

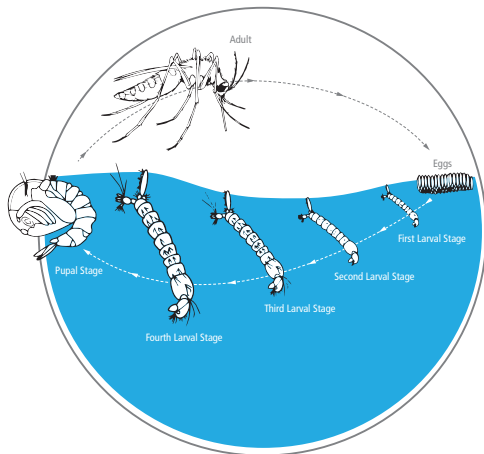


# Mosquito Control Protocol



## Life Cycle

- Complete metamorphosis in four stages: egg, larva, pupa and adult.



## Understanding Mosquito Habits and Life Cycle

- Mosquitoes are most active at dawn and dusk, and they can feed on multiple hosts, including but not limited to humans and pets.
- Females lay their eggs in water. The eggs hatch in 1 to 3 days, and the emerging larvae will go through 4 molts, which can last from 7 days to several weeks depending on environmental conditions.
- The pupal stage (or tumbler stage) can take between 2 days or up to a few weeks. During the 4th molt, the pupal skin splits and the adult emerges.
- While adult males primarily feed on plant nectar, females require a blood meal to produce eggs.
- Males live for 6 to 7 days, while females live 1 to 2 months during warm weather and as long as 6 months in cold weather.

## Unique Qualities of Common Backyard Mosquitoes

*(Aedes aegypti and Aedes albopictus)*

- Only fly a few hundred meters from emergent sites
- Small container breeders
- Lay individual eggs usually near the waterline
- Eggs are laid in multiple sites (skip-oviposition)
  - 100-200 eggs per batch
  - Five batches laid in a lifetime
- Eggs can last for years and remain viable
- Active daytime biters although they will also bite at dusk and dawn

## Inspection

- Survey the property for the presence of adults and larval stages
- Inspect the entire yard for harborage (shady areas, heavy foliage) and breeding sites (standing or stagnant water), then remove all conducive conditions. See common breeding sites on page 3.
- Develop a control strategy based on inspection findings

## Control Strategies

- Exclusion
- Source reduction
- Larviciding/IGRs
- Adulticiding

## Customer Communication

- Listen carefully to the customer and communicate treatment plan and expectations, such as cutting the grass, trimming excess vegetations and removing all standing water.
- In conjunction with reducing conducive conditions and using adulticides and larvicides, we also recommend informing the customer to use repellents to help prevent mosquito bites while outdoors.
- Inform the customer that even with your best efforts, it might not be possible to accomplish 100% mosquito reduction after treatment, but reducing the overall population will ultimately reduce bites.
- Set realistic expectations and inform your customer of what to expect after treatment. For example, live larva and pupa can be seen actively moving in breeding sites and do not instantly die due to how NyGuard® IGR works. However, larva that are exposed to NyGuard IGR do not emerge as biting adults and usually die in the pupa stage.

## Application Equipment

- For applying adulticides or a combination of an adulticide and IGR, we recommend using equipment such as backpack mist blowers and power sprayers.
- In sensitive areas, for example where people and pets frequent, use a handheld sprayer for targeted applications.
- To apply NyGuard IGR alone, we recommend a spray bottle or handheld sprayer.

## Dilution Rates

Mix Onslaught FastCap, NyGuard IGR and OneGuard according to the following table:	
Product	Rates
Onslaught FastCap	0.50 fl. oz. per gal**
NyGuard IGR	4 to 12 ml per gal
OneGuard	1 to 2 fl. oz. per gal**
Standing water (NyGuard IGR only)	4 to 12 ml per gal

\*NyGuard can be mixed at up to 12 ml per gallon for difficult-to-control infestations. Apply up to 1 gallon per 1500 sq. ft. Always follow the package label instructions.

\*\* or sufficient water to treat 1,000 sq. ft.

## Pre-Treatment

- Remove all pet belongings, toys and other items from the yard. Some items can be put in plastic bags.
- If possible, cover or remove any food and food contact surfaces such as tables and grills.
- Explain that mosquito treatments can be affected by excessive moisture and recommend sprinklers remain off until product is dry. For best results, schedule treatments when rain is not expected.
- Check areas such as fence lines for the presence of people, pets, etc. that should not be in the treatment area.

