

# This Lake Alive!

## **An Interdisciplinary Handbook for Teaching and Learning about the Lake Champlain Basin**

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Published by Shelburne Farms, Shelburne, Vermont

Printed with funding from the U.S. Environmental Protection Agency  
through the Lake Champlain Basin Program (grant #001840-01-0).

Work for this book was supported in part by a grant from the Christa McAuliffe Foundation.





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**SHELburne FARMS**

*Shelburne, Vermont 05482*

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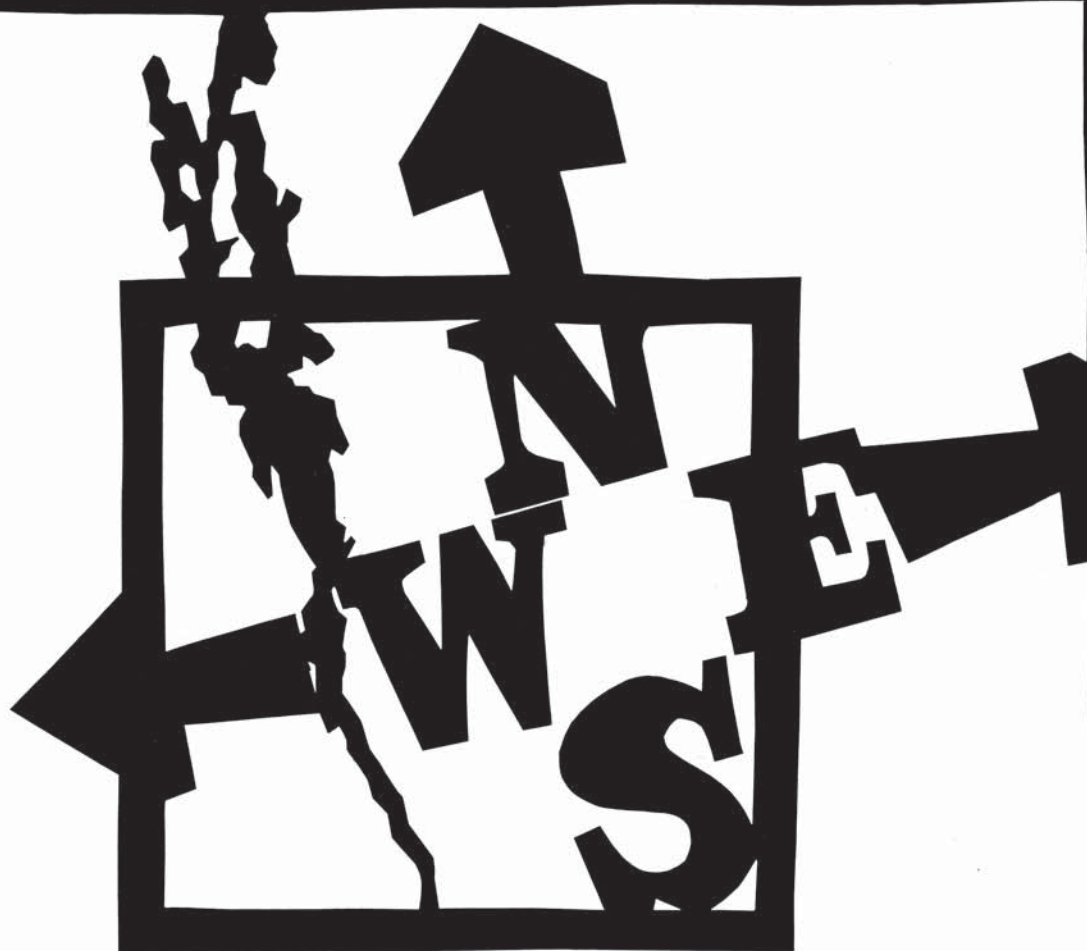
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Printed in Burlington, Vermont in the United States of America by Queen City Printers, Inc.  
*Printed on recycled paper.*

*Bonnie Acker's cover illustration is a cut-paper collage created from both Japanese paper hand-dyed with watercolors,  
and handmade paper from Langdell Paperworks in Topsham, Vermont. The inside illustrations were cut from  
black paper originally used to protect new offset printing plates enroute to printing houses.*



# **The Geography of the Lake Champlain Basin**

# Champ's Trip

by Valerie Lamphere, Grade 7, Milton Jr. High School, Milton, Vermont



**H**i! This is Champ, the Champlain Monster. I've been here for quite a while. You don't look so pretty after that. Now, this is my story of how I got to Snake Den Harbor, which is close to Bullwaga Bay, where I am often sighted.

It all started one night in the prehistoric age. I was going to bed for a cool nap when, suddenly I woke up. BAM! It's the Twentieth Century. The rock I was on turned out to be an island, now called Valcour. It's a nice spot but not sheltered enough for me. So I figured I'd ask for directions. I met a snapping turtle named Varco.

He said the best place to hide was at Snake Den Harbor near the narrows of the Lake. So I set out heading south.

I stopped to surface near Colchester Point, there I caught my first sight of Humans. They were shrieking and their yelling was deafening to me. I dove down again. I passed a ferry and on the bottom of the ferry, I saw some writing. It said:

## STATE OF VERMONT FERRY ON LAKE CHAMPLAIN

So that's where I was! Lake Champlain! Soon I hit Four Brother's Islands. I spent the night there. I was halfway to my destination! I had traveled 14 miles.

My next stop was Bullwaga Bay. Late that night, a ship tried to capture me! That was it! I was gone! I advanced a few miles to reach the straits. I was home at last at Snake Den Harbor.

And that's my story of how I got to Snake Den Harbor!



