

# RESIDENT CANADA GOOSE

*Branta canadensis*

Photo courtesy of Alan D. Wilson, [Naturespicsonline.com](http://Naturespicsonline.com).

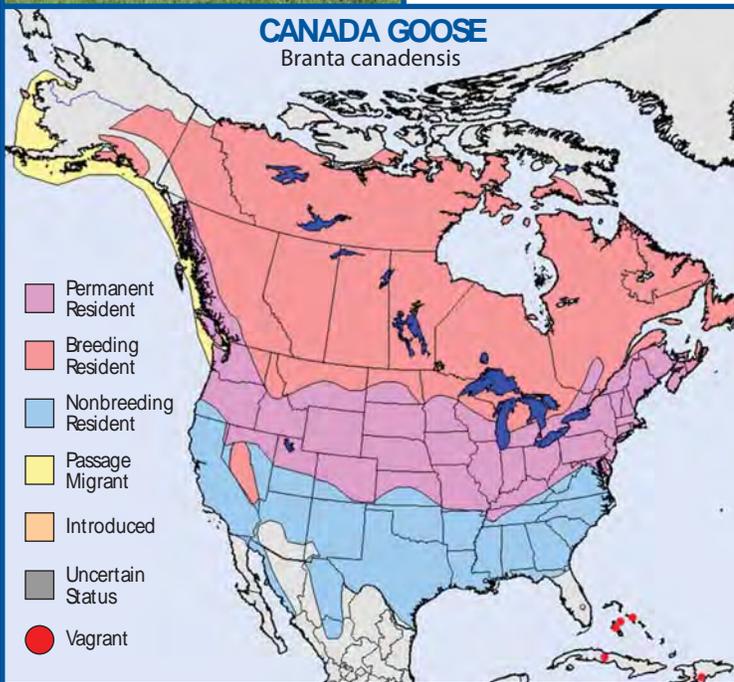


Photo courtesy of Daniel Mayer.

*Canada geese, also called “honkers” are the most abundant of all North American species of geese, with scientists estimating about 1 million in the Atlantic flyway population. Unlike its migratory cousin, the resident Canada goose nests and resides predominantly in the United States, and has become a permanent and problematic resident in suburban and urban communities.*

## SPECIES DESCRIPTION

The Canada goose is a large water bird weighing up to 18 lbs (8 kg). It has a long neck, large body, large webbed feet, and a wide flat bill. Both sexes have a black head and neck with broad white cheek patches that extend from the throat to the rear of the eye. The breast, abdomen, and flanks are light gray to a dark chocolate brown. The back and tail are usually dark brown to black with a white “U”-shaped band on the rump. They are often seen in flight moving in V-shaped flocks.



Map created by Terry Sohl, data from NatureServe.

## NATIVE & INTRODUCED RANGES

Ancestors of the resident Canada goose used the Atlantic flyway to migrate from breeding grounds in Canada to wintering areas in the South. Individual geese began to take up residence along the way, extending their range throughout most of the United States and Canada. Strong reproducing populations exist all throughout Pennsylvania.

## BIOLOGY & SPREAD

Canada geese are very mobile and can easily spread as they are willing and able to fly great distances to find food and nesting areas. By the early 1900s, Canada geese were nearly hunted to extinction, with no reports of nesting pairs in Pennsylvania before 1935. However, the Migratory Bird Treaty Act created protection for geese, and intensive relocation programs helped repopulate historic habitats. In the United States, breeding rates are higher than in Canada because there are less adverse weather conditions, such as late spring snow storms, that could impact nesting.



Photo courtesy of Dick Daniels, [CarolinaBirds.org](http://CarolinaBirds.org).

CANADA  
 GOOSE

# CANADA GOOSE



Photo courtesy of Wikipedia.

**Sea Grant**  
Pennsylvania  
[www.paseagrant.org](http://www.paseagrant.org)

Extension • Education • Research

*Pennsylvania Sea Grant* is a partnership of  
The Pennsylvania State University,  
The Commonwealth of Pennsylvania,  
and NOAA.

Penn State is an affirmative action, equal  
opportunity university.



**Great Lakes RESTORATION**

Funded in part by PA DEP Coastal Resources  
Management Program, The U.S. Fish and Wildlife  
Service, and the Great Lakes Restoration Initiative

## HABITAT

There are a variety of habitats that are suitable for Canada geese, especially those that offer a wide open view, such as islands in rivers and lakes, marshes, reservoirs, artificial nesting structures, golf courses, and grassy fields near water.

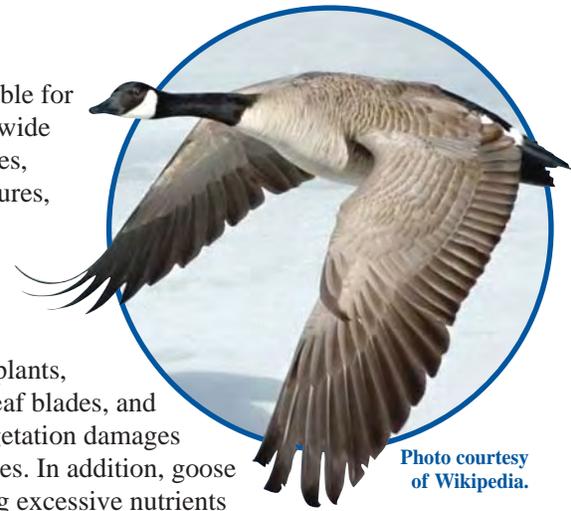


Photo courtesy of Wikipedia.

## IMPACTS

### *Threat to Biodiversity*

Grazing geese feed on wild and cultivated plants, damaging rhizomes, roots, shoots, stems, leaf blades, and seeds. Grazing and trampling on native vegetation damages delicate wetland habitats and restoration sites. In addition, goose droppings can harm water quality by adding excessive nutrients to a water body and causing algal blooms.

### *Economic Costs*

Complaints of Canada geese usually involve the accumulation of goose feces on lawns, walkways, private residences, schools, public parks, and other residential areas. Goose feces can damage property and reduce the aesthetic appeal of recreational use areas. Canada geese can also cause severe agricultural damage as they feed on cultivated crops like corn and wheat, reducing yield and increasing erosion. In addition, these large waterfowl pose flight safety hazards at airports where bird-aircraft strikes have occurred resulting in injuries, financial losses, and even loss of human life.

### *Health Risks*

The presence of goose feces in residential areas poses serious health threats due to the presence of disease causing organisms. Furthermore, goose aggression, especially during the nesting season, has been known to cause human injury.

## PREVENTION & CONTROL

Once established in an area, Canada geese are very persistent and management is difficult. One strategy used to deter geese from an area is to modify favorable habitat to include unpalatable vegetation, or allowing grass to grow tall to create a visual barrier between feeding areas and water. Barriers such as low fences are effective at keeping geese from lawns, especially during summer months when geese have molted and are unable to fly. Loud noises, geese-chasing dogs, or frightening methods such as helium balloons or scarecrows can be a convenient and inexpensive way to control geese; however, they can become accustomed to repetitious methods, especially if they realize there is no danger.

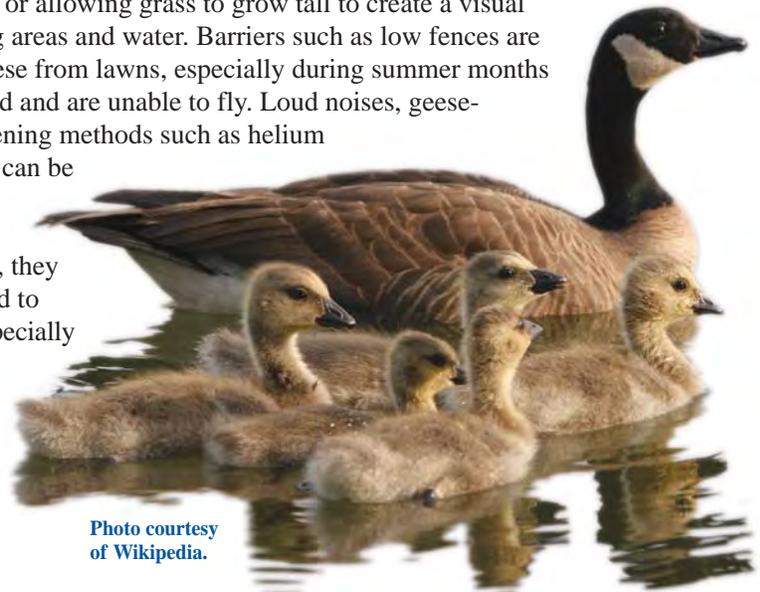


Photo courtesy of Wikipedia.

