



# TEACH THE COLUMBIA

## Rivers, wetlands and ecosystem services

Lesson 2-2

### Guiding questions

What are ecosystem services? What are some examples of ecosystem services provided by rivers and wetlands? How do we learn to value these? Why are rivers and wetlands so important and so threatened?

### Learning goals

Students understand the value of healthy rivers and wetlands for nature and for the kinds of “ecosystem services” that they provide for humans

Students understand the importance of intact wetlands as a component of river ecosystems.

Students consider the Columbia Wetlands as an example of a relatively healthy and naturally flowing river ecosystem.

### Materials

#### Videos:

- **Ecosystem services in brief**
- **Intro to ecosystem services**
- **Fabulous wetlands**
- **The Columbia Wetlands**

#### Other materials:

- **Ecosystem services** backgrounder
- Columbia Wetlands Stewardship Partners (CWSP) **Conservation Framework** (pgs 1-18)

### Preparation

- Print a copy of the ecosystem services backgrounder and the CWSP document for each student (or provide devices and link)
- Prepare videos for viewing by the class

### Instructions

**Total time: 90 minutes**

1. Begin with a short class discussion to determine prior knowledge of the concept of ecosystem services. What do people know and wonder about this idea? **10 mins**
2. Watch one or both of the short ecosystem services videos as a class and discuss in small groups. Write definitions ‘in their own words’ for ecosystem services. **20 mins**
  - **Ecosystem services in brief** with NYC watershed protection example (**3 minutes**)
  - **Intro to ecosystem services** - video from Europe AlpES (**3 minutes**)
3. Provide students with the **ecosystem services** backgrounder by the Ecological Society of America and read individually. Think, pair, share to review and come up with ideas on ecosystem services that are provided by healthy, intact river ecosystems. Think about (or re-watch) the **River Ecology video** (interview with Annette Lutterman). What are the benefits of the natural flow of a river? How do rivers play a role in distributing sediments and nutrients across the landscape? **20 mins**
4. Introduce the idea of wetlands as an important, but often under-valued ecosystem type that is part of many rivers. Watch **Fabulous Wetlands** with Bill Nye for a general introduction to the services provided by wetlands. **10 mins**
5. Read an excerpt from the Columbia Wetlands Stewardship Partners **Conservation Framework** document (pgs 13-18) to provide an overview of what makes the Columbia Wetlands so significant. View **The Columbia Wetlands** video or use Google Earth or Google Satellite (in Google Maps) to provide imagery. **20 mins**
6. Have a final class discussion summarizing the values and ecosystem services provided by free-flowing rivers, including wetlands in general, and the Columbia Wetlands, specifically, using the

lesson's guiding questions.

Ideally, make time for more in-depth discussion and concept review through some of the extension activities.) **10 mins**

## Extensions

- After viewing the Fabulous Wetlands video, have students present on the values and ecosystem services provided wetlands in the form of “**wetland metaphors**”, as in this lesson from Project WET.
- Print the **nature's services** List from Wildsight for each student. Have them add their own ideas and examples, with an emphasis on free-flowing rivers and wetlands. Have a ‘values auction’ in which each student is allocated a hypothetical \$1000 and needs to decide how much to ‘bid’ for services (using only \$100 increments). Or, have students choose their top 1-3 and create ‘info-mercials’ advertising ‘their’ service. It may help to imagine that they are going to set up life on Mars or another planet without the ecosystems that exist on Earth.

## Curriculum links

**Science 9**

**Social studies 11**

**Earth Science 11**

**Environmental Science 11**

**Physical Geography 12**

## Additional resources

**Basic Description of Ecosystem Services** - UN Decade on Biodiversity

**Wetlands Facts**, No Water, No Life (basic list of wetland services)

**The Value of Natural Capital in the Columbia River Basin**, Upper Columbia United Tribes (very detailed, but has a section specifically about ecosystem services in a larger context)

**Ecological Goods and Services** video found in BC Tomorrow's video library (perhaps without the end part that introduces playing their online game)

**Nature's Services** list - Wildsight