



**Contributing Teacher Ranger Teacher:** Shevaun Adams- Valentine Rural High School, Valentine, NE

**Subject:** Life Science

**Grades:** 5<sup>th</sup>-7<sup>th</sup>

**Standards:** Science [NE] SC 8.3.3a, SC 8.3.3b, and SC 8.3.3e

### Food Webs of the Niobrara

**Description:** This lesson overviews the roles of producers, consumers, and decomposers. Students will create their own food webs using plants and animals found in the Niobrara River Valley.

#### **Background**

Previous knowledge needed includes: definitions of populations, ecosystems, energy flow, producers, consumers, decomposers, and trophic (energy) level.

Review the roles of producers, consumers, and decomposers. (You may also want to review herbivores, carnivores, and omnivores.) Create a simple food chains on the board, using plants and animals found in the river valley, as an example.

#### **Activity**

Have the students work in pairs to create their own food chains using plants and animals found in the Niobrara River Valley. The chains need to have at least 3 levels of consumers. Students can take digital pictures of the different plant and animal species and then try and identify. (Your local FFA chapter would also be an excellent resource for native plants in the area.)

Have two or three groups of students put their food chains up with the example on the board. Have the class brainstorm and create an interconnected food web using the chains. Also, have them show the energy flow.

Once they have an example, pair them up and have them create their own food web and show/explain the flow of energy through the web.

Then have each group compare the roles of producers, consumers, and decomposers in an ecosystem. \*\*Be sure to go through the numbers involved in each level as well. For example, there will be many fewer 3<sup>rd</sup> level consumers than primary consumers because there is not enough energy to support a lot of 3<sup>rd</sup> level consumers. (This is also why 3<sup>rd</sup> level consumers generally have a much larger territorial range, and are generally more protective of it, than primary consumers.)

## Niobrara National Scenic River

146 South Hall St.  
P.O. Box 319  
Valentine, NE 69201  
(402) 376-1901

National Park Service  
U.S. Department of the Interior

[www.nps.gov/niob](http://www.nps.gov/niob)  
[www.facebook.com/NiobraraNSR](https://www.facebook.com/NiobraraNSR)



### Activity [Continued]

Now have them brainstorm different scenarios and hypothesize on what could happen to the organisms in their food web. Examples: drought, disease in rabbits, overabundance of hawks, late freeze, blizzard, removal of turtles, etc.

Note: \*\*\*The National Park Service in Valentine has species lists of both plants and animals. E-mail them at [www.nps.gov/niob](http://www.nps.gov/niob) and they can send you a copy electronically. It would be good if your group could actually visit the Niobrara River. If this is possible, contact Sandi Kinzer or Adrienne Johnson at the NPS office for help in setting up the visit. The phone number is 402-376-1901.

### Follow up

After this exercise, have students identify the positive and negative effects of natural and human activity on a food web and thereby, on an ecosystem.

You can follow this activity up with a virtual lab from [explorescience.com](http://explorescience.com). It is the Gizmo web activity dealing with food chains. However, a subscription is needed for this site. Many wonderful virtual labs for science and math are located here.

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