk and continue search for a host into the night. During the day they are inactive and rest on leaves in dense vegetation, away from the sun and protected from wind. Some species feed only during the day, and this includes many of the Aedes mosquitoes. They rest between foraging flights in vegetation.

Female mosquitoes fly from their breeding site in search of a blood meal, but males usually remain close to the breeding site. Female flight range varies with species, time of year, wind direction, and other factors. Most adult mosquitoes disperse only 100-200 m from their emergence site. Aedes aegypti fly 25-100 m and Anopheles species fly about 2 km. Wind above 6.4 km/h permits only downwind movement, and velocities above 9.7 km/h inhibits flight of most adults. The flight range of most Culex species is very short, and they prefer to rest on indoor surfaces.

Life span

The life span of the adults is variable, and depends on environmental conditions. Most species live one or two months during warm weather. Adults that over-winter live for about six months.

CONTROL

Get Rid of Mosquito Habitat

If you can eliminate the mosquitoes habitat you'll stop them from breeding. These are simple things to do in your backyard to get rid of mosquito habitat:

- Checks gutters and drains are clear of leaves and other debris regularly - this stops water from pooling.
- Make sure rain water collecting tanks are covered and sealed.
- Keep swimming pools well chlorinated and free of dead leaves.
- Empty and clean pot plant drip trays and fill with sand (sand stores the water for the plants but its not suitable for the mosquito).
- Overturn any outdoor item that can't be removed so that water doesn't sit inside it - eg boats, dingy's, drums, unused sandpits and paddling pools etc.
- Cover venting pipes or small gaps on septic tanks.
- Fill or drain holes in the ground that store water.Emp
- Empty and clean pet drinking water vessels regularly.
- Fish ponds - try to find fish species that love mosquito larvae. Over summer there may be too many larvae for the fish to eat, this is one area where mosquito dunks are a good idea.
- Old tyres - mosquitoes love tyres! make sure they have a drain hole in them or get rid of them completely.

- Make sure you remove any rubbish such as old cans, tins, jars, bottles or any other items including plastic that can hold water.
- Under the trees - try to provide a heavy mulch to prevent water from pooling, weed mat compresses the soil and often results in pooling under the weed mat that those clever mosquitoes can still get at.
- The Ministry of Health produced these guidelines a few years ago, but it contains the best simplest methods to help control mosquitoes in and around you home.

Mosquito control can target the adults and/or the larvae. Control methods include the use of insecticides to kill either the adults or larvae.

Non-chemical methods

In addition to insecticides there are other non-chemical control materials for larvae, such as insect growth regulators (IGRs), insect hormone mimics, and species of Bacillus bacteria (BTI).

Although Bacillus bacteria (BTI) is a biological control agent, it is not persistent in the environment.

Application of Aquatain AMF to the surface of standing water is effective in controlling larvae and pupae. This material forms a monomolecular film on the water surface, which prevents larvae and pupae from getting access to the air and they suffocate. This material is used to treat small bodies of water, such as buckets, ponds, puddles, drains, water tanks, septic tanks, and old tyres.

The active ingredient of the monomolecular film is iso-alcohol ethoxylate. It is a degradable surfactant and is an environmentally friendly pesticide. It has very little adverse impact on fish and plants.

Biological methods

Biological control methods uses animals (including bacteria) and other organisms that naturally occur in mosquito infested water. Small fish are the most common and effective bio-control agent; they feed on mosquito larvae and pupae.

Chemical control methods

Thermal fogging or ULV application (cold fogging) is used to control adult mosquitoes. These applications are timed to coincide with the available light and feeding behavior of the target species, such as species that are active during the day (diurnal feeding), or at night (nocturnal feeding), or at dusk (crepuscular feeding).