# The Geography of the Lake Champlain Basin

**W**hen you study geography, you learn about the land and the stories it has to tell. Lake Champlain and the land around it have affected what humans have done in this area for thousands of years. The lake provided food for the people who lived here. Until only recently, it was a main transportation route for the people of this region. For the Woodland people, the lake was a political barrier between two groups, the Iroquois and the Western Abenaki. When the Europeans moved into the region, they depended on the lake as a main highway, the way people had done in the past and would continue to do for three hundred more years. The lake has been the stage for numerous battles, trade and commerce. Tourist brochures now refer to the lake as the “west coast” of New England. Some people still depend on the lake for their food and many people use the lake for pleasure and recreation.

You may be lucky to live very close to the lake or have had the opportunity to visit there. If you have, you probably have some pictures in your head of what the lake looks like on a sunny, sparkly day—or a wild and wavy day. You may have a clear image of what the Adirondacks or the Green Mountains look like as they rise from either side of the lake. Maybe you can visualize the path of a tributary as it meanders towards the lake. As you learn more about the geography of Lake Champlain and the land around it, try to remember some of the pictures you have in your mind.

The Adirondacks in New York and the Green Mountains in Vermont are the high boundaries of the Lake Champlain Basin. The mountains help define an area of 8,234 square miles that covers land in New York, Vermont and Quebec. All the rain that falls within this special area drains into Lake Champlain. Small streams and creeks and large tributaries carry this water into Lake Champlain.

The lake itself covers 415 square miles and is 120 miles long. It is a narrow lake, only 12 miles wide at its widest part. One writer compared it to a “silver dagger” that struck through the mountains. How long does it take to travel the length of the lake in a motorboat? How long does it take in a canoe?

*Although you’ll probably find plenty of people who think differently, many think that the Main Lake is the most beautiful part of Lake Champlain. Sunsets over the Adirondacks are a main attraction for Vermonters. Do New Yorkers rise early to watch the sun rise over the Green Mountains?*

*Land in the basin is 56% Vermont, 37% New York, 7% Quebec.*



*The temperature of still air decreases about 3.5° F for every 1,000 feet in elevation. The average temperature on Mt. Mansfield is about 14° F cooler than that in Burlington, some 4,000 feet below.*

*When there is less precipitation after storms cross a mountain range, it is called a “rain shadow.”*

*The volume of Lake Champlain has been calculated as 909 billion cubic feet of water, which equals 6.8 trillion gallons of water.*

*A 1990 census recorded 607,788 people living in the basin.*

Lake Champlain has 587 miles of shoreline. It begins in Whitehall, New York, and flows northward toward Canada. Near Ash Island, it empties into the Richelieu River, which drains into the St. Lawrence River. It is sometimes called the “sixth Great Lake.” It is called this because of its kinship to the five Great Lakes, not because of its relative size.

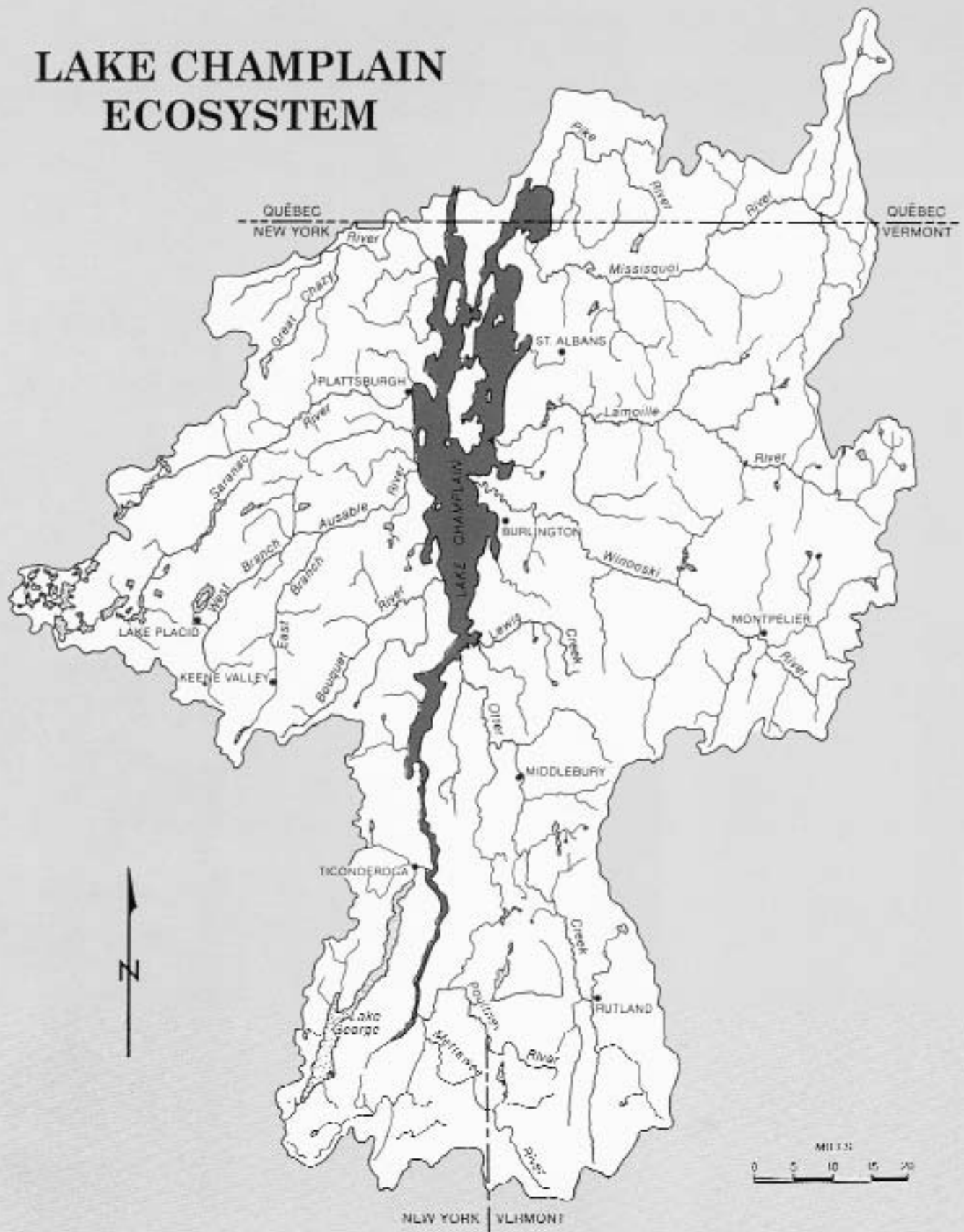
Lake Champlain is surrounded on the west by the Adirondacks and on the east by the Green Mountains. The land ranges from the highest peaks of the Adirondacks to the lowlands of the Champlain Valley. Average temperatures around the basin vary according to elevation,

