

# Living with Mosquitoes

## MOSQUITO ECOLOGY IN THE LOWER HUNTER AND MID NORTH COAST REGION

### **Mosquito life cycle**

All mosquitoes require standing water to complete their life cycle. Mosquitoes can lay their eggs on the water surface, in depressions on the ground or on the side of water holding containers. Larvae (commonly called wrigglers) hatch from eggs and have four growth stages before becoming pupae (commonly called tumblers). Adult mosquitoes then emerge from the pupae. During the warmer months, it may only take a week for mosquitoes to develop from egg to adult.

Adult mosquitoes generally only live up to 3 weeks. Female mosquitoes generally need to feed on blood from an animal or human to assist with the development of her eggs. Not all mosquitoes feed on humans, with some preferring to feed on other mammals, birds and even frogs. Male mosquitoes do not require blood so they do not bite humans, preferring to feed on plant juices.

### **What good do mosquitoes do?**

Mosquitoes are not all pests. There are many mosquitoes that rarely bite humans or only occur in very small numbers. Mosquitoes provide food for birds, bats, frogs, fish and other insects. Some mosquitoes may also help pollinate plants.

### **Where do mosquitoes live?**

Mosquitoes can be found in a wide range of habitats and are a natural part of coastal wetland ecosystems. Wherever there is pooling of water, mosquitoes can be found. Some of these habitats include:

**Freshwater Wetlands** Natural freshwater wetlands provide important habitat for native wildlife and plants as well as mosquitoes. Mosquitoes naturally occur in wetlands but they do not always pose a serious problem. Healthy wetlands support a balanced ecosystem containing natural predators that eat mosquitoes and help keep their populations low. These wetlands are more likely to produce large mosquito populations when they become polluted (causing the death of mosquito predators) or overgrown with aquatic weeds.

**Saltwater Wetlands** Mangroves and saltmarshes have the potential to produce large populations of pest mosquitoes. When tides and/or rainfall create pools in these habitats it can trigger the hatching of large mosquito populations. Mosquito populations are usually greatest when tidal flows and drainage are restricted and it is difficult for predatory fish to enter the pools and eat mosquito larvae.

**Brackish Water Wetlands** There are many coastal wetlands including Melaleuca (Tea Tree) wetlands, sedgeland and other marshy areas that have slightly salty conditions and provide habitats for a range of mosquito populations. While large mosquito populations may be present, these mosquitoes do not generally travel far from these habitats.

**Constructed Wetlands and Farm Dams** Constructed wetlands, including those used for the treatment of urban stormwater and/or wastewater, and farm dams, have the potential to encourage mosquito populations if not designed and managed correctly. As mosquitoes are an important part of the wetland ecosystem, eradication is not usually the answer. Management techniques may be introduced to ensure that mosquito populations are reduced to a tolerable level.

There are a number of ways to reduce the number of mosquitoes produced from constructed water bodies. These include:

- § Keeping the edges of the wetland steep (at least 1:4 slope) and reducing thick vegetation.
- § Selecting and managing plants to enhance the wetland habitat and provide suitable conditions for mosquito predators such as fish, water beetles, dragonflies and damselflies.
- § Selective removal of dense strands of emergent vegetation, dead vegetation and algal mats, while reducing the amount of invasive plants such as *Typha* and *Phragmites*.
- § Adjusting the water level in the pond or wetland to enable the interruption of mosquito development when populations are unusually high.
- § Introducing small native fish species (e.g. Pacific Blue-eye or Empire Gudgeon) that feed on mosquito and larvae. The introduction of Mosquitofish (*Gambusia holbrooki*) or other exotic species should be avoided.
- § Chemical control agents may be used if other techniques have failed to control mosquito populations. Chemical control is usually applied to control short-term excessive breeding. Environmentally acceptable control agents are available if required.

Where possible, wetlands should be avoided during certain times, for example, several days after heavy rains and high tides or during dusk. As mosquitoes will always be present in these areas, we must do our best to protect ourselves from them.