### *References:*

Connecticut Department of Energy and Environmental Protection. 1997. Canada Goose (*Branta Canadensis*). Factsheet. < <http://www.ct.gov/dep/cwp/view.asp?A=2723&Q=325984>>.

USDA APHIS. 2003. Managing Canada Goose Damage. Fact Sheet. < <http://www.aphis.usda.gov/ws/statereports/NJ/cagonj021303.pdf>>.

Fergus. C. Canada Goose. Pennsylvania Game Commission Wildlife Notes. < <http://www.pserie.psu.edu/seagrant/ais/images/canadagoose.pdf>>.



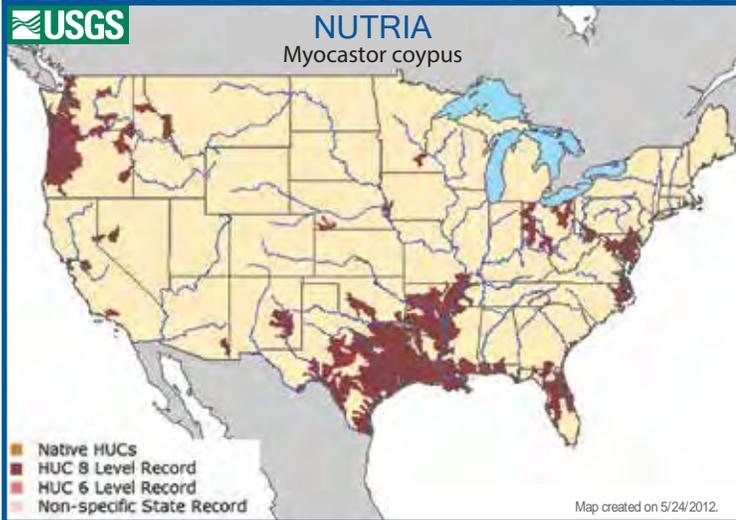
# NUTRIA

## *Myocastor coypus*

Photo courtesy of Wikipedia.com.

*Nutria, also called Coypu, are large, semi-aquatic rodents that were once considered an important resource for the Louisiana fur industry. With the collapse of the fur market in the 1940s, nutria became overabundant and affected thousands of acres of coastal wetland as they grazed on important marsh vegetation.*

Photo courtesy of Steve Kendrot, USDA.



Map courtesy of United States Geological Survey.

### SPECIES DESCRIPTION

Often mistaken for beavers and muskrats, nutria are furry swimming rodents that can weigh 15-20 lbs and reach 2 ft (0.6 m) long. They are usually dark brown with large heads, short legs, and a stout body that appears hump-backed on land. Their large front teeth can range from yellow to orangish-red on the outer surface. Highly adapted for aquatic ecosystems, nutria have partially-webbed hind feet—along with eyes, ears, and nostrils that are set high on the head allowing them to stay above the waterline while swimming. The best way to tell nutria from beavers or muskrats is to look at their size and tails. Nutria are about one-third the size of an adult beaver, and 5 to 8 times larger than an adult muskrat. Beavers have large, broad, flat tails and muskrats have long narrow tails that whip back and forth when swimming. Nutria have a heavy rat-like tail thinly covered in bristly hairs that trails smoothly behind them when swimming.

### NATIVE & INTRODUCED RANGES

Native to South America, nutria were introduced into the United States in 1899 to establish a fur farming industry in California. Although this initial introduction failed, subsequent introductions into Louisiana, Ohio, New Mexico, Washington, Michigan, Oregon, and Utah led to accidental and intentional releases that have allowed this species to spread into 22 states, and become established in at least 16 states. In the United States, the largest nutria populations are located in coastal areas along the Gulf Coast.

### BIOLOGY & SPREAD

After the collapse of the fur market, thousands of nutria were released into the wild by ranchers who could no longer afford to feed and house them. In some areas, they were also released by state agencies to control problem plants like water hyacinth (*Eichhornia crassipes*) and alligator weed (*Alternanthera philoxeroides*). Other than annual fur harvesters, alligators are the only significant predator of nutria; however, even in areas with an abundance of alligators, nutria can thrive if habitat conditions are suitable. Nutria are also highly prolific, reaching sexual maturity at six months of age and producing at least two litters of 4-5 young in one year.



Photo courtesy of J. C. Schou, Biopix.

NUTRIA



Photo (top) courtesy of Milos Andera, naturfoto.cz.  
Photo (bottom) courtesy of Gustavo Duran, Encyclopedia of Life.

**Sea Grant**  
Pennsylvania  
[www.paseagrant.org](http://www.paseagrant.org)

Extension • Education • Research

*Pennsylvania Sea Grant* is a partnership of The Pennsylvania State University, The Commonwealth of Pennsylvania, and NOAA.

Penn State is an affirmative action, equal opportunity university.



Funded in part by PA DEP Coastal Resources Management Program, The U.S. Fish and Wildlife Service, and the Great Lakes Restoration Initiative

## HABITAT

Nutria have adapted to a wide range of habitats and are usually found living along lakes, marshes, slow-moving streams, and in freshwater, brackish, or saltwater marshlands. They tend to prefer habitats with an abundance of emergent vegetation and small trees, shrubs, and other succulent vegetation along the banks. In cities, nutria can be found under buildings, in overgrown lots, on golf courses, and in storm drains.



Photo of nutria footprint in mud courtesy of Steve Kendrot, USDA.

## IMPACTS

### *Threat to Biodiversity*

High populations of nutria can severely damage wetland ecosystems and native plant species. They feed predominantly on the base of plant stems, but dig for roots and rhizomes in the winter. This grazing can strip large patches of marsh, destroying the plants that hold together the marsh soils that sustain coastlines and support the survival of native species. In some cases, these resources are permanently damaged. The destruction of these marshlands also increases the vulnerability of adjacent upland sites to erosion and flooding during storms.

### *Economic Costs*

The burrowing behavior of nutria can weaken the foundation of important infrastructure such as reservoir dams, buildings, road beds, and flood control levees that protect low-lying areas. Grazing has damaged important economical crops such as sugarcane, rice, corn, and various kinds of fruits and vegetables, resulting in significant economic losses for farmers. Anglers and local industries also suffer when the degradation of wetland spawning areas results in decreased catches of shrimp, crab, and fish.

### *Health Risks*

Nutria can threaten public health and safety because they serve as hosts for several pathogens and parasites such as tuberculosis, septicemia, blood flukes, and tapeworms, which can contaminate drinking water supplies and swimming areas.

## PREVENTION & CONTROL

It is best to control nutria where they are concentrated and most active. While trapping, poisoning (currently zinc phosphide is the only chemical approved for nutria), and shooting are controversial, they offer direct methods of control. Indirect methods include enclosures like fences or walls, rodent repellents, seedling protection, and aromatic plantings. Intensive trapping is useful for removing nutria from localized areas, and when applied strategically, can eliminate populations across large areas provided the risk of reinvasion is manageable. However, due to low fur prices, recreational or commercial harvest is generally insufficient to exert population control.



Photo courtesy of Wikipedia.com.

