Most Unwanted AIS Poster

AIS Mini-Poster Project

PROJECT CHALLENGE: Design your own “MOST UNWANTED AIS” poster for an aquatic invasive species that is a threat to Montana lakes, rivers, ponds, and streams.

FIRST: Select ONE of the following to research. Check the box for the topic you selected.

- Asiatic clam (*Corbicula fluminea*)
- Chinese mystery snail (*Cipangopaludina chinensis*)
- New Zealand Mudsnail (*Potamopyrgus antipodarum*)
- Quagga Mussel (*Dreissena roestiformis bugensis*)
- Red-rim melania (*Melanoides tuberculatus*)
- Zebra mussel (*Dreissena polymorpha*)
- Virile crayfish (*Orconectes virilis*)
- Bloody red shrimp (*Hemimysis anomala*)
- Red swamp crayfish (*Procambarus clarkii*)
- Rusty crayfish (*Orconectes rusticus*)
- Spiny waterflea (*Bythotrephes longimanus*)
- Bighead carp (*Hypophthalmichthys nobilis*)
- Asian swamp eel (*Monopterus albus*)
- American Bullfrog (*Lithobates catesbeianus*)
- Northern pike (*Esox lucius*)
- Northern snakehead (*Channa argus*)
- Snapping turtle (*Chelydra serpentina*)
- Brazilian waterweed (*Egeria densa*)
- Curly-leaf pondweed (*Potamogeton crispus*)
- Didymo (*Didymosphenia geminata*)
- Eurasian watermilfoil (*Myriophyllum spicatum*)
- Flowering rush (*Butomus umbellatus*)
- Hydrilla (*Hydrilla verticillata*)
- Parrot Feather Water-milfoil (*Myriophyllum aquaticum*)
- Yellowflag iris (*Iris pseudacorus*)
- Starry stonewort (*Nitellopsis obtusa*)

SECOND: Research your AIS topic, complete the AIS Poster Research Guide worksheet, and create a mini-poster on an 8.5” x 11” paper or Google Slide. Please include the following:

- **Common name** of the organism (and scientific name if it has one).
- **Mug shot** – A photo, which must be properly cited (see example below), or draw a sketch.
- **What to Look For** – Physical appearance and any other distinguishing characteristics.
- **Modus operandi** – Police jargon for “mode of operation.” What physical, chemical, and/or behavioral traits make it an invasive species.
- **Last Known Location** - Last know locations? Where could it be found in Montana?
- **Hide out** – What is its preferred habitat?
- **Armed and dangerous?** – How so? How does it harm the environment and/or economy?
- **Tips for capture** – Suggest weapons that can be used against it, as well as, ways to detect and prevent it.
- **Contact** – An agency or appropriate authority to contact if organism is found.
- **Miscellaneous** – At least two other unique facts that could help lead to its capture.

THIRD: Create a **Poster Reference List**

- At least **two sources** (ex. a website, book, or encyclopedia, etc.).
- Source material MUST have an author’s name or be from a reliable organization (.gov, .org, or .edu), otherwise do NOT use it.
- A.P.A. formatted. See provided formatting guide.
- Alphabetized.
- You must submit it separately from your poster.
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**LAST:** Review your poster to make sure the following criteria are met:
- Typed OR neatly hand written.
- Limit the number of words. Not too wordy, nor too sparse!
- ‘Wow’ factor that engages the viewer and helps them to learn about your AIS topic!
- ‘Mug shot’ is sketched, or copied and pasted from the web source (but make sure you cite the source directly beneath the image and include the source in your Reference List).

**Poster Grading Rubric**
Use the following rubric as a guide as you complete your poster.

<table>
<thead>
<tr>
<th>Content</th>
<th>Exceeds</th>
<th>Meets</th>
<th>Does Not Meet</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Common and scientific name included</td>
<td>□ Common name included</td>
<td>□ Organism name not included</td>
<td></td>
</tr>
<tr>
<td>□ Mugshot clearly depicts the organism</td>
<td>□ Mugshot is included but the organism is difficult to see</td>
<td>□ Mugshot was either inaccurate or not included</td>
<td></td>
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<tr>
<td>□ Physical appearance and distinguishing traits are clearly identified in detail</td>
<td>□ Physical appearance described</td>
<td>□ Physical appearance vague or inaccurate</td>
<td></td>
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<tr>
<td>□ Explains in detail why the species is invasive</td>
<td>□ Briefly explains why the species is invasive</td>
<td>□ Invasive traits unclear</td>
<td></td>
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<tr>
<td>□ Hide out clearly identified</td>
<td>□ Hide out identified</td>
<td>□ Hide out not identified</td>
<td></td>
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<tr>
<td>□ Impacts to the environment and economy described in detail</td>
<td>□ Provides potential impacts</td>
<td>□ Impacts unclear</td>
<td></td>
</tr>
<tr>
<td>□ Accurate tips for detection and/or prevention provided</td>
<td>□ Minimal tips for detection and/or prevention provided</td>
<td>□ Detection and/or prevention tips not included</td>
<td></td>
</tr>
<tr>
<td>□ Contact listed</td>
<td>□ Contact listed</td>
<td>□ Contact not listed</td>
<td></td>
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<tr>
<td>□ Three or more unique facts included</td>
<td>□ Two unique facts included</td>
<td>□ Unique facts not included</td>
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<tr>
<td>□ Typed or artistically hand-written</td>
<td>□ Neatly hand-written</td>
<td>□ Writing messy or unclear</td>
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</tr>
<tr>
<td>□ Poster design elicits a ‘WOW’</td>
<td>□ Basic poster design</td>
<td>□ Text is too unclear</td>
<td></td>
</tr>
<tr>
<td>□ Text is not too wordy or sparse</td>
<td>□ Text is too wordy</td>
<td>□ Text is too sparse</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reference List</th>
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<th>Meets</th>
<th>Does Not Meet</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Three or more reliable sources provided in correct A.P.A format</td>
<td>□ Two sources provided in A.P.A. format</td>
<td>□ Less than two sources provided or not in A.P.A format</td>
<td></td>
</tr>
<tr>
<td>□ Mugshot properly cited and included in reference list</td>
<td>□ Mugshot cited and included in reference list</td>
<td>□ Mugshot not cited</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**
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AIS Poster Research Guide

