

Invader Inspectors

Teaching kids how to protect our waters through learning about and inspecting for Aquatic Invasive Species

Aquatic invasive species (AIS) can be animals, plants or microbes. They create devastating, irreversible impacts to the environment and the economy once introduced. The direct and indirect impacts of AIS are felt by everyone, not just by boaters and anglers. There is usually no solution for dealing with an invasive species after it is established in the wild, so the most important thing we can do is to prevent introduction. This activity helps students to understand the problems that AIS cause, how they become introduced, and how to inspect fishing and boating gear to stop introductions of AIS.

To cut down on AIS movement, state and federal agencies have begun to conduct boat/trailer inspections at boat launches. Inspections are also taking place at state border crossings and at agriculture check stations. These inspections not only look for AIS hitchhikers on boat hulls and motors, but also search for AIS in live wells, bilge water, boat trailers, and bait buckets.

The Invader Inspectors activity brings to light the importance of inspecting fishing gear, boats, waders, trailers, and other water craft in a fun and informative way. Upon completion of the Invader Inspectors activity students will gain knowledge of what AIS are, the problems they cause, how they are distributed, how to inspect fishing and boating gear for AIS and how they can take personal action to preventing spread.

Invader Inspectors

– An Aquatic Invasive Species Inspection Activity

Objective: To provide students with information on aquatic invasive species (AIS), the threats they pose to aquatic environments, how they are introduced and spread and what we can all do to prevent their spread. The basic concept of inspect, clean and dry as a way to prevent AIS introduction is the primary take-home message.

Background: The direct and indirect impacts of AIS are felt by everyone, not just by boaters and anglers. AIS can cause significant ecological and economic damage once established. They impact entire aquatic food webs, agriculture, hydropower, industry and municipalities. There is often no solution for dealing with AIS after it is established in the wild, so the most important thing we can do is to prevent introduction. This activity is meant to illustrate to students how AIS are spread through recreational boating and fishing and how we can stop their spread by inspecting, cleaning and drying our boats and fishing gear after each outing. Students will come away from this activity with a basic knowledge of what AIS are, how they are transported via angling and boating and what they can do to help prevent spreading AIS. For more information regarding AIS please visit <http://www.stopans.org/aboutANS.htm>.

Overview: This activity is meant to show how AIS are spread through recreational boating and angling. Most AIS introductions are the result of accidental movement by recreationists and it is important that we teach people how to avoid this transport. Boat inspections have become a major tool of agencies to protect our waters and in many places boats are routinely inspected before they can launch. This activity teaches children how to inspect their equipment by having them actually inspect boats and fishing gear that has been prepared with simulated AIS.

This activity works well at events like watershed festivals, outdoor science days, or for on-site school/classroom visits. This activity can be used with groups of all sizes (see special directions for larger groups later in the document). The AIS activity works well in a 40 minute time frame, but can be adapted to work in a shorter amount of time.

This activity uses wading gear (hip boots, waders, wading boots) and boats/watercraft (drift boats, rafts, personal watercraft, jet skis, canoes, runabouts, boat trailers, etc.) as props for the activity.

This activity is best conducted outside, but will also work inside a gymnasium on a rainy day. The facilitator should be sure to make rainy day arrangements prior to arrival. The facilitator should arrange for boats/watercraft well in advance of the activity.

Materials: The amount of materials needed for the activity is dependent on the number of students there are. Large groups (over 30) may require as many as four different watercraft for inspection (keep in mind these can be as simple as a float tube) along with waders, and wading boots. This allows all students to have a part in inspection. Smaller groups may only require one watercraft along with the wading gear. It is recommended that you use as many different items as possible for inspection to help the students understand the different ways that AIS are spread.