### *References:*

United States Department of Agriculture: Wildlife Services. 2010. Nutria, and Invasive Rodent. Factsheet. <[http://www.aphis.usda.gov/publications/wildlife\\_damage/content/printable\\_version/fs\\_nutria10.pdf](http://www.aphis.usda.gov/publications/wildlife_damage/content/printable_version/fs_nutria10.pdf)>

Burk, P.W., Witmer, G.W., Jojola, S.M. and Nolte, D.L. 2008. Improving Nutria Trapping Success. Proceedings of the 23rd Vertebrate Pest Conference. San Diego, California. <<http://naldc.nal.usda.gov/download/23404/PDF>>

United States Geological Survey. 2000. Nutria, Eating Louisiana's Coast. Factsheet. <<http://www.nwrc.usgs.gov/factshts/020-00.pdf>>



## BROWN MARMORATED STINK BUG

*Halyomorpha halys*

### DISCLAIMER

The brown marmorated stink bug (BMSB), an insect not previously seen on our continent, was apparently accidentally introduced into eastern Pennsylvania. It was first collected in September of 1998 in Allentown, but probably arrived several years earlier. As of September 2010, *Halyomorpha halys* has been recorded from the following 37 counties, although it is probable that they are in all counties:

Adams, Allegheny, Armstrong, Beaver, Berks, Blair, Bucks, Butler, Cambria, Carbon, Centre, Chester, Clinton, Columbia, Cumberland, Dauphin, Delaware, Elk, Franklin, Indiana, Lackawanna, Lancaster, Lebanon, Lehigh, Luzerne, Mercer, Mifflin, Monroe, Montgomery, Northampton, Northumberland, Perry, Philadelphia, Pike, Snyder, Washington, Westmoreland and York

It is also recorded from many other states such as:

California, Connecticut, Delaware, Indiana, Kentucky, Maine, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, Washington, D.C. and West Virginia

Sightings have also been reported in the following states how-



Figure 1. Adult brown marmorated stink bug.

ever this is not to imply that there are reproducing populations in those states:

Alabama, Arizona, Colorado, Florida, Georgia, Illinois, Iowa, Michigan, Minnesota, Missouri, Nebraska, Vermont, Washington, and Wisconsin

This true bug in the insect family Pentatomidae is known as an agricultural pest in its native range of China, Japan, Korea and Taiwan. Recently, the BMSB has become a serious pest of fruit, vegetables and farm crops in the Mid-Atlantic region and it is probable that it will become a pest of these commodities in other areas in the United States.

BMSB becomes a nuisance pest both indoors and out when it is attracted to the outside of houses on warm fall days in search of protected, overwintering sites. BMSB occasionally reappears during warmer sunny periods throughout the winter, and again as it emerges in the spring.

### DESCRIPTION

Adults are approximately 17 mm long (25 mm = one inch) and are shades of brown on both the upper and lower body surfaces (Fig. 1). They are the typical “shield” shape of other stink bugs, almost as wide as they are long. To distinguish them from other stink bugs, look for lighter bands on the antennae and darker bands on the membranous, overlapping part at the rear of the front pair of wings. They have patches of coppery or bluish-me-



Figure 2. BMSB nymphs on Trumpet Creeper.

tallic colored punctures (small rounded depressions) on the head and pronotum. The name “stink bug” refers to the scent glands located on the dorsal surface of the abdomen and the underside of the thorax.

The eggs are elliptical (1.6 x 1.3 mm), light yellow to yellow-red with minute spines forming fine lines. They are attached, side-by-side, to the underside of leaves in masses of 20 to 30 eggs.

There are five nymphal instars (immature stages). They range in size from the first instar at 2.4 mm to the fifth instar that is 12 mm in length. The eyes are a deep red. The abdomen is a yellowish red in the first instar and progresses to off-white with reddish spots in the fifth instar. Protuberances are found before each of the abdominal scent glands on the dorsal surface. The legs, head and thorax are black. Spines are located on the femur, before each eye, and several on the lateral margins of the thorax (Fig. 2).

### LIFE HISTORY

This species probably has a single generation per year in Pennsylvania depending on the temperatures. Warm spring and summer conditions could permit the development of two or three generations. However, in parts of sub-tropical China, records indicate from four to possibly six generations per year. Adults will emerge sometime in the spring of the year (late April to mid-May), and mate and deposit eggs from May through August. The eggs hatch into small black and red nymphs that go through five molts. Adults begin to search for overwintering sites starting in September through the first half of October.

### DAMAGE

In its native range, it feeds on a wide variety of host plants. Fruits attacked include apples, peaches, figs, mulberries, citrus

fruits and persimmons. This true bug has also been reported on many ornamental plants, weeds, soybeans and beans for human consumption. Feeding on tree fruits such as apple results in a characteristic distortion referred to as “cat facing,” that renders the fruit unmarketable as a fresh product.



*Sweet Corn Damage*



*Peach Damage*



*Apple Damage*

This insect is becoming an important agricultural pest in Pennsylvania. In 2010, it produced severe losses in some apple and peach orchards by damaging peaches and apples. It also has been found feeding on blackberry, sweet corn, field corn and soybeans. In neighboring states it has been observed damaging tomatoes, lima beans and green peppers.

These insects are not known to cause harm to humans, although homeowners become alarmed when the bugs enter their homes and noisily fly about. The stink bug will not reproduce inside structures or cause damages. If many of them are squashed or pulled into a vacuum cleaner, their smell can be quite apparent.

### MANAGEMENT FOR BMSB IN HOMES

#### *Before Bugs Enter a Building*

Mechanical exclusion is the best method to keep stink bugs from entering homes and buildings. Cracks around windows, doors, siding, utility pipes, behind chimneys, and underneath the wood fascia and other openings should be sealed with good quality silicone or silicone-latex caulk. Damaged screens on doors and windows should be repaired or replaced.

Exterior applications of insecticides may offer some minor relief from infestations where the task of completely sealing the exterior is difficult or impossible. Applications should consist of a synthetic pyrethroid (i.e. deltamethrin, cyfluthrin, lambda-cyhalothrin, cypermethrin, sumithrin or tralomethrin) and should be applied by a licensed pest control operator in the fall just prior to bug congregation. Unfortunately, because insecticides are broken down by sunlight, the residual effect of the material will be greatly decreased and may not kill the insects much beyond several days or a week.

#### *After Stink Bugs Have Entered the Structure*

If numerous bugs are entering the living areas of the home, attempt to locate the openings where the insects gain access. Typically, stink bugs will emerge from cracks under or behind baseboards, around window and door trim, and around exhaust fans or lights in ceilings. Seal these openings with caulk or other suitable materials to prevent the insects from crawling out. Both live and dead stink bugs can be removed from interior areas with the aid of a vacuum cleaner - however, the vacuum may acquire the smell of stink bugs for a period of time.

It is not advisable to use an insecticide inside after the insects have gained access to the wall voids or attic areas. Although insecticidal dust treatments to these voids may kill hundreds of bugs, there is the possibility that carpet beetles will feed on the dead stink bugs and subsequently attack woolens, stored dry goods or other natural products in the home. Although aerosol-type pyrethrum foggers will kill stink bugs that have amassed on ceilings and walls in living areas, it will not prevent more of the insects from emerging shortly after the room is aerated. For this reason use of these materials is not considered a good solution to long-term management of the problem. Spray insecticides, directed into cracks and crevices, will not prevent the bugs from emerging and is not a viable or recommended treatment.

## **WARNING**

Pesticides are poisonous. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

©The Pennsylvania State University 2010  
Steve Jacobs Sr. Extension Associate  
Department of Entomology

PH-1

**Revised - October 2013**

This publication is available in alternative media on request.

Where trade names are used, no discrimination is intended and no endorsement by The Pennsylvania State University or Pennsylvania Department of Agriculture is implied.

Entomological Notes are intended to serve as a quick reference guide and should not be used as a substitute for product label information. Although every attempt is made to produce Entomological Notes that are complete, timely, and accurate, the pesticide user bears the responsibility of consulting the pesticide label and adhering to those directions.

Issued in furtherance of Cooperative Extension Works, Acts of Congress May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture and the Pennsylvania Legislature. D. Calvin, Director of Cooperative Extension, The Pennsylvania State University.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Bouke Building, University Park, PA 16802-5901, Tel 814-865-4700/V, 814-863-1150/TTY.

---

# Pest Alert

Animal and Plant Health Inspection Service  
Plant Protection and Quarantine

## Spotted Lanternfly (*Lycorma delicatula*)

The spotted lanternfly is an invasive pest, primarily known to affect tree of heaven (*Ailanthus altissima*). It has been detected on many host plants, including apples, plums, cherries, peaches, nectarines, apricots, almonds, and pine. It also feeds on oak, walnut, poplar, and grapes. The insect will change hosts as it goes through its developmental stages. Nymphs feed on a wide range of plant species, while adults prefer to feed and lay eggs on tree of heaven (*A. altissima*).<sup>1</sup> If allowed to spread in the United States, this pest could seriously harm the country's grape, orchard, and logging industries.

### Distribution and Spread

The spotted lanternfly is present in China, India, Japan, South Korea, and Vietnam. The insect was detected in Pennsylvania in September 2014. This was the first detection of spotted lanternfly in the United States.

Spotted lanternflies are invasive and can spread rapidly when introduced to new areas. While the insect can walk, jump, or fly short distances, its long-distance spread is facilitated by people who move infested material or items containing egg masses.