Online resources that you may use to find information about your AIS topic:
- Yellowstone Coordinating Committee Aquatic Invasive Species Pocket Guide: [https://docs.wixstatic.com/ugd/a0f00b_398521b0c8fc42acbc1226ea9c7a3110.pdf](https://docs.wixstatic.com/ugd/a0f00b_398521b0c8fc42acbc1226ea9c7a3110.pdf)

Complete the following as you research your AIS topic:

**Common name:** __________

**Scientific name:** __________

**Mug shot** (Find a photo or create a sketch) Source/website: __________

**Physical Description:** __________

**Other distinguishing (unique) characteristics:** __________

**Modus operandi** (what makes it invasive): __________

**Who/what it associates with:** __________

**Armed and dangerous?**

**How it harms the environment:** __________

**How it harms the economy:** __________

**Where it is found in Montana:** __________

**Hide out** (preferred habitat): __________

**Tips for capture:** Weapons that can be used against it, as well as, ways to detect and prevent it: __________

**Contact if found:** __________

**Miscellaneous** (At least two other unique facts that could help lead to its capture):
1. __________
2. __________

**References** (record the websites that you get information from):
__________
__________
__________

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A.P.A Referencing Guide
What follows is how to cite the most commonly used sources in APA format and how to make an in-text citation for each example.

**Website:**
Author last name, first initial OR organization's name. (Year of publication). *Title of document*. Retrieved from: URL

*Example of a person as author:*

*Example of organization as author:*

**Article in a magazine or journal:**
Author last name, first initial. (Year, month, day). Title of article. *Name of periodical*, issue number, pages. Retrieved from [database name].

*Example:*

**Book:**
Author last name, first initial. (Year of publication). *Title of work: Capital letter also for subtitle*. Location: Publisher.

*Example:*
Complete the following as you examine 5 of your classmates’ posters.

<table>
<thead>
<tr>
<th>#</th>
<th>Common Name</th>
<th>What adaptations make this species invasive?</th>
<th>How is it harmful?</th>
<th>Where is this species found in Montana?</th>
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<tbody>
<tr>
<td>1</td>
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What do all of the aquatic invasive species that you looked at have in common?

In what ways can these species impact the local economy?

How can the spread of the species be prevented or controlled?
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### AIS Poster Sign Up Sheet

<table>
<thead>
<tr>
<th>AIS Poster Topic</th>
<th>Student Name(s)</th>
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<tbody>
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<td>Asiatic clam (<em>Corbicula fluminea</em>)</td>
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<td>Flowering rush (<em>Butomus umbellatus</em>)</td>
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<td>Other:</td>
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<tr>
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</table>
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Warm Up

Examine the items below and be prepared to respond to the two questions below:

1. What is the problem?

2. Where is it occurring?

Eurasian watermilfoil:

Photo credit: www.clean-flo.com

Eurasian watermilfoil:

Photo credit: Alison Fox, U. of Florida, bugwood.org

Eurasian watermilfoil distribution map:

Photo credit: Invasive.org https://www.invasive.org/browse/subinfo.cfm?sub=3055

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Montana Aquatic Invasive Species Distribution – Plants

2018

Life Cycle of Eurasian watermilfoil in the Great Lakes Region

- **Lake temperatures increase**
- **Lake temperatures reach 15°C**
- **Ice off all lakes**
- **Lake temperatures peak**
- **Ice forms on lakes**

- **April**: EWM established
- **May**: Growing Season
- **June**: Rapid Growth
- **July**: Flowering
- **August**: Fruiting
- **September**: Autofragmentation
- **October**: EWM Biomass maxima
- **November**: EWM Senescence

Eurasian watermilfoil:
- grows quickly in dense patches.
- fragments easily.
- displaces native plants, reducing food for native waterfowl.
- produces large amounts of decomposing leaf-litter or detritus, which produces low oxygen conditions.
- makes it difficult for native trout to catch food.
- increases standing water and mosquitos.
- reduces land values.
- impacts tourism and recreation.

Photo credit: Montana Fish, Wildlife, and Parks [https://tinyurl.com/y2fl4ak9](https://tinyurl.com/y2fl4ak9)

Photo credit: Michigan Tech Research Institute [https://mtri.org/eurasian_watermilfoil_biology.html](https://mtri.org/eurasian_watermilfoil_biology.html)