



## Urban Water-Quality Management Wildlife in the Home Pond Garden

*Lynnette Swanson, Extension Agent, City of Norfolk*

*Mike Andruczyk, Extension Agent, City of Chesapeake*

*Laurie Fox, Horticulture Associate, Hampton Roads AREC*

*Susan French, Extension Agent, Virginia Beach*

*Reviewed by David Close, Consumer Horticulture and Master Gardener Specialist, Horticulture, Virginia Tech*

Small home pond gardens support aquatic plants and also attract a variety of wildlife. Turtles, frogs, birds, snakes, lizards, and raccoons as well as many other animals may use these ponds. Most wildlife needs water to survive and will seek out ponds for drinking, bathing, habitat, and in some cases, reproduction.

Wildlife in and around the home pond garden can make the area interesting. However, an overabundance of wildlife can become a burden on the pond ecosystem. In some cases, controls may be necessary to reduce the adverse impact of wildlife.

### Fish

Fish are a wonderful addition to the home pond garden. They eat mosquito larvae, water beetles, and other insect pests. Fish, especially colorful koi and goldfish, are extremely vulnerable to predators and need places to hide. If the pond is located where fish could escape into natural bodies of water, then the fish placed in the home pond should only be native to the area to avoid the introduction of exotic or invasive species.

Fish can cause problems in the home pond garden. In addition to providing natural insect control, fish will eat the eggs and larvae of frogs, snails, and other amphibians. Under the right conditions fish will breed readily and may overwhelm the pond ecosystem promoting algal blooms and declining water quality. A high fish population may also stimulate greater plant damage in the home pond by uprooting the plants or eating the foliage.



### Birds

Some bird species can cause problems in the home pond garden. Kingfishers, herons, and egrets eat fish and amphibians from the pond, which is why providing adequate hiding places is important. Ducks, geese, and other birds can also foul the water and adjacent landscape areas.

During the breeding seasons, geese and other waterfowl may become aggressive and threaten or attack people and pets. Discourage birds from resting or nesting in an area by not feeding them and blocking access to the pond. This can be done by raising the height of the plants along the shoreline and making the shoreline of the pond steeper. Loud noises and random or motion-sensitive high-pressure water sprays can also discourage birds from becoming permanent visitors. Nets and fencing will also deter birds from the home pond garden.

Other birds, especially songbirds, frequently visit home pond gardens. They eat insects and small frogs, drink, and bathe at the pond. Birds near the home pond garden may also attract predators such as snakes, raccoons, and cats.

If the design of the pond does not allow easy access to the water for drinking or bathing, birds may fall into the water and drown. Be cautious when using netting as birds can become tangled. To avoid both of these problems create a separate area such as a birdbath to supply drinking and bathing water.

Whenever birds are present at a site, predatory birds such as hawks and falcons may also be attracted to the site.

## Insects and Other Invertebrates

Mosquitoes lay their eggs in warm, still water. An adult female needs a blood meal to complete her life cycle and lay eggs. Often that blood meal comes from a human or other mammal. Fish, tadpoles, and dragonflies (both the adults and the young called naiads) in the home pond feed on mosquito larvae. Adding an aerating fountain will reduce the mosquito population by keeping the water moving. Biological treatments (various forms of the bacteria *Bacillus thuringiensis* or Bt) to prevent the mosquito larvae from developing into adults are available, but should only be used according to the label directions so as to not harm fish and other wildlife in the home pond.

Dragonfly and Damselfly naiads are aquatic predators that feed on insects, tadpoles, and even small fish. Larger fish feed on naiads. Bullfrogs and insect-feeding birds also eat the adult forms of these insects.

Insect pests of pond plants may become problematic when aquatic plants are added to the home pond garden. Insect Pests of Water Garden Plants, Virginia Cooperative Extension publication 426-040, describes these pests, the damage they cause, and control methods.

Other insect pest populations, such as diving beetles and water bugs, frequently are controlled by predators such as larger fish and frogs.

Snails primarily feed on algae. There are some species that devour pond plants. Japanese black and trapdoor snails are less likely to feed on pond plants.

Crayfish can be problematic because they are scavengers and will eat pond plants. Discourage them by reducing hiding sites such as soft, damp soil, and rock piles.

## Pets

House cats may upturn pots or catch fish, frogs, and birds from the home pond. Keeping them indoors is the

easiest solution. Motion-sensitive sprinklers or speakers, and repellent sprays will deter them from the pond. Weighting containers with gravel or stones can help anchor them. Adding netting over the pond will prevent cats from accessing the pond.