### Damage

Both nymphs and adults of spotted lanternfly cause damage when they feed, sucking sap from stems and leaves. This can reduce photosynthesis, weaken the plant, and eventually contribute to the plant's death. In addition, feeding can cause the plant to ooze or weep,



Adult spotted lanternfly

resulting in a fermented odor, and the insects themselves excrete large amounts of fluid (honeydew). These fluids promote mold growth and attract other insects.

### Description

Adult spotted lanternflies are approximately 1 inch long and one-half inch wide, and they have large and visually striking wings. Their forewings are light brown with black spots at the front and a speckled band at the rear. Their hind wings are scarlet with black spots at the front and white and black bars at the rear. Their abdomen is yellow with black bars. Nymphs in their early stages of

development appear black with white spots and turn to a red phase before becoming adults. Egg masses are yellowish-brown in color, covered with a gray, waxy coating prior to hatching.

### Life Cycle

The spotted lanternfly lays its eggs on smooth host plant surfaces and on non-host material, such as bricks, stones, and dead plants. Eggs hatch in the spring and early summer, and nymphs begin feeding on a wide range of host plants by sucking sap from young stems and leaves. Adults appear in late July and tend to focus their feeding on tree of heaven (*A. altissima*) and grapevine

<sup>1</sup> In Pennsylvania, adult spotted lanternflies have also been found feeding and egg laying on willow, maple, poplar, and sycamore, as well as on fruit trees, like plum, cherry, and peach.

(*Vitis vinifera*). As the adults feed, they excrete sticky, sugar-rich fluid similar to honeydew. The fluid can build up on plants and on the ground underneath infested plants, causing sooty mold to form.

## Where To Look

Spotted lanternfly adults and nymphs frequently gather in large numbers on host plants. They are easiest to spot at dusk or at night as they migrate up and down the trunk of the plant. During the day, they tend to cluster near the base of the plant if there is adequate cover or in the canopy, making them more difficult to see. Egg masses can be found on smooth surfaces on the trunks of host plants and on other smooth surfaces, including brick, stone, and dead plants.

## Report Your Findings

If you find an insect that you suspect is the spotted lanternfly, please contact your local Extension office or State Plant Regulatory Official to have the specimen identified properly.

To locate an Extension specialist near you, go to the U.S. Department of Agriculture (USDA) Web site at [www.nifa.usda.gov/Extension](http://www.nifa.usda.gov/Extension). A directory of State Plant Regulatory Officials is available on the National Plant Board Web site at [www.nationalplantboard.org/membership](http://www.nationalplantboard.org/membership).



Nymphs are black with white spots in early stages of development. (Credit: itchydogimages)



Nymphs turn red just before becoming adults. (Credit: itchydogimages)



Hatched and unhatched egg masses



Cluster of adults on the trunk of a tree at night

# CLEAN YOUR GEAR!

## Preventing the Spread of Aquatic Invasive Species in Pennsylvania



Photo courtesy of Rob Carr, Associated Press. Robert Cousins of Arlington, Va., scrubs his felt soled waders at a wader wash station before fishing for trout.



**STOP AQUATIC HITCHHIKERS!**<sup>TM</sup>

Prevent the transport of aquatic invasive species. Clean all recreational equipment.

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)

## TIPS FOR ANGLERS

*Recreational fishing provides both economic and social benefits to Pennsylvania. It is important that anglers take action to remove any “hitchhikers” from their equipment, boots, nets, clothing, and other gear that touched the water while fishing so that AIS are not spread to new locations.*

Aquatic invasive species (AIS) are non-native plants, animals, or pathogens that cause harm to the environment, the economy, and human or animal health. Preventing the spread of AIS is important because once introduced, these species disrupt ecosystems, reduce biodiversity, and cost communities huge amounts of time, money, resources, and lost revenue.

AIS pose a significant threat to recreational and commercial fishing. Native fish populations, including both prey and game fish, are negatively impacted by AIS because they compete for food, reduce spawning habitat, feed on young of year, and impact water quality. Some species can become a serious nuisance to anglers by fouling fishing lines and stealing bait. Aquatic invasive plants also impact fishing because they clog aquatic habitats, limit access to good fishing spots, and make navigation nearly impossible.

Because anglers often travel great distances to fish at different lakes and streams, unwanted species can be unintentionally transported and introduced. Hitchhikers can attach themselves to equipment, clothing, boots, and boats and move from lake to lake. Therefore it is important to become aware of this issue and understand how to prevent further spread. By following a few simple steps, anglers can play an active role in preventing the spread of AIS (see other side).

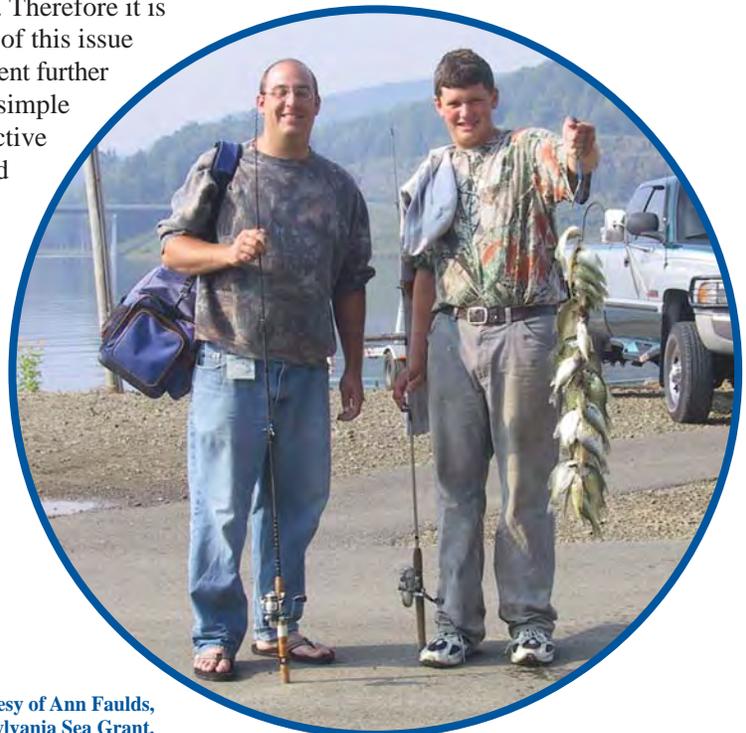


Photo courtesy of Ann Faulds, Pennsylvania Sea Grant.

## CHECK THESE AREAS:

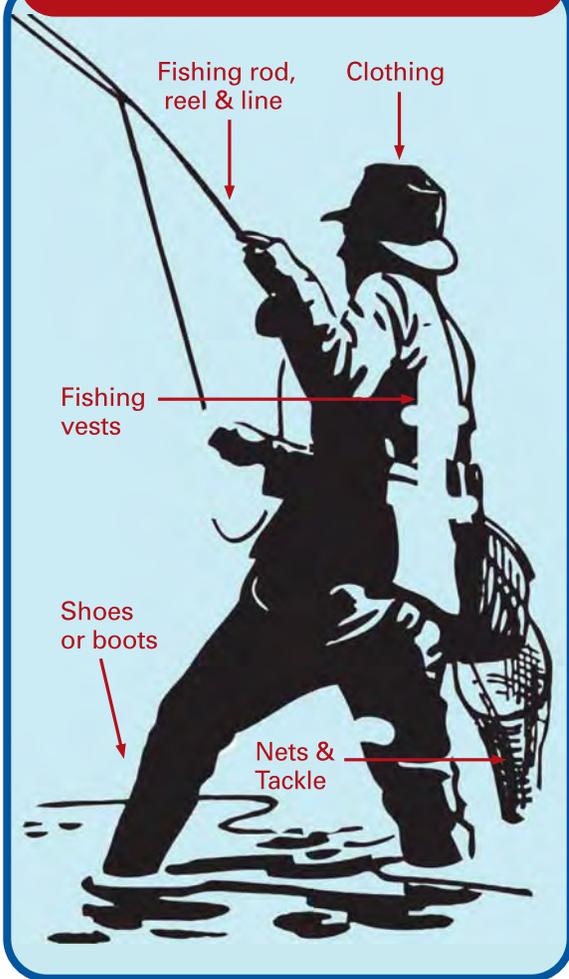


Diagram courtesy of the Aquatic Nuisance Species Taskforce's Recreational User Guidelines.

**Sea Grant**  
Pennsylvania  
[www.paseagrant.org](http://www.paseagrant.org)

Extension • Education • Research

Sea Grant is a partnership of  
The Pennsylvania State University,  
The Commonwealth of Pennsylvania,  
and NOAA.