especially during the spring, summer and fall. Temperatures are usually colder in the mountains and warmer in the lower elevations. The Champlain Valley tends to have the longest growing season in the area. That’s why it’s easier to grow melons near the lake.

Sometimes the same storm will bring snow to the mountains and rain to the lake and surrounding lowlands. Most of the weather patterns come to Lake Champlain from the west, crossing the Adirondacks on the way. As the air hits the Adirondacks, it is forced higher and thus becomes cooler. Cooler air can hold less moisture than warmer air, so it drops more rain or snow in the higher elevations. When the air travels down the east side of the mountains toward the lake, it gets warmer and there is less precipitation because the warm air holds onto the moisture. The storm also has “lost” some of its moisture while crossing the mountains. When the air rises up again over the Green Mountains, precipitation will increase again .

Tributaries that drain into Lake Champlain provide 91% of the lake’s water. Major tributaries include the Missisquoi River, Lamoille River, Winooski River, LaPlatte River and Otter Creek in Vermont; and La Chute River, Lake George, Bouquet River, Ausable River, Saranac River and the Great Chazy River in New York. The remaining 9% of the lake’s water comes from precipitation and condensation that falls directly into the lake. About 600,000 people live in the Champlain Basin and at least 150,000 use Lake Champlain as their source for drinking water.

# LAKE CHAMPLAIN ECOSYSTEM







*In 1823, the Champlain Canal was built. This canal linked the lake to the Hudson River and made Lake Champlain one of the most significant trade highways in the world.*

*A 1993 boat study showed an 86% increase in the number of boats in high use in Mallett's Bay since 1980.*

*Most of the Missisquoi Bay is in Canada. It begins at the delta of the Missisquoi River and extends into Quebec. The bay is cut off from the lake's northward flow and is shallow and warm. Like the South Lake, the bay has problems with aquatic plants.*

## **REGIONS of the LAKE**

The lake is divided into five sections that are determined by geographic boundaries and characteristics. These five sections act like different lakes and are considered as such when scientists consider pollution problems and planners look at land-use issues. They are five different “living regions.”

For example, although the average depth of all of Lake Champlain is 64 feet, if you calculated the average depth of each region, it would vary drastically. The Main Lake is over 400 feet deep at its deepest part, whereas most of the South Lake never is deeper than 40 feet. Imagine all the ways that lake depth alone would change the qualities of the different regions.

**The South Lake** is the long narrow part of the lake that starts at the mouth of the Poultney River and runs north to the Crown Point Bridge. It is very much like a river and is a favorite nesting ground for herons. Eurasian milfoil and water chestnut love it too, because the water in the South Lake is warm and shallow. It looks very different from the rest of the lake. It is very primitive and unspoiled and has marshy vegetation on the edges. Not many people live on the shores of the South Lake, but it was very important as a navigation route because it linked Lake Champlain to harbors further south.

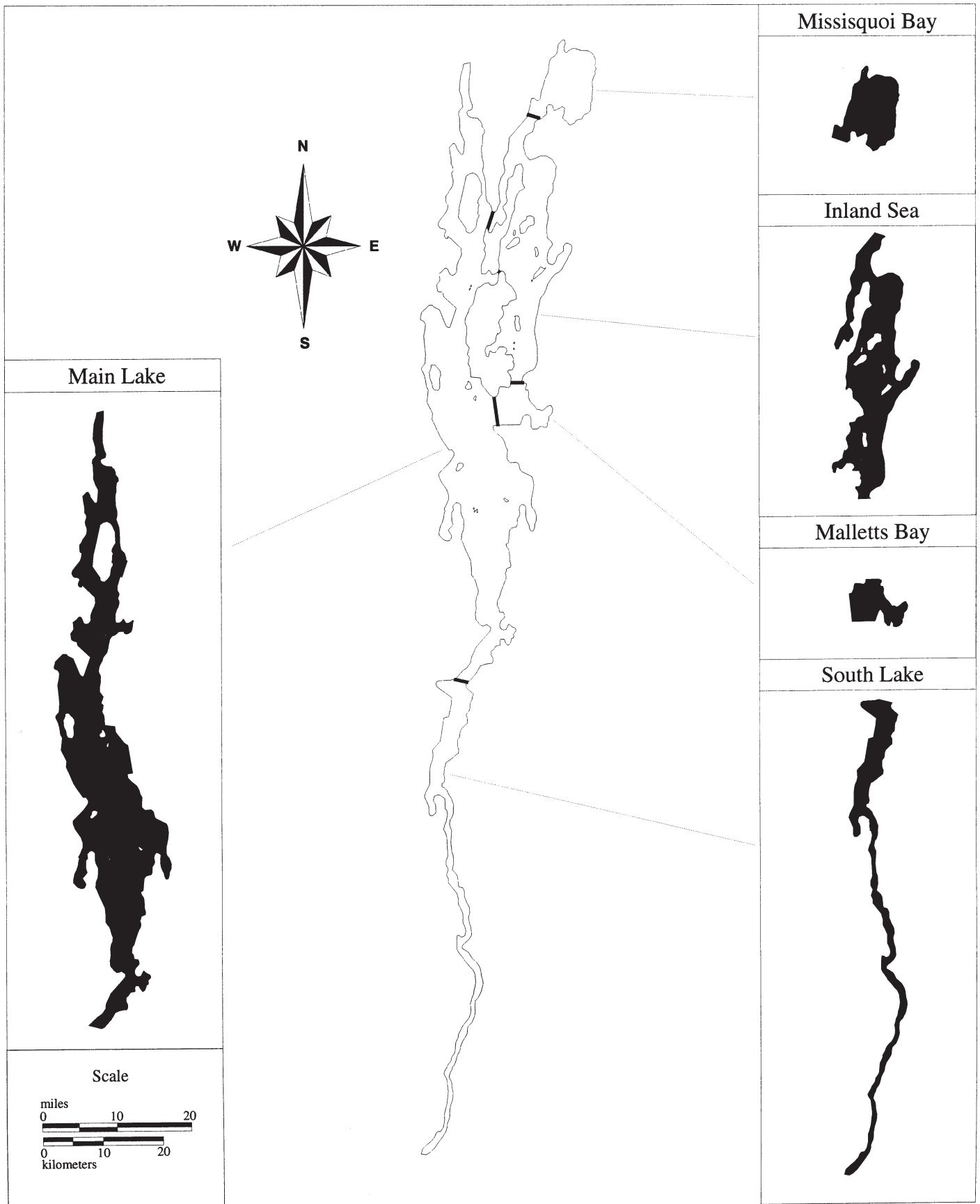
**The Main Lake**, or Broad Lake, begins at the Crown Point Bridge and opens into the wide open expanse of lake. West of Grand Isle County in Vermont, the lake narrows again and becomes the Richelieu River that flows into Canada. The Main Lake is the deepest, widest and largest section of the lake and contains 81% of the lake's total volume of water. This part of the lake is popular for boaters and many people live on the shores of the Main Lake.