Here is a list of materials needed for the activity

Boats and watercraft

ATV's, mountain bikes, dogs, inner tubes

Plastic aquarium plants (to represent AIS that are plants)

Small Felt pads (different colors) - purchased at any hardware store

Small Vinyl bumpers –purchased at any hardware store

8' Table for brochures, handouts, supplies, etc

Paper weights

Waders

Wading boots

Posters or preserved samples of ANS

Inspection form

Documentation form

Evaluation forms

Set up: Place felt pads where AIS would normally hitchhike on wading gear and boat (hull, and submerged part of the motor). Place plastic plants in place where Eurasian water milfoil (or other invasive vegetation) would hitchhike (trailer, fenders, intake of jet ski, boat propeller/lower unit). Consider using clear vinyl bumpers to represent the things we cannot see but can feel like newly attached zebra/quagga mussels. Foam pads come in green, tan and dark brown. Using different color pads can be used to represent any type of invader that is stuck to a water craft and wading gear in a generic fashion. Or, they can represent specific AIS like green=plants, brown=mussels, tan=microbes (like whirling disease or viral hemorrhagic septicemia).

Procedure:

10 minutes – A brief lecture as an introduction to AIS is a good first step. Include where they come from, how they get here, how they are spread, threats they pose, and mention the species that are of local concern. Be sure to mention what we can do to stop AIS spread by *Inspecting, Cleaning and Drying* your fishing gear and boat/trailer. Consider including ways or equipment that kids could come across invasive species if they do not participate in recreation activities like boating or angling.

20-25 minutes - Inspection of gear, watercraft and trailers. The instructor will use a combination of felt pads and vinyl bumpers, and plastic aquarium plants to act as invasive species. Prior to beginning the activity, these AIS pieces will be placed in a variety of spots on equipment for the students to inspect. When placing the AIS pieces consideration should be made to where AIS would normally hitchhike. Tell the students the felt pads and vinyl bumpers represent different things – for example: vinyl bumper is a mussel, green felt is algae, plastic plants are milfoil, include gimmick of rubber critter at the end. The AIS pieces can also be used generically and not made to specifically represent any one type of AIS. Put a puddle of water in boat to act as possible place that holds AIS. Select student volunteers to inspect equipment carefully with other students

observing the inspection. During inspection, reinforce idea of using eyes and hands for searching.

5-10 minutes- Facilitator can review or recap the information given in the lecture and inspection portion of the activity. This can be done via a series of questions that come directly from the information covered. Little prizes for correct answers is a good way to gain attention.

Suggestions: For a smooth running activity one suggestion would be to break the group into inspection teams. For example: One team to inspect the wading gear, one team to inspect watercraft A, one team to inspect watercraft B, etc. While not part of active inspection the rest of the group can watch and critique the inspecting team. This will also assure that all students take part in an inspection and help to keep order.

Note: *Be sure to do a brief evaluation of how well the students inspected each item at the end of each inspection. Have the students who are observing and waiting their turn to be inspectors critique the job the inspectors are doing. Be sure the inspectors are using the senses of sight and feel to find ANS.*

Modification Suggestions

Suggested equipment stations for inspection: waders or boots, pontoon boats, jet skis, drift boats, trailers, motor boats, four-wheelers, and tractors. Inspection stations could be set up to be boats only, or waders only.

If you have limited time:

- focus on general information about invasive species rather than individual species
- do inspections on appropriate number of equipment or vehicles

If you have unlimited time:

Depending on the size of the group, students could have inspection checklist that goes through parts of the boat that associates to a map of known invaders on the gear. Instructor would have a map that indicated the places where invasive species are on the boat. Inspectors can then be checked for thoroughness.

As follows is a sample activity for a group of 20 students.

Round One: Inspection of wading gear. (5 inspectors – 5 minutes)

Prior to activity felt pads and vinyl bumpers to represent AIS should be placed in common ANS hitchhiking areas including the soles of the boots, laces, tongue, outside of the boot and under the insole.

Students will have a background on inspection and AIS from the brief lecture at the beginning of the lesson. Using that knowledge student inspectors will search the waders, wading boots and hip boots for AIS hitchhikers (felt pads and vinyl bumpers). While one team inspects the rest of the group watches quietly and will have a chance to critique after the inspection finishes.

Note: Tell the students not to remove the felt pads, and vinyl bumpers...just to locate them.

