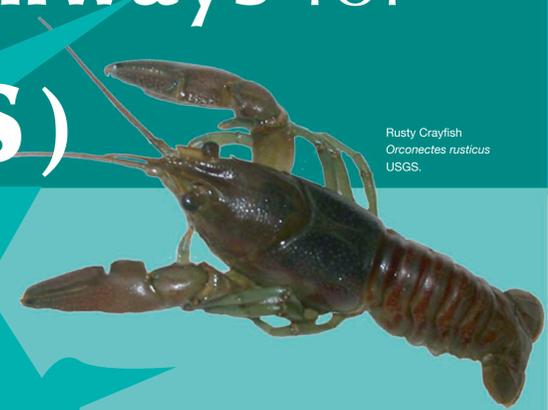


Schools and Science Curricula as Potential Pathways for Aquatic Invasive Species (AIS)



Brazilian Elodea
Egeria densa
Virginia Tech Weed Guide.



Rusty Crayfish
Orconectes rusticus
USGS.

Introduction

Traditionally, schools and classrooms have not been regarded as primary pathways for the introduction of aquatic invasive species (AIS). However, aquatic organisms such as rusty crayfish and Brazilian Elodea are brought into classrooms, highlighting a potential AIS problem and providing an opportunity for outreach and education.

The Problem

The introduction of AIS into the environment through classroom activities involves technical and social issues. Live animals and plants used in school curricula can become nuisance species if released outside of the classroom. Released non-native organisms can outcompete native species for food resources, and spread disease. Dumped aquarium water may also carry invasive plant or mollusk species.

Educators may not realize that a species can be invasive or that they are using an invasive species in the classroom.

Teachers and students soon realize that rusty crayfish are aggressive. The crayfish often fight in aquaria, and make poor pets.

Although school districts generally have procedures for the proper disposition of nuisance animals and plants used in the classroom, teachers and students may become attached to the animals and as a result have difficulty euthanizing or disposing of them properly.



Photos by Samuel S. Chan, Oregon Sea Grant.

Pathways of the Problem

Science curricula developers

Popular science curricula developed by UC Berkeley's Lawrence Hall of Science, FOSS science curriculum developers, and others use crayfish in lesson plans. (Agencies such as the National Science Foundation fund the development of science curricula).



Photos by Samuel S. Chan, Oregon Sea Grant.

Biological supply houses

Schools order crayfish or other potential AIS from biological supply houses. The houses often do not provide genus and species or invasive potential.

Organism suppliers

Organism suppliers capture or raise AIS for sale to biological supply houses.

Schools

Schools use crayfish (or other AIS) in science lessons.



Disposal options

If no information is provided on the invasive potential of the organisms, the class may decide to release them, resulting in potential ecologic and economic harm. Once the unit is completed, the class and teacher must decide what to do with the organisms.



Photo by Chris a. Taylor, Illinois Natural History survey.



Photo by Chris Lukhaup, http://www.crayfishworld.com

Outcomes and Next Steps

People can clearly identify the pathway and supply of the AIS. Teachers can modify handling procedures for animals and plants and quickly incorporate AIS curriculum into their lessons. After learning about the impacts of AIS through their class research, students were conscious about not releasing the organisms and discussed alternatives for properly disposing of the organisms. This is a project in progress. We are just beginning to work with biological supply houses and science curricula developers such as UC Berkeley's Lawrence Hall of Science on addressing AIS issues. Develop partnership for preventing the spread of AIS from school.



Photos by Timothy M. Davidson, Oregon Institute of Marine Biology.