## Treatment

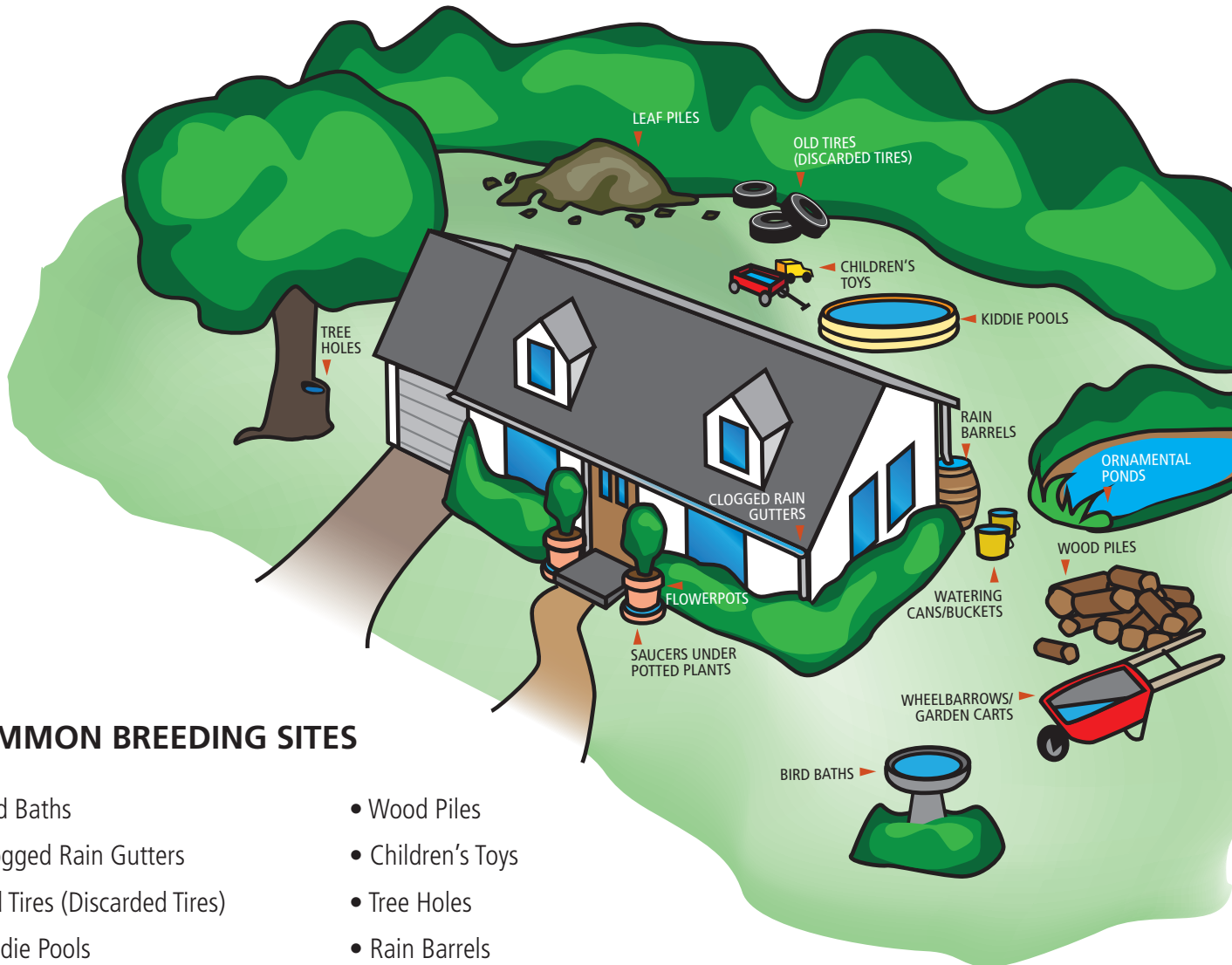
- Consider all choices for IPM control of mosquitoes including non-chemical options.
- Treat all harborage areas, including shaded areas, foliage, shrubs and areas with little air movement (soffits and entryways). Remember the ideal target area is the bottom 20 ft. of trees.
- Adding an IGR is highly recommended to help combat resistance because it is a different mode of action. The IGR also prevents mosquito larvae from developing into breeding and biting adults.
- Using a small spray bottle or a handheld sprayer, apply NyGuard IGR as a wet spray (stagnant or standing water) to all breeding sites that cannot be adequately removed.
- Do not apply NyGuard IGR to natural bodies of water, active waterways or koi ponds.
- NyGuard IGR effectively prevents adult mosquito emergence from breeding sites. NyGuard also reduces egg hatch from eggs laid by exposed adult female mosquitoes.

## Post Treatment

- Re-inspect during your next treatment interval. Always be aware of product retreatment intervals prior to reapplying.
- During surveillance after treatment, live larva and pupa may be seen due to NyGuard IGR effects, but they will eventually die and not mature to the adult stage.



# Mosquito Control Protocol



## COMMON BREEDING SITES

- Bird Baths
- Clogged Rain Gutters
- Old Tires (Discarded Tires)
- Kiddie Pools
- Flowerpots
- Saucers Under Potted Plants
- Wheelbarrows/Garden Carts
- Watering Cans/Buckets
- Ornamental Ponds
- Wood Piles
- Children's Toys
- Tree Holes
- Rain Barrels
- Leaf Piles



# The Integrated Mosquito Solution for Superior Results



Use of these products as a barrier treatment is an effective treatment option for mosquito control. See individual product labels for additional details.



## OneGuard®

- Convenient all-in-one product containing a knockdown agent, adulticide, synergist and NyGuard® IGR
- Two modes of action
- Controlled-release technology
- Kills Aedes, Anopheles and Culex mosquitoes
- Long-lasting residual control



## Onslaught® FastCap Microencapsulated Formula

- Fast-acting microencapsulated formula with long-lasting residual control
- Contains a knockdown agent, adulticide and synergist
- Kills mosquitoes in their harborage and breeding sites, including Aedes that may carry and transmit Zika virus



## NyGuard® IGR Insect Growth Regulator

- Effective as a mosquito larvicide
- Effectively breaks the reproductive cycle
- Can be applied to standing water (cannot be applied to active waterways)



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