Penn State is an affirmative action, equal  
opportunity university.



Funded in part by PA DEP Coastal Resources  
Management Program, the U.S. Fish and Wildlife Service,  
and the Great Lakes Restoration Initiative

## CLEAN

*Inspect and clean off* plants, animals, and mud from gear and equipment including waders, footwear, ropes, anchors, bait traps, downrigger cables, dip nets, fishing lines, and field gear *before leaving water access*.

*Scrub off* any visible material on footwear with a stiff brush.

## DRAIN

*Drain* water from watercraft, motor, bilge, bladder tanks, livewell and portable bait containers *before leaving water access*.

## DISPOSE

*Dispose* of unwanted bait, fish parts, and packing materials, in the trash; do not dump them in the water or on land.

## DRY

*Dry* everything *five days* or more, unless otherwise required by local or state laws, when moving between waters to kill small species not easily seen **OR** if drying is not possible, *wipe* with a towel *before reuse*.

*In addition to the steps above, anglers should:*

- Use non-felt soled boots instead of felt-soled footwear to further reduce the risk of spreading AIS.
- Never* release live fish, plants, or other organisms into a body of water unless they came from that body of water. Fish caught for eating or taxidermy should be cleaned away from the water and placed on ice.
- Dispose* of unwanted bait, fish parts, worms, and packing material in the trash; do not dump them in the water or on land.

## References and links to more information:

### Prevention steps for anglers:

Stop Aquatic Hitchhikers: [www.Protectyourwaters.net](http://www.Protectyourwaters.net)

### Additional recreational user guidelines:

[http://www.anstaskforce.gov/Meetings/2013\\_June/Recreational\\_Guidelines.pdf](http://www.anstaskforce.gov/Meetings/2013_June/Recreational_Guidelines.pdf)

### Where to report new invasive species infestations:

Sea Grant online reporting form: [www.paseagrant.org/report-invasive-species/](http://www.paseagrant.org/report-invasive-species/)

### Aquatic invasive species in Pennsylvania

Pennsylvania Sea Grant AIS fact sheets:

[www.paseagrant.org/fact\\_sheet\\_group/invasive-species/](http://www.paseagrant.org/fact_sheet_group/invasive-species/)

### Aquatic Invasive species mapping in Pennsylvania:

iMap Invasives: [www.imapinvasives.org/](http://www.imapinvasives.org/)

### Additional AIS information:

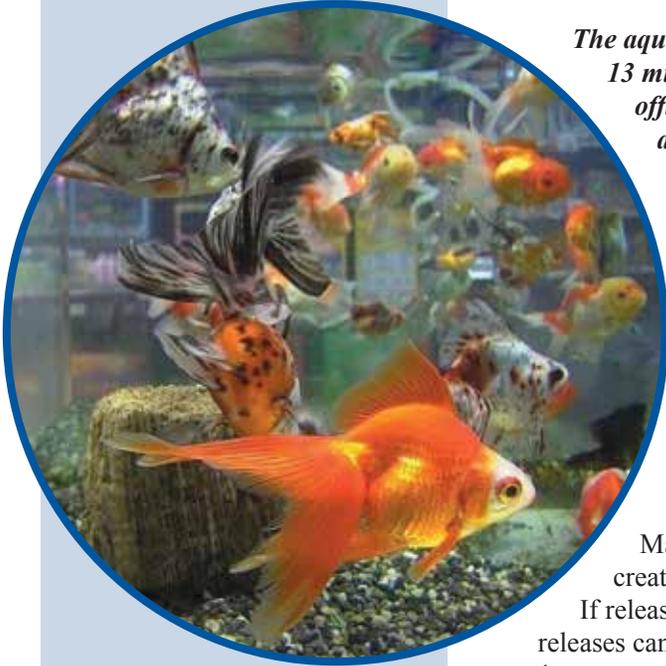
Pennsylvania Fish and Boat Commission: [www.fishandboat.com](http://www.fishandboat.com)

Wildlife Forever: [www.wildlifeforever.org/](http://www.wildlifeforever.org/)

# CLEAN YOUR GEAR!

## *Preventing the Spread of Aquatic Invasive Species in Pennsylvania*

Photo courtesy of Wikipedia Commons  
via Encyclopedia of Life.



### TIPS FOR AQUARIUM OWNERS

*The aquarium industry is a very popular hobby in the United States. More than 13 million households maintain aquariums, and businesses such as medical offices and restaurants can account for thousands more. However, when owners decide they no longer want, or can no longer take care of the animals and plants in their aquariums, species are often released into the natural environment where they can establish and become invasive. It is important that aquarium owners understand the impacts that AIS can have and take actions to ensure these plants and animals are disposed of in a proper manner and are never released into the natural environment.*

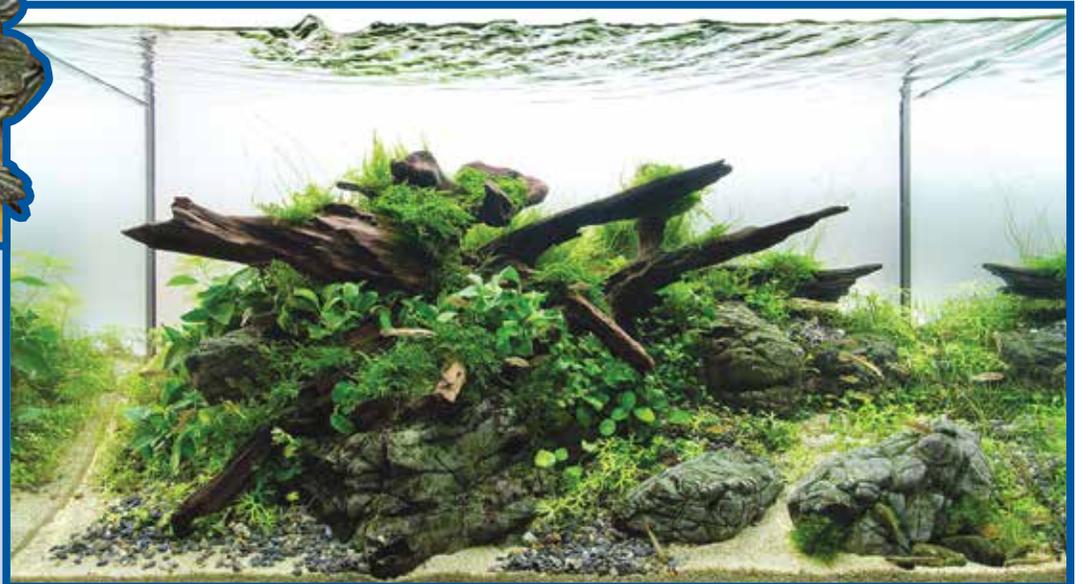
Aquatic invasive species (AIS) are non-native plants, animals, or pathogens that cause harm to the environment, the economy, and human or animal health. Preventing the spread of AIS is important because once introduced, these species disrupt ecosystems, reduce biodiversity, and cost communities huge amounts of time, money, resources, and lost revenue.

Many of the brightly colored and attractive fish, crustaceans, plants, and other creatures purchased for aquariums are exotic and not native to Pennsylvania. If released, they have the potential to become harmful invasive species. These releases can be intentional or unintentional. Unintentional introductions can occur if species escape and make their way into a water source. Intentional releases can occur if pet owners decide they can no longer care for their pets or plants, and think the most humane option is to release them into a local pond or river. Unfortunately, the intended good deed of releasing that species could have dire consequences for native species. Released species can often outcompete native species by altering the food chain and consuming valuable resources needed by native species. AIS also have negative impacts on water quality and have the ability to completely change the dynamics of natural ecosystems.



Photo courtesy of Wikipedia Commons  
via Encyclopedia of Life.

Photo courtesy of Local River  
via Wikimedia Commons.





**Habitattitude™**

PROTECT OUR ENVIRONMENT  
DO NOT RELEASE FISH AND AQUATIC PLANTS

PIJAC - U.S. FISH & WILDLIFE SERVICE - NOAA'S SEA GRANT  
[www.Habitattitude.net](http://www.Habitattitude.net)

Photo courtesy of Wikipedia Commons  
via Encyclopedia of Life.



Photo courtesy of Shawn McMahon,  
iNaturalist via Encyclopedia of Life.

**Sea Grant**  
Pennsylvania  
[www.paseagrant.org](http://www.paseagrant.org)

Extension • Education • Research

Sea Grant is a partnership of  
The Pennsylvania State University,  
The Commonwealth of Pennsylvania,  
and NOAA.