Prevention and Outreach

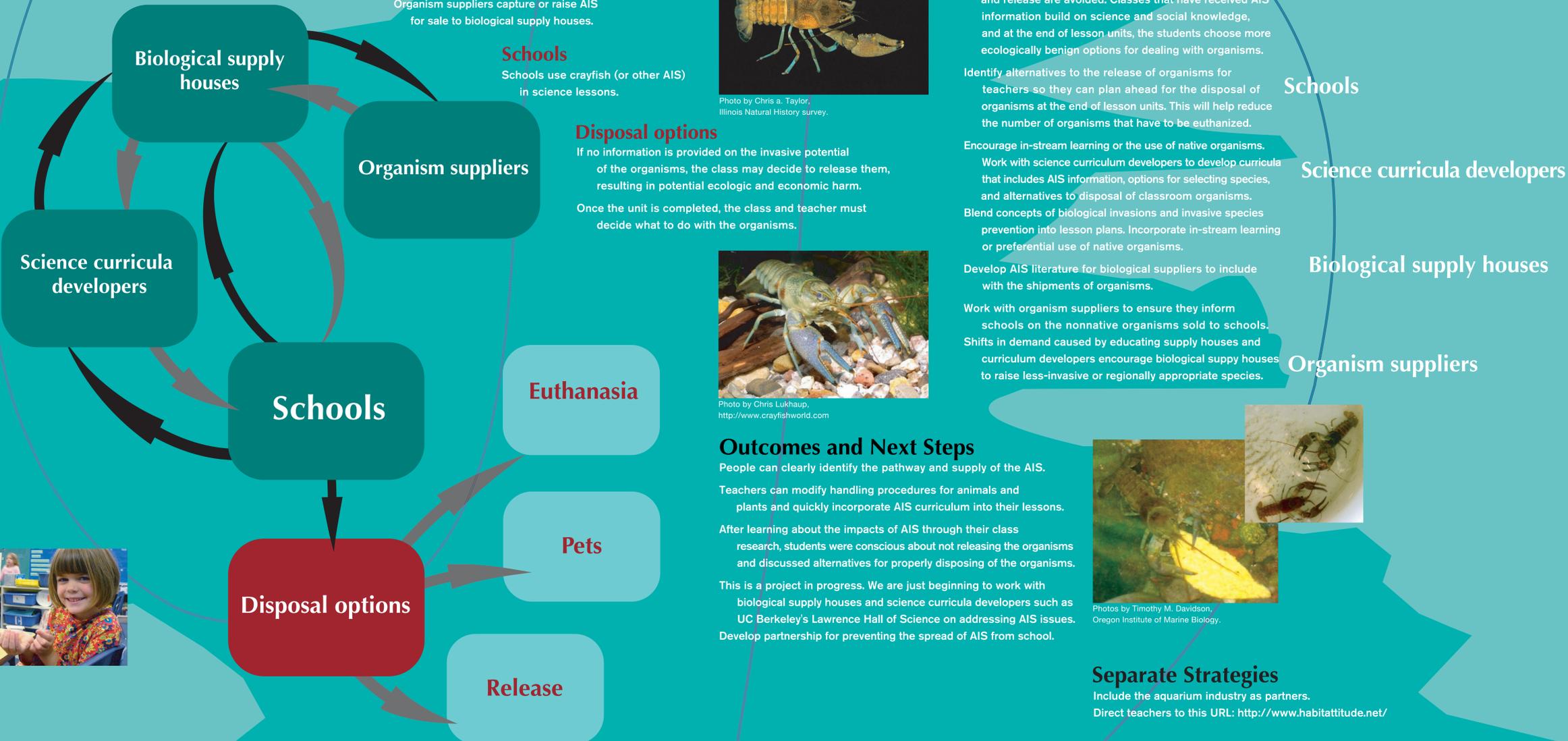
Provide schools with information and resources about AIS so the options of pets, social attachment, and release are avoided. Classes that have received AIS information build on science and social knowledge, and at the end of lesson units, the students choose more ecologically benign options for dealing with organisms.

Identify alternatives to the release of organisms for teachers so they can plan ahead for the disposal of organisms at the end of lesson units. This will help reduce the number of organisms that have to be euthanized.

Encourage in-stream learning or the use of native organisms. Work with science curriculum developers to develop curricula that includes AIS information, options for selecting species, and alternatives to disposal of classroom organisms. Blend concepts of biological invasions and invasive species prevention into lesson plans. Incorporate in-stream learning or preferential use of native organisms.

Develop AIS literature for biological suppliers to include with the shipments of organisms.

Work with organism suppliers to ensure they inform schools on the nonnative organisms sold to schools. Shifts in demand caused by educating supply houses and curriculum developers encourage biological supply houses to raise less-invasive or regionally appropriate species.



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