**Mallett's Bay** is southeast of Grand Isle and is separated from the Main Lake by an abandoned railroad causeway. Mallett's Bay is the most restricted part of the lake. In addition, this area is a very popular summer recreation area. There is a real “traffic problem” in the summertime with sailors, speed boaters, wind surfers and kayakers making their way out to the Main Lake.

**The Inland Sea** or Northeast Arm is east of Grand Isle. This section starts at Sand Bar Bridge and ends at the mouth of Missisquoi Bay. “The Gut” that runs between South and North Hero is considered part of the Inland Sea. Water flows in from the Missisquoi Bay and north from Mallett's Bay, keeping the Inland Sea relatively healthy. This is a very quiet section of the lake and is a favorite place to catch yellow perch, northern pike and Atlantic salmon.



# Regions of Lake Champlain



**Credit:** Northern Cartographic. Used with permission.

# Islands of Lake Champlain

**A**bout seventy-five islands dot the surface of Lake Champlain. They lend variety to the scenery, pique the explorer's imagination, and afford the photographer a chance to record nature as it cycles through the seasons. When a sudden storm blows up, sailors find refuge in the lee of an island. The Lake Champlain islands are a haven for those who wish to escape the turmoils of the world, a living textbook for the student and scientist, and a home to thousands of migrating waterfowl, shorebirds and songbirds.

Islands are fragile and it sometimes is not clear how to protect them. While many Lake Champlain islands are well suited to public use, others are strictly private. Some islands support populations of birds that must not be disturbed while they are nesting.

Popsquash was the original nesting site of the common tern. The tern was driven out by the ring-billed gull, but naturalists have worked to protect nesting areas and reestablish the tern population. Young Island has a large colony of black-crowned night herons. Boaters are often warned to stay off certain islands during critical nesting times.

The name of an island often tells some of its story. Almost a third of the islands carry the name of a former or current owner. Savage Island was named for James Savage, a surveyor who worked on this property in 1789. Metcalf Island, which is located near the mouth of the Missisquoi River, was inhabited by a fur trader named Metcalf, who carried on his business in the 1760s. Ball, Young, Knight, Johnson, and Sawyer are all thought to be named after former owners. Many other islands are named by those who knew and loved them. People who fished, bird-watched or farmed probably named Shad, Fish Bladder, Gull, Hen and Garden Islands. Some islands have received their names from their vegetation or geological features such as Cedar, Juniper, Birch, Mud, Rock, Cave and Marble. Other names are descriptive such as Sunset or Lazy Lady.

Sometimes the names of islands change. A famous island, Ojibozo, is of great importance to the Native Americans. It is named after the creator who turned himself into a rock in the middle of Lake Champlain so he could forever enjoy this beautiful spot. Newcomers renamed it Rock Dunder, but many people still call it Ojibozo, its original name. Four Brothers Island shows up on an old map as Four Sisters Island.

The future of these islands is unclear. Will they remain wild and untouched? Will they be subdivided for camps and summer homes? Will the wildlife found nowhere else in Vermont or northeastern New York still be welcomed "home" each nesting season? Growing population pressures, rising land prices and increasing property taxes affect the status of these scenic islands. Change is coming, but how it occurs and what it looks like will be influenced by important decisions made by citizens like you.

**Credit:** Adapted with permission from "A Portrait of the Lake Champlain Islands," by the Lake Champlain Islands Trust.



The different bays and open water, the tributaries and the wetlands, the shapes of the lake and the land around it tell the different stories of Lake Champlain. One place may have been the bluff where a hunter made camp, or a bay where a smuggler could hide from the patrol boat. It may have been that gentle slope to the water on which a settler wished to plant fruit trees or a rock on which a child liked to sit and fish. The places of the lake tell the stories.