Penn State is an affirmative action, equal  
opportunity university.



**Great Lakes**  
RESTORATION

Funded in part by PA DEP Coastal Resources  
Management Program, the U.S. Fish and Wildlife Service,  
and the Great Lakes Restoration Initiative

Many aquarium species, such as goldfish, red-eared sliders, and numerous aquarium plants like Hydrilla and Brazilian waterweed have already made their way into Pennsylvania waters. National campaigns such as *Habitattitude™* provide alternatives for releasing unwanted aquarium pets and plants. By following these simple steps, aquarium owners can help prevent further release of these species and play an active role in preventing the spread of AIS.

## ALTERNATIVES TO RELEASE:

1. Contact a retailer for proper handling advice or for possible returns.
2. Give/trade with another aquarist, pond owner, or water gardener, or donate to a local aquarium society, school, or aquatic business. If your plant or animal finds a new home with one of these locations, be sure to emphasize “Don’t Release” into the environment.
3. Seal aquatic plants in plastic bags and dispose in trash. These materials should not be composted because their seeds and other plant parts may spread.
4. Contact a veterinarian or pet retailer for guidance about humane disposal of animals. Disposal of live organisms should be considered as the last resort.



Photo courtesy of Jon Sullivan, Biolib.cv via Encyclopedia of Life.



Photo courtesy of Pennsylvania Sea Grant.

### References and Links to more information:

#### Alternatives to Releasing Unwanted Aquarium Pets:

Habitattitude™: [www.habitattitude.net](http://www.habitattitude.net)

#### Where to report new invasive species infestations:

Sea Grant online reporting form: <http://www.paseagrant.org/report-invasive-species/>

#### Aquatic invasive species in Pennsylvania

Pennsylvania Sea Grant AIS fact sheets:

[http://www.paseagrant.org/fact\\_sheet\\_group/invasive-species/](http://www.paseagrant.org/fact_sheet_group/invasive-species/)

#### Aquatic invasive species mapping in Pennsylvania:

iMap Invasives: <http://www.imapinvasives.org/>

#### Additional AIS information:

Pennsylvania Fish and Boat Commission: [www.fishandboat.com](http://www.fishandboat.com)

Wildlife Forever: <http://www.wildlife-forever.org/>

# CLEAN YOUR GEAR!

## Preventing the Spread of Aquatic Invasive Species in Pennsylvania

### TIPS FOR BOATERS



Photo courtesy of Sara Gris -Stahlman, Pennsylvania Sea Grant.

*Recreational boating is one way that AIS are spread. Boats, motors, and trailers have ideal hiding spots where species may attach and be transported to new locations. Many of these species can survive out of water for five days or more!*

Aquatic invasive species (AIS) are non-native plants, animals, or pathogens that cause harm to the environment, the economy, and human or animal health. Preventing the spread of AIS is important because once introduced, these species disrupt ecosystems, reduce biodiversity, and cost communities huge amounts of time, money, resources, and lost revenue.

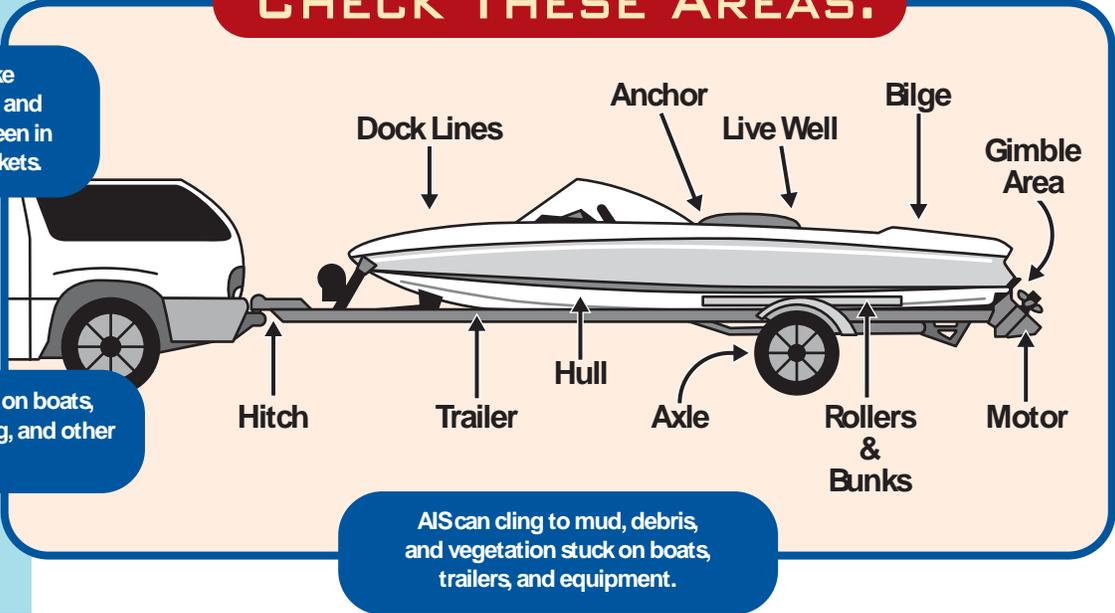
AIS can be especially troublesome to boaters because they negatively impact the rivers, ponds, lakes, and activities that boaters enjoy. Aquatic invasive plants, such as hydrilla, water chestnut, Eurasian watermilfoil, and curly-leaf pondweed form thick mats of vegetation that clog water bodies, impede navigation, and get tangled around boat propellers and other equipment. Invasive mussels like zebra and quagga mussels impact boating by clogging steering equipment and causing damage to boat engines.

While many species are large enough to see with the human eye, others are too small to be readily noticed, and can easily hitchhike to new locations on boats, trailers, motors, and in livewells, bilges, or bait buckets. By following a few simple steps, boaters can play an active role in preventing the spread of AIS (see other side).

### CHECK THESE AREAS:

Microscopic organisms like zebra mussel veligers, algae, and pathogens, can hitchhike unseen in bilges, livewells, and bait buckets

Aquatic plants entangle on boats, trailers, propellers, clothing, and other equipment.



AIS can cling to mud, debris, and vegetation stuck on boats, trailers, and equipment.

Diagram courtesy of the Aquatic Nuisance Species Taskforce's Recreational User Guidelines.



## STOP AQUATIC HITCHHIKERS!™

Prevent the transport of aquatic invasive species.  
Clean all recreational equipment.

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)



Extension • Education • Research

Sea Grant is a partnership of  
The Pennsylvania State University,  
The Commonwealth of Pennsylvania,  
and NOAA.

Penn State is an affirmative action, equal  
opportunity university.



Funded in part by PA DEP Coastal Resources  
Management Program, the U.S. Fish and Wildlife Service,  
and the Great Lakes Restoration Initiative

## CLEAN

### Boaters should:

*Inspect* and *clean off* visible aquatic plants, animals, and mud from watercraft, motor, trailer, and equipment *before leaving water access*.

*Scrub* hull using a stiff brush.

*Rinse* watercraft, trailer, and equipment with high pressure hot water when possible.

*Flush* motor according to owner's manual.

### Jet Boats and Personal Watercraft users should also:

*Inspect* and *clean off* visible aquatic plants, animals, and mud from hull, trailer, intake grate, and steering nozzle, etc.

*Run* engine 5-10 seconds to blow out excess water and vegetation from internal drive *before leaving water access*.

### Sailors should also:

*Inspect* and *clean off* visible aquatic plants, animals, and mud from the centerboard, bilge board wells, rudderpost, trailer, and other equipment *before leaving water access*.

## DRAIN

*Drain* water from watercraft, motor, bilge, bladder tanks, livewell, and portable bait containers *before leaving water access*.

## DRY

*Dry* everything *five days* or more, unless otherwise required by local or state laws, when moving between waters to kill small species not easily seen **OR** if drying is not possible, *wipe* with a towel *before reuse*.

