



ECHO'S NEWTON TAKES A SPIN!

Lake Champlain to the World's Lakes!

science



Map Source: Lehner, B. & P. Doll (2003), Birkett, C.M. & J.M. Mason (1985), Commonwealth of Australia-Geoscience Australia (1990), ESRI (2003).

Major World Lakes

My Name

Bathymetry

Bathymetry, or depth, maps show the landscape below the surface of a lake. The maps are important tools for lake scientists, boaters and anglers, as well as ferries and other businesses. These maps also show the habitats where fish live in the Lake. Some fish like deep, cold water and others like the water warm and shallow.

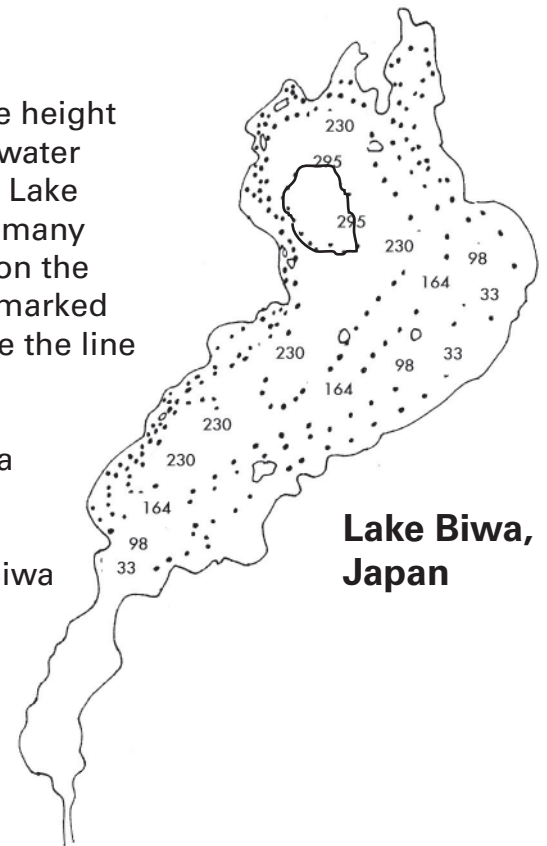
A new depth map of Lake Champlain was created by Professor Tom Manley of Middlebury College in Vermont. Other scientists had mapped the Lake's bottom, but with new equipment, Dr. Manley made a more detailed map and even found underwater mountains! Visit the Resource Room at ECHO to see the map.

Underwater Dot-to-Dot

1. Similar to maps that show the height of mountains, lake maps show water depth. The **contour lines** on this Lake Biwa bathymetry map show its many depths. Connect all of the dots on the map that have the same depth marked in meters along a line. HINT: See the line marked 295 meters.

A. The deepest part of Lake Biwa is _____ meters.

B. The shallowest part of Lake Biwa is _____ meters.



When Is A Sea A Lake?

Most of the world's lakes are freshwater, but some are salty. The Caspian Sea is a large terminal lake, meaning that its water never reaches the ocean. Because of this, minerals build up in the water as it evaporates. Over time this makes the water salty. Terminal lakes are usually more sensitive to pollution than lakes that drain to the ocean.

1. Looking at the map on the cover, name at least one other salty water body that is considered a world lake:

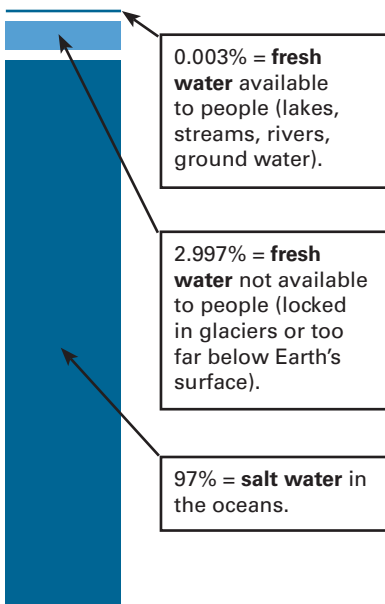
2. Lake Champlain is *not* a terminal lake. It drains through two different waterways to reach the Atlantic Ocean. Write their names below.