Dogs may dig, swim, splash and upturn pots or catch fish, frogs, or birds at or in the home pond. They can also puncture the liner with their toenails. Keeping them indoors and monitoring their behavior around the pond when outdoors are the easiest solutions. Other options include motion-sensitive sprinklers or speakers, repellent sprays, or adding fencing (structural or electric) around the pond to prevent access. These methods also work for potbellied pigs and other domestic pets.

## Wild Mammals

Deer will eat water lily leaves and buds as well as many other pond and garden plants. In addition, their hooves can easily puncture pond liners. Fencing (structural and/or electric), repellent sprays (hot pepper wax, soap, predator urines, human hair, etc.), motion-sensitive lights, sprinklers, and audio speakers may keep deer from the pond.

Opossums will eat small animals, insects, carrion, birds, eggs, and plants from the pond. They may be vectors of transmittable diseases, including: rabies (rarely), tuberculosis, herpes, tularemia, salmonella, and leptospirosis, and/or disperse parasites such as fleas, ticks, mites, and lice. To deter opossums, eliminate tree cavities and brush piles. Close off areas under decks and houses, and lock up or securely close trashcans, compost bins, and sheds. Fencing, repellent sprays, motion sensors, and dog or human activity may also deter them.

Raccoons are attracted to pond gardens and eat small animals, wild birds, fruits, carrion, poultry, eggs, nuts, mollusks, insects, grubs, vegetables, and fish. They can become aggressive and are the primary vector species for rabies in Virginia. Remove or close off tree hollows, drain pipes, brush piles, and abandoned burrows. Lock up compost piles, sheds, basement/crawl spaces, garages, pet foods, and trash. Suspend netting over ponds, limb up trees and/or put 5-foot-high metal sheeting around tree bases, and increase human activity to deter raccoons. Fencing and repellents do not work and auditory/visual stimuli have limited effectiveness. Trapping may be an alternative, but check with local game wardens first.

Skunks may come to ponds to eat small animals, insects, fruits, eggs, grubs, and vegetation. Skunks are undesirable

because of their very smelly defensive spray, plus they may carry rabies as well as other diseases. Grub control and blood meal may help to keep skunks from visiting the pond and flowerbeds. Remove or close up fallen tree hollows, abandoned burrows, and crawl spaces. Call animal control or a professional exterminator to trap them.

## Reptiles and Amphibians

Lizards/skinks are harmless and help eat insects around ponds. Eliminating debris and limbing up shrubs/trees will deter their presence.

Snakes eat fish, tadpoles, worms, slugs, frogs, crayfish, toads, rats, voles, moles, birds, and other snakes. They also frighten people and some are poisonous. Eliminate shady areas, firewood piles, tall grass, and brush and rock piles and block holes to discourage snakes from the home pond. Repellents are not effective.

Turtles eat fish, birds, and vegetation. Snapping turtles can injure humans, ducks, or pets and puncture liners. To reduce their visitation, keep the pond small and site it in an area without loose soils or mulch where turtles may easily lay eggs.

Salamanders lay eggs in moist areas and occasionally in ponds. The carnivorous young will eat insects and small fish. Eliminate logs and rocks that adults tend to hide under and keep ponds steeply sloped and open to discourage their presence.

Frogs and toads as tadpoles are good scavengers and food for fish and dragonfly larvae. Adult frogs control mosquitoes and other insects. Bullfrogs eat fish, small rodents, and birds. Frogs can be noisy at times. To keep the population under control, make ponds shallow and open so that predators can have easy access to them.

Similar to frogs, toads lay their eggs in ponds and spend part of their life cycle as tadpoles. Toads do not cause warts, but can make dogs ill if they eat or mouth toads. To reduce the toad population, eliminate shady areas adjacent to the pond.

## Conclusion

Whether wild or domestic, big or small, creatures will be attracted to home ponds. All living things need food, shelter, water, and space to live. Removing one or more of these elements will help deter unwanted organisms.

In general, to deter undesirable wildlife:

- Increase the lawn/open area and keep the grass mowed short.
- Decrease plant diversity – monoculture.
- Eliminate brush, leaf, and debris piles.
- Eliminate open water.
- Build the pond with steep sides.
- Do not provide feeders or other food sources.
- Increase human and dog activity.

For quick reference on the pest, possible impacts to the home pond garden, and pest control options refer to the chart on page 4.