### References and links to more information:

#### Prevention steps for boaters:

Stop Aquatic Hitchhikers: [www.Protectyourwaters.net](http://www.Protectyourwaters.net)

#### Additional recreational user guidelines:

[www.anstaskforce.gov/Meetings/2013\\_June/Recreational\\_Guidelines.pdf](http://www.anstaskforce.gov/Meetings/2013_June/Recreational_Guidelines.pdf)

#### Where to report new invasive species infestations:

Sea Grant online reporting form: [www.paseagrant.org/report-invasive-species/](http://www.paseagrant.org/report-invasive-species/)

#### Aquatic invasive species in Pennsylvania

Pennsylvania Sea Grant AIS fact sheets:

[www.paseagrant.org/fact\\_sheet\\_group/invasive-species/](http://www.paseagrant.org/fact_sheet_group/invasive-species/)

#### Aquatic Invasive species mapping in Pennsylvania:

iMap Invasives: <http://www.imapinvasives.org/>

#### Additional AIS information:

Pennsylvania Fish and Boat Commission: [www.fishandboat.com](http://www.fishandboat.com)

Wildlife Forever: [www.wildlifeforever.org/](http://www.wildlifeforever.org/)

# CLEAN YOUR GEAR!

## Preventing the Spread of Aquatic Invasive Species in Pennsylvania



### STOP AQUATIC HITCHHIKERS!™

Prevent the transport of aquatic invasive species. Clean all recreational equipment.

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)

## TIPS FOR RECREATIONAL DIVERS

*Divers can accidentally spread zebra mussels and other AIS when they get caught in the folds and seams of diving suits and can hitchhike in the nooks and crannies of equipment.*

Aquatic invasive species (AIS) are non-native plants, animals, or pathogens that cause harm to the environment, the economy, and human or animal health. Preventing the spread of AIS is important because once introduced, these species disrupt ecosystems, reduce biodiversity, and cost communities huge amounts of time, money, resources, and lost revenue.

Recreational diving is a popular activity that can be heavily impacted by unwanted AIS such as zebra and quagga mussels. Favorite underwater attractions become encrusted with thousands to millions of invasive mussels, making these destinations less desirable diving spots. Clearing of the water allows sunlight to penetrate deeper in the water column, causing overgrowth of aquatic plants that can decrease visibility and negatively impact water quality.

Scuba divers can unintentionally transport species between waters when they hitchhike on diving gear and equipment. All age classes, including the microscopic larvae (called veligers), can be transported this way so precautions should be taken to reduce the risk of moving AIS, especially when diving in different waters on the same or repeated days. By following a few simple steps, divers can play an active role in preventing the spread of AIS (see other side).



Photo courtesy of Ann Faulds, Pennsylvania Sea Grant.

### CHECK THESE AREAS:

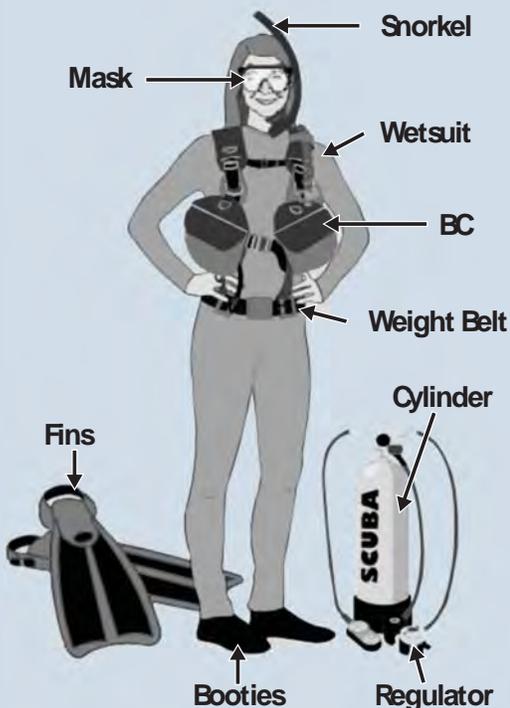


Diagram courtesy of the Aquatic Nuisance Species Taskforce's Recreational User Guidelines.



Photo courtesy of Ann Faulds, Pennsylvania Sea Grant.



Photo courtesy of Ann Faulds,  
Pennsylvania Sea Grant.

## CLEAN

*Inspect and clean off* visible plants, animals, and mud from wetsuit, dry suit, mask, snorkel, fins, buoyancy compensator (BC), regulator, cylinder, weight belt, watercraft, motor, and trailer *before leaving water access.*

*Soak* gear used in saltwater dives in 5% dishwashing liquid solution (1 cup/gallon), or gear used in freshwater dives in 3.5% salt solution, (½ cup/gallon) for 30 minutes. This method is most effective for zebra mussel larvae, but is also effective in treating other small AIS.

*Rinse* inside and outside of gear with hot water, when possible.

## DRAIN

*Drain* water from BC, regulator, cylinder boot, watercraft, motor, and any water containing devices *before leaving water access.*

## DRY

*Dry* everything *five days* or more, unless otherwise required by local or state laws, when moving between waters to kill small species not easily seen **OR** if drying is not possible, *wipe* with a towel *before reuse.*



Extension • Education • Research

Sea Grant is a partnership of  
The Pennsylvania State University,  
The Commonwealth of Pennsylvania,  
and NOAA.

Penn State is an affirmative action, equal  
opportunity university.



Funded in part by PA DEP Coastal Resources  
Management Program, the U.S. Fish and Wildlife Service,  
and the Great Lakes Restoration Initiative

### References and links to more information:

#### Prevention steps for divers:

Stop Aquatic Hitchhikers: [www.Protectyourwaters.net](http://www.Protectyourwaters.net)

#### Additional recreational user guidelines:

[http://www.anstaskforce.gov/Meetings/2013\\_June/Recreational\\_Guidelines.pdf](http://www.anstaskforce.gov/Meetings/2013_June/Recreational_Guidelines.pdf)

#### Where to report new invasive species infestations:

Sea Grant online reporting form: [www.paseagrant.org/report-invasive-species/](http://www.paseagrant.org/report-invasive-species/)

#### Aquatic invasive species in Pennsylvania

Pennsylvania Sea Grant AIS fact sheets:

[www.paseagrant.org/fact\\_sheet\\_group/invasive-species/](http://www.paseagrant.org/fact_sheet_group/invasive-species/)

#### Aquatic Invasive species mapping in Pennsylvania:

iMap Invasives: <http://www.imapinvasives.org/>

#### Additional AIS information:

Pennsylvania Fish and Boat Commission: [www.fishandboat.com](http://www.fishandboat.com)

Wildlife Forever: <http://www.wildlifeforever.org/>

# CLEAN YOUR GEAR!

## *Preventing the Spread of Aquatic Invasive Species in Pennsylvania*



### **STOP AQUATIC HITCHHIKERS!™**

Prevent the transport of  
aquatic invasive species.  
Clean all recreational equipment.

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)

## **TIPS FOR WATER GARDENERS**

*Water gardening is becoming an increasingly popular hobby and is one of the fastest growing branches of the aquarium trade. While water gardens are beautiful and promote feelings of serenity and calm, they can also represent troubled waters as invasive species can often appear and be accidentally spread by water gardening activities. It is important that water gardeners understand the impacts that AIS can have and take actions to ensure these species don't spread while still enjoying their hobby.*

Aquatic invasive species (AIS) are non-native plants, animals, or pathogens that cause harm to the environment, the economy, and human or animal health. Preventing the spread of AIS is important because once introduced, these species disrupt ecosystems, reduce biodiversity, and cost communities huge amounts of time, money, resources, and lost revenue.

Invasive plants, snails, and fish often make attractive additions to water gardens; however, if released, they can become a huge problem. These species are often readily available for purchase at local retail outlets, by delivery from online sources, or hitchhike in the packing material, soil, or water accompanying your purchase. Unintentional introductions become more likely if a water garden is built near a natural body of water. Extreme weather events, such as heavy storms and flooding, can spread species as high waters and winds can carry plant fragments, debris, seeds, and even the species themselves to neighboring waterways.

Invasive species are typically hardier, grow faster, reproduce often, and can outcompete native species and cause harm to ecosystems and the food web, and therefore should never be disposed of or released into a natural water system.

Water gardeners can unintentionally spread AIS when they 1) unknowingly purchase an invasive species from retail stores; 2) build water gardens too close to a natural waterway, or 3) dispose of aquatic plants by releasing them into a natural waterway. By following a few simple steps, water gardeners can play an active role in preventing the spread of AIS (see other side).



Photo courtesy of  
Darrell Rhoades, WhatPond.com.



Photo courtesy of Greg Hitzroth,  
Illinois-Indiana Sea Grant.