Just as people have chosen different parts of the lake for different reasons, so too the fish, birds and other creatures have found the places that are best suited to them. Warm-water fish such as pickerel and bass seek the shallow water of a wetland to lay their eggs, while cold-water fish, such as trout and salmon, prefer the clear, cold bottom of the Main Lake. The islands of Lake Champlain provide favored “hotels” to migrating birds. Herons congregate in rookeries in the Missisquoi Wildlife Refuge where a single tree may house five or six nests. We know that Champ prefers the deep water near Snake Den Harbor where he can hide in peace and quiet!

*Carleton's Prize (pictured below) was named after the British general who chased Benedict Arnold down the lake from Valcour Island. Chasing the American fleet in the early morning mist of October 12, 1776, Carleton saw what he thought was a ship and gave the order to fire. When the fog lifted, the “vessel” was an island.*









# **The Geography of the Lake Champlain Basin Activities**



**T**he activities in this chapter represent a sampling of different geography activities that you can use when you are integrating geography into an interdisciplinary study. These activities were developed in consultation with David Rider, geography teacher at Bellows Free Academy, St. Albans, and former co-coordinator of the Vermont Geographic Alliance. He offers this perspective on geography instruction:

*In the past decade, instruction in geography from grades K–12 has been organized around five themes of geography. These content organizers set the stage for eighteen standards within the National Geography Standards. The five themes are present throughout the Standards. The five themes and the standards were developed by the Geographic Education National Implementation Project (GENIP). GENIP is a consortium of four geographic organizations: the Association of American Geographers, the American Geographical Society, the National Council for Geography Educators and the National Geographic Society.*

## **THE FIVE THEMES of GEOGRAPHY**

### **1. Location** (*Absolute and Relative*)

Where in the world is it? What is it near? How is it connected to other places?

### **2. Place** (*Physical and Human Characteristics*)

What physical and human characteristics make this place unique? (See chapters: *Geology, History, Ecology* and *Living Treasures*.)

### **3. Human-Environment Interaction** (*Relationships Within Places*)

People interact with and change their environments. How has the environment been altered? Why was it altered? What are the consequences of these changes? (See chapters: *Ecology, History* and *Living Treasures*.)

### **4. Movement** (*Mobility of People, Goods and Ideas*)

Travel, communication and migration are examples of how people connect with each other. How does your family/community/state/nation depend on other areas? How has the movement of people influenced the demographics of your area? (See chapters: *History* and *Nautical Archeology*.)

### **5. Regions** (*How They Form and Change*)

Areas on the Earth can be defined by certain unifying characteristics, either human or physical. What human or physical regions can you identify within your own state? (See chapters: *Geology, History, Ecology*.)



## QUESTIONS

- How does the geography of Lake Champlain affect how people live in the basin?
- How are parts of the lake different from each other?
- How are fish and wildlife affected by the lake's geography?

## KEY RESOURCES

- Vermont Land and Resources *by Harold Meeks*
- Vermont Geographic Alliance
- The Nature of Vermont *by Charles W. Johnson*
- A Portrait of the Lake Champlain Islands *published by the Lake Champlain Islands Trust (out of print)*
- “Lake Champlain North, N.Y.-VT” and “Lake Champlain South, N.Y.-VT”—*U.S. Geological Survey (USGS) topographic maps*
- “Lake Champlain Atlas of Navigational Charts”—*R. W. Vogel*
- “Raised Relief Map of Champlain Valley: Lake Champlain” and “Raised Relief Map of Lower Champlain Valley: Glens Falls”—*Hubbard*
- “Lake Champlain Region: Road Map and Guide”—*Northern Cartographic*





# Word Bank

Adirondacks  
Ausable River  
basin  
bay  
bluff  
Bouquet River  
Champlain Valley  
Crown Point Bridge  
delta  
elevation  
Great Chazy River  
Great Lakes  
Green Mountains  
“The Gut”  
The Inland Sea  
    or Northeast Arm  
La Chute River  
Lake Champlain  
LaPlatte River  
lowlands  
The Main Lake,  
    or Broad Lake  
Mallett’s Bay  
Missisquoi Bay  
Missisquoi River  
mouth  
New York  
Otter Creek  
Quebec  
regions  
Richelieu River  
Saranac River  
South Lake  
St. Albans Bay  
St. Lawrence River Basin  
tributary  
Vermont  
wetlands  
Winooski River

## Native American Place Names

**azeskoimenahan** (muddy island) - Isle La Motte

**bitawbagok** (waters in between) - Lake Champlain

**bitawbagwizibok** (between-lake river) - Richelieu River

**gitsimenahan** (big island) - Grand Isle

**madegwasewapskak** (at rabbit rock) - Mt. Philo

**masipskwebik** (flint water) - Missisquoi Bay

**moziozaganek** (moose shoulder) - Camel’s Hump

**mozôdebiwajok** (moosehead mountain) - Mt. Mansfield

**onegigwizibok** (otter river) - Otter Creek

**senapskaizibok** (stone rock river) - Ausable River

**senipôganitegok** (stone pipe river) - La Platte

**winozkitegok** (onion river) - Winooski

**wintegok** (marrow river) - Lamoille River

**zalônaktegok** (sumach cone river) - Saranac River

*Jeanne Brink provided the Abenaki place names.*



# Activity: Making a Map of Lake Champlain

## TEACHER NOTES *and* INFO

Students need a solid grounding in the geography of Lake Champlain. Even if your study is mostly historical or scientific, it is helpful for students to be familiar with present-day locations and distances.

## STUDENT ACTIVITY

Each student will make a map of Lake Champlain. Because the location of the borders and islands are sometimes confusing on a blank map, the most important first step is coloring in the blue of the lake correctly! Before we do any labeling, I put up an overhead with the lake's outline and the water colored in correctly and ask students to carefully color the surface of the lake. I then proceed through the labeling process in layers, so that what is on the overhead is exactly what they are working on.