## References and More Information

Aquascape Lifestyle Books. 2004. *The Ecosystem Pond*. The Pond Guy Publications, West Chicago, Illinois. ISBN 0-9753123-0-8

Drzewucki, Vincent Jr. 1998. *Gardening in Deer Country*. Brick Tower Press, New York, New York. ISBN 1-883283-09-4

Kramer, Elsa, project editor. 2003. *Creating Water Gardens*. Ortho Books, Meredith Publishing Group, Des Moines, Iowa. ISBN 0-89721-492-7

North Carolina State University, Wildlife Damage Control: <http://www.ces.ncsu.edu/nreos/wild/wildlife/wdc/>

University of Florida: IFAS Extension Wildlife Ecology and Conservation: <http://edis.ifas.ufl.edu>

Virginia Cooperative Extension Publications: <http://www.ext.vt.edu/resources/>

## Acknowledgments

The authors thank Jim A. Parkhurst, associate professor of wildlife sciences and Extension wildlife specialist, Virginia Tech; William Dimock, Extension agent, City of Newport News; and Leanne DuBois, Extension agent James City County, for their editorial contributions to this publication.

## Home Pond Garden Pest Reference

Pest	Prey on Pond Fish	Prey on Other Pond Inhabitants	Damage Pond Plants	Other Damage	Control Options
Fish	X	Tadpoles, snails, amphibians	X	Can overpopulate the pond	Feed less frequently; Reduce fish population; Add gravel to tops of containers
Egrets, Herons and Kingfishers	X	Tadpoles, small frogs, other amphibians			Nets over the pond; Make the shoreline steeper; Loud noise and random or motion-sensitive high pressure water sprays
Waterfowl			X	Foul water and adjacent landscape areas Aggressive at nesting time of the year	Add weight to the pots to anchor; Add gravel to tops of containers; Provide hiding places for fish; Nets and fencing around the pond; Raise height of plants along shoreline; Make the shoreline steeper; Loud noise and random or motion-sensitive high pressure water sprays
Other Birds		Insects, small frogs		Attract other predators May drown in pond	
Mosquitoes				Larvae will develop in ponds	Fish, tadpoles, and dragonflies feed on larvae; Aerating fountain to keep the water moving; Biological pesticides
Dragonfly naiads	X	Insects, tadpoles, small frogs			Encourage frogs and insect-feeding birds
Snails			X		Choose Japanese black or trapdoor snails
Crayfish	X	Tadpoles, small frogs	X	Will create mounds in soft soil	Reduce hiding sites such as soft, damp soil and rock piles
Housecats	X	Frogs, birds, other inhabitants	X		Keep indoors; Monitor outside behavior; Motion-sensitive sprayers, sprinklers, loud noise, repellents; Nets and fencing around the pond; Add weight to the pots to anchor them
Dogs, Potbellied Pigs and Other Pets	X	Frogs, birds, other inhabitants	X	Puncture pond liners with toenails; Swim, splash in the pond	Keep indoors; Monitor outside behavior; Motion-sensitive sprayers, sprinklers, loud noise, repellents; Nets and fencing around the pond; Add weight to the pots to anchor them
Deer			X	Puncture pond liners	Fencing around the pond; Repellents; Motion-sensitive sprayers, sprinklers, loud noises
Opossums	X	Small animals, insects, birds, other inhabitants	X	Can transmit diseases and parasites to humans and pets; Can injure pets	Remove nesting areas such as trees with cavities, brush piles;
Raccoons	X	Small animals, birds, frogs, other inhabitants	X	Can be aggressive; Can transmit diseases and parasites to humans and pets	Lock up and secure compost piles, sheds, crawl spaces, garages, and trash areas; Fencing; Motion-sensing devices;
Skunks	X	Small animals, insects, birds, other inhabitants	X	Can transmit diseases and parasites to humans and pets; Can be aggressive	More animal/human activity; Animal control or exterminator services
Snakes	X	Small animals, insects, birds, other inhabitants		Can be aggressive, some venomous; usually frighten humans	
Turtles	X	Smaller birds, frogs, other inhabitants	X	Can transmit salmonella; Snapping turtles can be aggressive	Eliminate debris areas, rocks, wood piles, and brushy areas; Keep pond area small; Eliminate shady areas adjacent to pond
Frogs / Toads	X	Small animals, smaller birds, frogs, and other inhabitants	X	Can make dogs ill and can be noisy.	