## WHEN CONSTRUCTING A NEW WATER GARDEN:

**Choose** a location away from natural waterways and flood-prone areas. *This will help ensure that the plants and animals in the water garden will not be carried into local streams, ponds, or lakes as a result of heavy rainfall.*

## WHEN ADDING PLANTS:

**Purchase** from licensed nurseries. Many jurisdictions require that the license be posted. If the license isn't clearly visible, ask an employee about their licensing.

**Choose** regionally-native or non-invasive plants. *This will reduce the amount of plant-removal (i.e., weeding) needed to maintain the garden while also reducing the risk to nearby waterways should any plants be moved by wind, animals, flooding, etc.*

**Check** with your state natural resource agency to confirm which plants to avoid for your region. *Many states maintain regulated invasive species lists.*

**Rinse** plants in a bucket before planting. Remove all dirt and any attached debris including other vegetation, animals, or eggs before planting; dump bucket water on dry land. Strain debris from water before dumping and dispose of debris in a plastic bag. *This will help keep unwanted plants and animals from being accidentally introduced into the water garden, and keep these same organisms out of storm drains that might lead to natural waterways.*

## WHEN DOING MAINTENANCE:

**Check** that the water garden remains isolated from natural waterways and areas that flood. *If this is not the case, the above recommendations regarding plant choice and rinsing are even more critical; installation of standard landscape water diverting structures (i.e., water bars, swales) or relocation of the water garden should be considered.*

**Remove** uninvited plants that colonize your pond. *A plant that moves into your pond and becomes established is likely an invasive species. It should be removed and disposed of properly (see below).*

**Freeze** unwanted plants in a sealed plastic bag and dispose in the trash. *Unwanted plants should not be composted because their seeds and other reproductive plant parts may remain viable.*

**Find** a new home for unwanted fish such as a pet retailer, animal shelter, or other water gardener. *If your animal finds a home with another water gardener, make sure that it won't be released into the environment in the future. If euthanasia is an option, consult with a veterinarian.*

## References and Links to more information:

### Prevention steps for water gardeners:

[http://anstaskforce.gov/Documents/ANSTF\\_Water\\_garden\\_steps\\_Final%20Draft.pdf](http://anstaskforce.gov/Documents/ANSTF_Water_garden_steps_Final%20Draft.pdf)

### Where to report new invasive species infestations:

Sea Grant online reporting form: <http://www.paseagrant.org/report-invasive-species/>

### Aquatic invasive species in Pennsylvania

Pennsylvania Sea Grant AIS fact sheets: [http://www.paseagrant.org/fact\\_sheet\\_group/invasive-species/](http://www.paseagrant.org/fact_sheet_group/invasive-species/)

### Aquatic invasive species mapping in Pennsylvania:

iMap Invasives: <http://www.imapinvasives.org/>

### Additional AIS information:

Pennsylvania Fish and Boat Commission: [www.fishandboat.com](http://www.fishandboat.com)

Wildlife Forever: <http://www.wildlifeforever.org/>



Photos courtesy of Greg Hitroth,  
Illinois-Indiana Sea Grant.



**Sea Grant**  
Pennsylvania  
[www.paseagrant.org](http://www.paseagrant.org)

Extension • Education • Research

Sea Grant is a partnership of  
The Pennsylvania State University,  
The Commonwealth of Pennsylvania,  
and NOAA.

Penn State is an affirmative action, equal  
opportunity university.



Funded in part by PA DEP Coastal Resources  
Management Program, the U.S. Fish and Wildlife Service,  
and the Great Lakes Restoration Initiative

# CLEAN YOUR GEAR!

## Preventing the Spread of Aquatic Invasive Species in Pennsylvania



### STOP AQUATIC HITCHHIKERS!™

Prevent the transport of aquatic invasive species. Clean all recreational equipment.

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)

Photo courtesy of Ed Lewandowski, Delaware Sea Grant.

Photo courtesy of William Stanell, Ducks Unlimited website.

## TIPS FOR WATERFOWL HUNTERS

*Waterfowl hunting is a popular pastime for many Pennsylvanians, and hunting activities contribute significantly to the recreational economy. However, aquatic invasive species (AIS) like Eurasian watermilfoil and zebra mussels can threaten habitat for waterfowl and other wildlife. Hunters should take precautions to ensure they don't spread plants and animals that can be accidentally transported on duck boats, blind material, and hunting gear.*

Aquatic invasive species (AIS) are non-native plants, animals, or pathogens that cause harm to the environment, the economy, and human or animal health. Preventing the spread of AIS is important because once introduced, these species disrupt ecosystems, reduce biodiversity, and cost communities huge amounts of time, money, resources, and lost revenue.

Photo courtesy of Ed Lewandowski, Delaware Sea Grant.



Many people associate the threat of spreading AIS with activities such as boating and fishing; however, hunters are also at risk of moving aquatic invaders from one water body to another. Once introduced, AIS can negatively impact waterfowl habitat by degrading water quality, replacing native plants that waterfowl use for food and breeding sites, and disturbing the food chain. AIS have also been blamed for severe die-offs of fish-eating waterfowl in Lake Erie because invasive mussels and round gobies may move the Type E botulism toxin up the food chain to birds where it can cause death.

Hunters often travel to multiple swamps, creeks, and rivers each season and from day to day. AIS can hitchhike in the mud, water, and plant debris that can collect on boats, decoys, waders, boots, clothing, and even hunting dogs. When not in blinds, hunters often brush themselves in and hide gear in the surrounding vegetation. Even a single fragment of some kinds of vegetation could start a new population if spread to a different water body. By following a few simple steps, waterfowl hunters can play an active role in preventing the spread of AIS (see other side).



Photo courtesy of Jerry Leisle, Ducks Unlimited website.



Photo courtesy of Ed Lewandowski, Delaware Sea Grant.

## CLEAN

*Inspect and clean off* visible plants, animals and mud from waders, hip boots, watercraft, motor, trailer, ATV's, push poles, decoys, decoy lines and anchors *before leaving area.*

*Brush* hunting dogs and rinse kennels with tap water.

## DRAIN

*Drain* water from watercraft, motor, bilge and other water containing devices *before leaving water access.*

## DRY

*Dry* everything *five days* or more, unless otherwise required by local or state laws, **OR wipe** with a towel *before reuse.*

## CHECK THESE AREAS:



Diagram courtesy of the Aquatic Nuisance Species Taskforce's Recreational User Guidelines.

### References and links to more information:

#### Prevention steps for waterfowl hunters:

Stop Aquatic Hitchhikers:  
[www.Protectyourwaters.net](http://www.Protectyourwaters.net)

#### Additional recreational user guidelines:

[www.anstaskforce.gov/Meetings/2013\\_June/Recreational\\_Guidelines.pdf](http://www.anstaskforce.gov/Meetings/2013_June/Recreational_Guidelines.pdf)

#### Where to report new invasive species

Sea Grant online reporting form:  
[www.paseagrant.org/report-invasive-species/](http://www.paseagrant.org/report-invasive-species/)

#### Aquatic invasive species in Pennsylvania

Pennsylvania Sea Grant AIS fact sheets:  
[www.paseagrant.org/fact\\_sheet\\_group/invasive-species/](http://www.paseagrant.org/fact_sheet_group/invasive-species/)

#### Aquatic Invasive species mapping in Pennsylvania:

iMap Invasives: [www.imapinvasives.org/](http://www.imapinvasives.org/)

#### Additional AIS information:

Pennsylvania Fish and Boat Commission: [www.fishandboat.com](http://www.fishandboat.com)

Wildlife Forever: [www.wildlifeforever.org/](http://www.wildlifeforever.org/)

#### In addition to the steps above, hunters should:

- Use non-felt soled boots to further reduce the risk of spreading AIS.
- Cut emergent vegetation above waterline for blinds or camouflage in accordance with regulations.
- Use elliptical and bulb-shaped anchors to help avoid snagging aquatic plants.
- Pick up shotgun hulls after shooting and dispose of them properly. Spent hulls can transport AIS if left to float around aquatic ecosystems.



Photo courtesy of J. Rawlings, Ducks Unlimited website.

**Sea Grant**  
 Pennsylvania  
[www.paseagrant.org](http://www.paseagrant.org)

Extension • Education • Research

Sea Grant is a partnership of  
 The Pennsylvania State University,  
 The Commonwealth of Pennsylvania,  
 and NOAA.

Penn State is an affirmative action, equal opportunity university.



**Great Lakes RESTORATION**

Funded in part by PA DEP Coastal Resources Management Program, the U.S. Fish and Wildlife Service, and the Great Lakes Restoration Initiative