Round Two: Inspection of watercraft without motor (5 inspectors – 5 minutes)

Watercraft can be: Canoes, float tube, rowboat, pontoon boat, sailboard, kayak, etc.

Set up is the same as round one. Facilitator should place the AIS on the boat prior to the activity. The second group will inspect the watercraft using the knowledge they acquired during the lecture. The other participants will observe and critique after the team has finished.

Round Three and Four: Inspection of trailered water craft. (5 inspectors – 5 minutes)

Watercraft can be drift boats, jet ski, raft, boat with outboard motor. AIS can be placed on the trailer, in the boat, on the hull, on the anchor, live well, or in a puddle of water signifying the need to dry boats and fishing gear. These stations run the same as the previous with the students who are not inspectors watching the inspection and critiquing afterward.

Extensions:

Social studies extension: What if AIS replaced native species? What would happen to the economy? What effects would it have on aquatic life? What effects could it have on agriculture, hydropower, tourism or municipalities?

Math: Teachers could implement math to show ANS spread.

Example: If invasive New Zealand mud snail populations can potentially spread to 200,000 per square meter, how many would be in creek bottom that is 18.25 meters wide by 234 meters long?

Stream Monitoring: Students can do weekly assessments temperature, pH, oxygen levels, nitrates, macro invertebrate densities, and AIS monitoring. This is a fun and ongoing class activity.

This game was developed by the Center for Aquatic Nuisance Species. Please feel free to call or email with questions.

www.stopans.org
matt@stopans.org

406-222-7270

Background Information for Aquatic Invasive Species

Aquatic invasive species (AIS) can be plants, animals or microbes and are generally non-native (invasive). They often have a competitive advantage over native species. By outcompeting or replacing native species, AIS can cause widespread ecological and economic problems

Typically, AIS are inadvertently introduced but may also be from intentional introduction. Once introduced AIS are impossible to eradicate. AIS are successful in foreign environments because there is usually an absence of animals that eat them, and diseases that kill them like in their native habitat. AIS are spread mostly by human activity including boating, fishing, hunting, and irrigating.

Many AIS are native to Eurasia which encompasses the geographic region of Europe and Asia. Many AIS made their way to the U.S. in the ballast water of large ocean freighters. Many AIS were introduced into the Great Lakes. From there they spread to other waters via recreational watercraft.

Zebra and Quagga mussels reach incredible densities and will attach themselves to any hard surface. They are filter feeders and when populations get out of control they can rob the water of essential nutrients that native macro-invertebrates rely on.

Didymo (rock snot) is a single cell algae. It reproduces very quickly to blanket stream/river bottoms suffocating the benthic macro-invertebrate population. Didymo infestations have been linked to significant fish population declines.

Eurasian Milfoil is a plant that forms dense mats that clog waterways and crowd out native aquatic plants. It is spread easily through fragments. It can stay alive as long as it stays moist.

Viral Hemorrhagic Septicemia (VHS) is a virus that kills fish. VHS can be transmitted in one drop of water. Infected fish can spread the virus as well. VHS can live up to two weeks in water that contains bait, boat bilge, and live wells. There is no cure for VHS and it has led to large fish kills in the Great Lakes.

Ecological impacts of AIS include displacement of native species, environmental degradation, and disruption of food webs and nutrient cycles.

Economic effects include impacts on agriculture, hydropower and municipalities. Degraded environments will result in less tourism, angling and other recreational use of our waters. Costs of mitigating for introductions, and monitoring species may be very significant for industry and agriculture.

What Can We Do About AIS? Aquatic invasive species are nearly impossible to eradicate once they are established. Preventing introduction is the only effective method

of combating the threat. Prevention can only succeed if the entire public is invested in the prevention effort.

Inspect – Clean – Dry your gear every time you go fishing or boating.

- Use water only – No Chemicals
- Nothing special to remember
- No special equipment needed
- Cheap, Easy and Available to Everyone!

For more information and links regarding AIS please visit our website at www.stopans.org