1. Show transparency of blank map on overhead.
2. Overlay with overhead (A) that has just blue lake filled in. Ask students to draw in lake, being careful of bays and islands.
3. Proceed with next overlay. Students proceed through each step with you:
  - (B) Borders—Vermont, New York, Quebec
  - (C) Tributaries—label major tributaries
  - (D) Major towns and cities—label major towns and cities

At this point, I hand out the complete basin map along with other maps so students can add more information to their own maps. Encourage them to choose information from many different maps. Discuss other things to include:

- historical sites and points of interest
- hometown (and student's house!)
- sites of field trips and tourist attractions
- major roads
- fishing accesses
- sites of shipwrecks

**STUDENT HANDOUTS** - Blank basin map and complete map ("The Lake Champlain Basin," p. viii)

### You will need:

- copies of blank map of the basin (see p. 69)
- copies of complete map, "The Lake Champlain Basin" (see p.viii)
- blue-colored pencils
- prepared overheads
- additional maps for student reference



- Use a state road map or a map of Lake Champlain to calculate distances from your town to the lake, routes to field trip and historic sites and the time of these trips. Use scale bar to estimate the length of boat trips on the lake. Students can also design their own questions about locations and distances.

- Use an overhead to project the outline of the lake on the wall. Have students paint or draw and label as a class project. A large map could include a variety of themes. Underwater wrecks, state parks, historic and tourist sites are some of the possibilities.

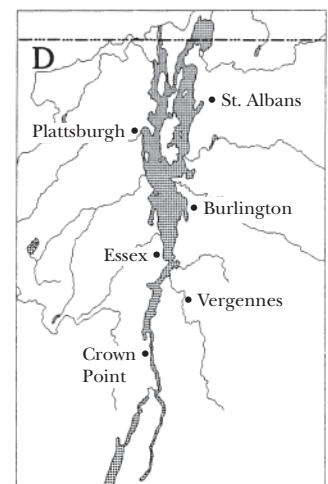
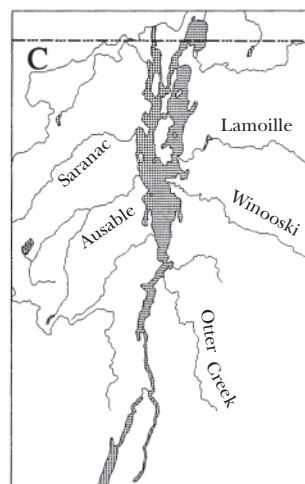
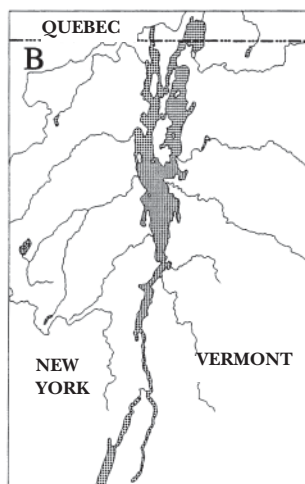
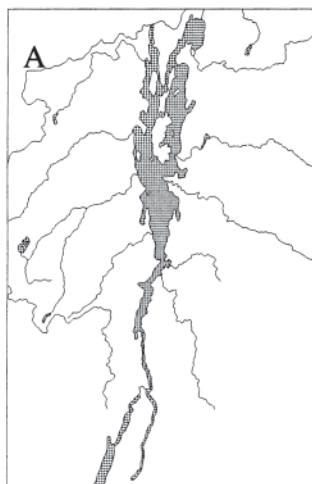
- Have students design a “Jeopardy Game.” You or a group of students design categories of answers and questions and students say whether something is true or false. This can be done with or without a map for reference.

- Use a variety of sources (map of Native American places; maps with more details of harbors, bays, island names; nautical charts; map of historical sites) and discuss how, and reasons why, places got their names. Be a toponymist!