Lake Champlain ↓

 _____ ↓
 _____ ↓

Atlantic Ocean

WORLD WATER



Visit the Lake Champlain Basin Atlas at www.lcbp.org for help!

Biodiversity Match-Up

The Lake Champlain Basin is considered to have a lot of **biodiversity**, with more than 80 fish species and 300 bird species. Different species take advantage of the watershed's numerous habitats, including deep cold water, shallow bays, wetlands, and islands. Across the world, lake managers are concerned about the effects of over-fishing, water pollution, and water withdrawal on the plants and animals that rely on world lakes.

Test your knowledge about world lake animals. Draw lines to connect the five photos below to the habitat descriptions.



WOW! I can see tons of birds from ECHO's deck!

This mammal is found in Lake Baikal. You might see its salt water relatives off the Maine Coast! The Baikal region has 2,615 plant and animal species.



Hippos

This species is caught in Lake Champlain, but rumor has it that the ones caught in the Great Lakes are even larger!



Lake Trout

You could see these at Disney World, but these migrated to Lake Nakuru, one of the Rift Valley Lakes in Kenya.



Flamingos

The Caspian Sea is home to 90% of the world's population of this fish, but in the past 20 years, its catch has declined by 88%. Lake Champlain's version of this fish is endangered.



Nerpa Seal

This species lives near the mouth of Blue Nile River in Lake Tana in Africa.



Sturgeon



Zebra Mussel

Native Here... Nuisance There!

If you were born in the Lake Champlain watershed, you are considered “native” to this region. But if you were born in another state and moved here, you are considered “nonnative.” Just like people, plants and animals are on the move. Some plants and animals cause problems in their new homes, so we call them **nonnative nuisance species**. Many world lakes have nuisance species.

Unscramble the lake names below to learn more about nuisance travelers (use the cover map for help):

1. **Water hyacinth** is a flowering plant native to South America. When it infested this lake in Africa, it grew in dense mats and caused lots of problems!

LAKE TAROCIIV = _____

2. The **bluegill** is a harmless native fish species in Lake Champlain, but it threatens local carp in this Asian lake.

LAKE WAIB = _____

3. Scientists knew **zebra mussels** (native to the Caspian Sea region) would spell trouble for Lake Champlain, because they had already caused problems in this midwestern lake.

LAKE RESIPOUR = _____

4. You could travel to Eastern Europe to see **water chestnut** in its native habitat. In this hometown lake, however, volunteers spend lots of time removing water chestnut because it’s a big nuisance.

LAKE PALMHACNI = _____

5. **MAP IT!** Using the cover map, circle all the “unscrambled” lakes. Then draw a symbol near the place where each nuisance species (in **blue** text above) is native. (Example: draw a small fish near Lake Champlain to show the bluegill.) Lastly, draw arrows to connect the nuisance species to the circled lake they infest.

What do the arrows tell you about how nuisance species travel around the world?

“Kul” Terms:

Nonnative Nuisance Species: Plants or animals that cause serious ecological or economic problems when they infest a new habitat.

Bathymetry: The measurement of the depth of bodies of water.

Biodiversity: The variety of plants and animals, as well as their interrelationships and habitats.

Contour Line: A line on a map that joins points of equal elevation.

Websites:

www.lcbp.org

www.echovermont.org

www.worldlakes.org

www.epa.gov/kids/water.htm

**Kul is the word for lake in Kyrgystan. It is pronounced like the word “cool.”*

About NEWTon: NEWTon is the trademarked mascot of ECHO at the Leahy Center for Lake Champlain on Vermont’s Burlington Waterfront. NEWTon represents the Lake Champlain Basin’s native red-spotted newt.

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