Objective
Students will design a wetland by choosing from bogs, marshes, swamps, and fens populated with native species.

Time Suggestion
Three class periods.

Wisconsin Model Environmental Education and Science Standards
Environmental Education:

DESCRIPTION
Students custom-design an ideal local wetland, after purple loosestrife has been controlled (to cure any loss of native diversity).

PROBLEM
What native plants should replace the purple loosestrife to make a wetland function as it should?

MATERIALS
- Per student or team, 1 copy of “Wetlands, Wonderlands” by Wisconsin DNR (or copies of its segments: “Wet Is Wonderful,” “Baby Boom or Bust?” and “A Spotter’s Guide for Wetland Visitors”) or find Web alternatives.
- Art supplies.
- Books with pictures of wetland plants and animals.
ACTIVITY 15  LIFE AFTER PURPLE LOOSESTRIFE CONTROL (CONTINUED)

PREPARATION
Obtain copies of “Wetlands, Wonderlands” from the Wisconsin DNR for handing out (or duplicating selected segments) by contacting your local DNR service center (or ordering them from the Wisconsin DNR’s Madison warehouse by emailing DNRAISinfo@wisconsin.gov with your name, organization, street address and number of copies needed.)

Have students read the Background Information or summarize it for them, focusing on any local, natural wet areas as examples from the two websites above.

PROCEDURES
Give the following instructions to the students, having them work either individually or in small teams.

1. Select a wetland type likely to occur in your area from “A Spotter’s Guide for Wetland Visitors;” check the Wisconsin Wetlands Association or the Wisconsin DNR State Natural Area guides for nearby examples.

2. Choose enough plant species to support the birds, mammals, reptiles, amphibians, and insects that will be incorporated into your restored wetland.

3. Read “Wet is Wonderful” and/or “Baby Boom or Bust” to better understand relationships among wetland organisms.

4. Make a diagram/drawing of your wetland showing each species that you have selected.

5. Explain to the rest of the group, or to the class, the interactions you might expect among the species in your wetland, including remnant purple loosestrife.

6. Conduct a discussion of the students’ choices of wetlands and compare species and likely outcomes of each student’s or team’s choices.

BACKGROUND INFORMATION
Reducing purple loosestrife with biocontrol is a great way to start restoring your infested wetlands and making them healthy again, but sometimes it is just the first step.

Purple loosestrife (or any other established invasive plant) will have taken the place of native plants in your wetland, thus reducing its plant diversity and making it less healthy. Biocontrol usually results in shorter purple loosestrife plants that produce fewer flowers and seeds, which is very useful in stopping its spread to other wetlands, but it rarely eliminates many loosestrife plants by itself. (Elimination by other methods is just as unlikely; though expensive and disruptive, heavy herbicide use may come close). Thus, further steps may be needed to restore your wetland site’s native plant diversity.

Why is this diversity important? It’s needed to support the great variety of native animals that depend on it and that we love to see there. It also helps wetlands persist well despite climatic changes (such as those likely coming as our planet warms over the next decades). And it allows wetlands to deliver the services that we expect from them, such as flood control, cleaner water in our lakes and streams, etc.

In order to regain high plant diversity your next step will be to learn about what your wetland should look like, and what types of native plants and animals it should contain, when it is healthy. Only then can you know what further steps you may have to take to build on the reduction of loosestrife and achieve a healthier wetland.

If you are lucky enough to still have lots of native plants on your site, in spite of the presence of purple loosestrife, these natives may simply increase as the loosestrife declines. In fact, tall native wetland plants will sometimes out-compete and push out remaining purple loosestrife plants once biocontrol has made the loosestrife shorter than the natives! But to determine if you have enough native species to just let them increase on their own, you need to know both what plant species you have on your site and what species you should have.
Conversely, if your site was heavily dominated by purple loosestrife, with few native plants left, you will likely need to move the missing species back onto the site—unless you are willing to wait a long time for them to return on their own (which may never happen because we have already eliminated many other wetlands from which they could have come). In this case, you will again need to know what native plants are typical for your wetland type.

The best way to learn about the plants typical of your wetland type is to explore other less disturbed wetlands of the type in your area. If you can’t do that, at least you can read about and study them. This exercise gives you a chance to do just that!

And once you know which native plants your wetland should contain (but doesn’t), you can assemble a list of the species you need and figure out how to get them there. Moving them can be done in many ways, from simply gathering seeds of the native plants and scattering them around appropriate parts of the site, to growing or buying native plants and transplanting them. Animals are generally more mobile than plants and may get there on their own, but you may need to help some of them move, as well!

But all this starts with knowing what species your particular type of local wetland should contain, and what it should look like. Learning these things, and thinking about the interactions of all the species on the site will make your restoration work better and your outdoor experience richer!

(Note: Many counties have wetlands in state natural areas that can be good places to visit or read about. For state natural areas by county: [http://dnr.wi.gov/topic/lands/naturalareas/county.html](http://dnr.wi.gov/topic/lands/naturalareas/county.html). The Wetland Restoration Handbook for Wisconsin Landowners, 2nd edition, by the Wisconsin Wetlands Association and Wisconsin DNR is also a great reference. It may be acquired from the Wisconsin Wetlands Association (suggested $5 donation) by calling (608) 250-9971 and requesting a copy. It can be downloaded from the Wisconsin Department of Natural Resources website at [http://dnr.wi.gov/topic/wetlands/handbook.html](http://dnr.wi.gov/topic/wetlands/handbook.html). Chapter 6 is about dealing with invasive plants.)

**STUDENT ASSESSMENT**

Evaluate each student’s or team’s drawings, written explanations, and class presentations, noting how accurately they detail the interactions within a wetland and how clearly students communicate their ideas.

**EXTENSION**

A student may be asked to develop a restoration plan for a particular wetland using the above restoration guide!