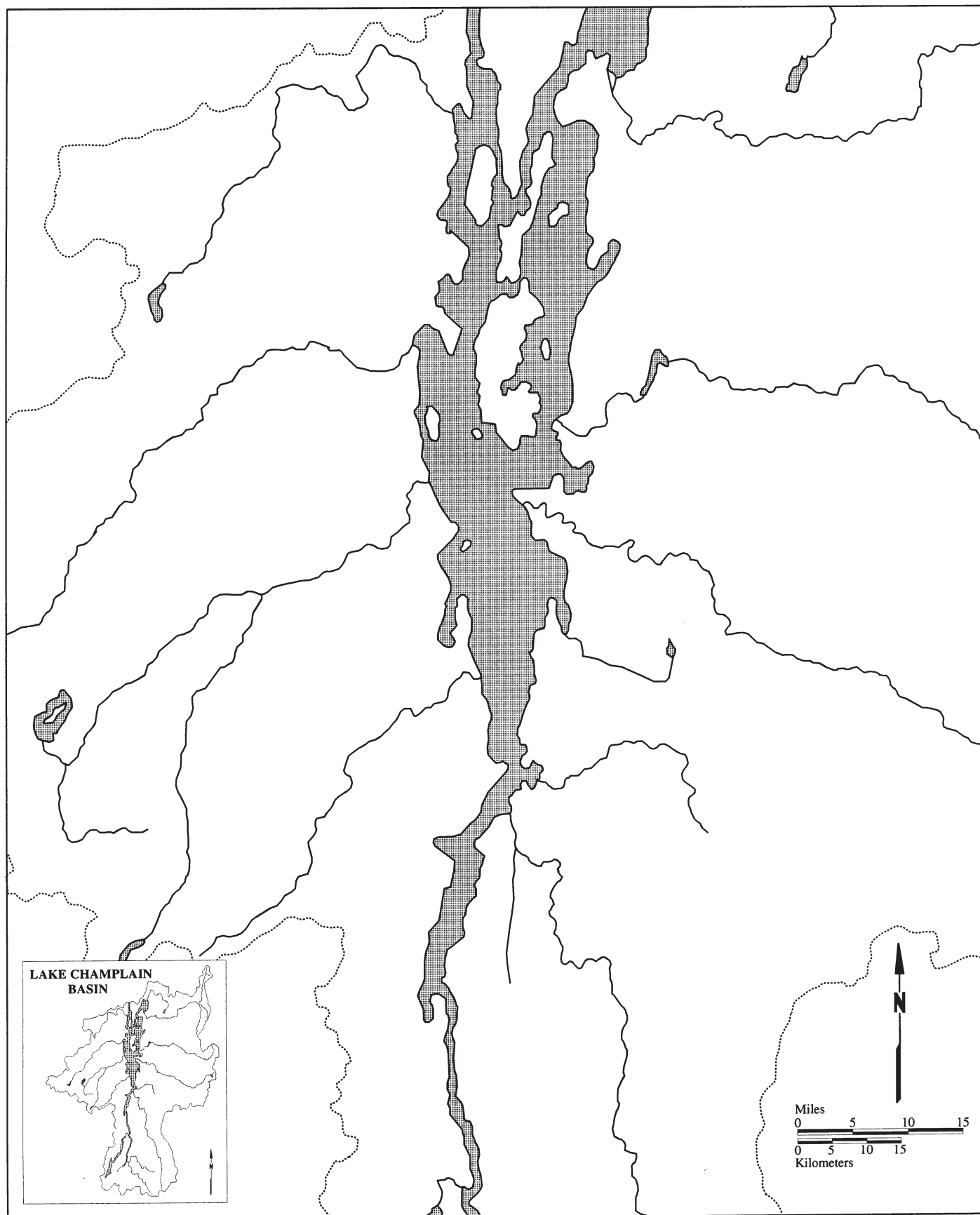
- Before you start making maps, discuss the outline of Lake Champlain and its implication. If you were living in the 1500s, where might you want to make your village? Why? If you were building a fort in the 1600s, where might you put it? Why? This is a good opener to start students thinking about the interaction between people and geography, e.g. shipbuilding, farming, mills.

\* Write 5 **true** statements about Lake Champlain geography.

\* Write 5 **false** statements about Lake Champlain geography.



# The Lake Champlain Basin



**Credit:** Northern Cartographic. Used with permission.



## *Activity:* Regions of the Lake



### **TEACHER NOTES *and* INFO**

Make a set of “puzzle pieces” of the five different lake regions for each group. Use the outline of map pieces from the map, “Regions of Lake Champlain,” (see p. 59), ideally enlarged and mounted on cardboard.

This activity requires that students have a mental image of the region they are working on. By students self-selecting, you may have all areas of the lake covered. This activity may be difficult if you live far from the lake or have few resources.

Using the previous essay, “The Geography of Lake Champlain,” maps, brochures and pictures, ask students to elaborate on the attributes of each region. Some photos are provided on the next few pages.



### **Taking It Home**

Ask students to ask parents and neighbors about these regions. These could be formal oral interviews or just treasure hunts to collect information. Pictures, stories, impressions, facts all count as treasures!

### **STUDENT ACTIVITY**

In small groups, students use materials to identify characteristics of each region. They will use the handout to gather information.

Make a worksheet with questions such as:

- What is the shape of your region?
- What are the characteristics of this region?
- Describe in your own words what makes this region different from other parts of the lake.
- What plants and animals live in this region?
- What kind of things might have happened here 500 years ago?  
200 years ago?
- What kind of pollution/water-quality problems might this region have?



When all the groups have completed gathering information, ask them to complete one of the following (or discuss as a class or in small groups which task they would like to do).

- Design a “habitat for sale” ad to attract a particular animal that you think would want to come live in your region.
- Design a “land for sale” ad to attract a person who you think would like to purchase land in your region.
- Make a case (speech, poster, song) for why your region should be protected from development and maintained as a natural preserve.
- Make a case (speech, poster, song) for why your region should be the site of a 300-slip marina.
- Design a skit that tells the important information about your region.



**A.** Inland Sea

- A.** Inland Sea
- B.** Inland Sea
- C.** Missisquoi River Delta and Bay
- D.** Missisquoi Wildlife Refuge
- E.** South Lake
- F.** Harvesting milfoil in South Lake
- G.** Mallett’s Bay
- H.** Mallett’s Bay
- I.** Burlington on Main Lake
- J.** Main Lake

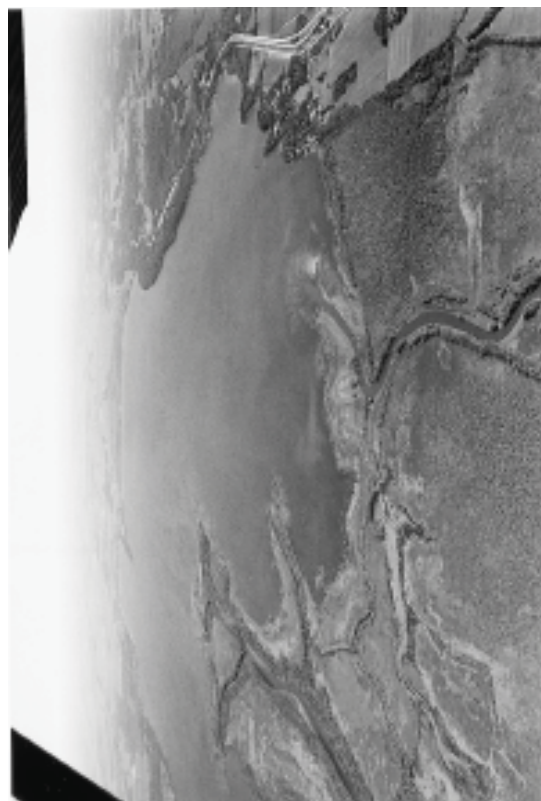


**B.** Inland Sea





**E.** South Lake



**C.** Mississippi River Delta and Bay

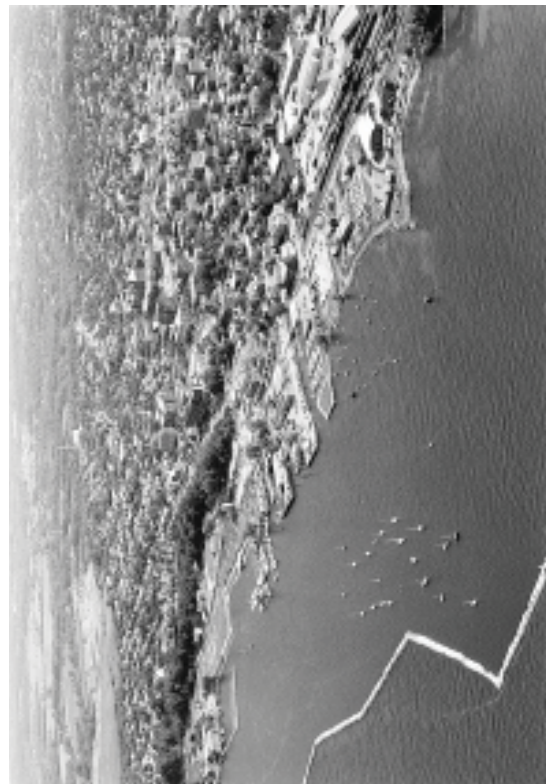


**F.** Harvesting milfoil in South Lake



**D.** Mississippi Wildlife Refuge





**I.** Burlington on Main Lake



**G.** Mallett's Bay



**J.** Main Lake



**H.** Mallett's Bay



## Activity: Reading a Map

### TEACHER NOTES *and* INFO

Below is a sampling of questions using the Vermont Department of Tourism's Official State Highway Map. It is possible to use a variety of maps to help kids discover geography facts. You can design more questions based on the map you are using.

## Reading a Map

**Look at the map scale and make a scale ruler.** 1 inch = \_\_\_\_\_ miles

1. Estimate the distance from Milton (Civil War Monument) to Shelburne. \_\_\_\_\_ miles
2. If a school bus averages 50 mph, how long would this trip take? \_\_\_\_\_
3. Find the route from Milton to Basin Harbor via Vergennes. Estimate the distance. \_\_\_\_\_ miles.
4. How long should it take the school bus? \_\_\_\_\_
5. Estimate the length of the lake from Benson Landing to Cantic, Quebec. \_\_\_\_\_ miles.
6. Find the widest part of the lake. Estimate the distance. \_\_\_\_\_ miles.
7. Find the distances between these communities on the lake:

Burlington—Port Kent	_____ miles	Burlington—Plattsburgh	_____ miles
Burlington—Shelburne Bay	_____ miles	Burlington—Port Henry	_____ miles
Plattsburgh—Shelburne Bay	_____ miles	Plattsburgh—Basin Harbor	_____ miles

**Using the map, choose locations that will make these sentences true. Write in your answers.**

8. How far must you travel if you went by boat from \_\_\_\_\_ to \_\_\_\_\_ to \_\_\_\_\_? \_\_\_\_\_ miles
9. It's about the same distance to travel by boat from \_\_\_\_\_ to \_\_\_\_\_ as it is to travel from \_\_\_\_\_ to \_\_\_\_\_.



# Activity: Comparing Lakes

## TEACHER NOTES *and* INFO

It is often incorrectly written that Lake Champlain is the sixth largest lake in North America. It's a common misconception that probably comes from it being called the sixth Great Lake. (Misconceptions are good things to share with students. You can even say that the author of this book always thought this was true!) In fact, Lake Champlain is the sixth largest freshwater lake in the continental United States. This activity compares the surface area, length, depth and elevation of Lake Champlain to other lakes in North America.

## STUDENT ACTIVITY

Ask students to speculate how large Lake Champlain is. How could they explain its size to someone who has not seen it? How does it compare to other lakes? Discuss depth and volume as ways to compare bodies of water. Which is the best measure to use? Why?

Complete a bar graph that compares Lake Champlain to the fifteen lakes, using the table of information on the following page.

Have a discussion about how the size of Lake Champlain has affected what human beings have done on the lake. Has the depth affected human activity? Has the volume? Would our history be different if the shape of the lake was different? Do the shape and size affect what kind of ecological problems there are? Do they affect what animals live here?

Compare the volume of Lake Champlain to other things in the world that students might be able to imagine.

**Example:** Compare the volume of Lake Champlain to how many gallons of water New York City uses in a day. If we plugged the Richelieu River and attached a hose that ran all the way to New York City, how many days could we supply New York City with water?

### *Other Ideas*

*Ask students to design a project that:*

- *compares the size of the fifteen lakes in some other way than a bar graph*
- *compares the depths of the lakes using a bar graph*
- *compares the volumes of the lakes using a bar graph.*

*A nonscientific estimate calculates that New York City uses 1.4 billion gallons of water a day (for resident and business use). Lake Champlain has an estimated volume of 6,800 billion gallons of water (or 6.8 trillion). Based on these numbers, Lake Champlain could supply New York City with water for 4,857 days—or 13 years and 112 days!*



## FIFTEEN LARGEST LAKES IN NORTH AMERICA

Lake	Area (sq. mi)	Length (miles)	Depth (feet)	Elevation (feet)
Superior	31,700	350	1,330	600
Huron	23,000	206	750	579
Michigan	22,300	307	923	579
Great Bear	12,096	192	1,463	512
Great Slave	11,031	298	2,015	513
Erie	9,910	241	210	570
Winnipeg	9,417	266	60	713
Ontario	7,550	193	802	245
Nicaragua	3,100	102	230	102
Athabasca	3,064	208	407	700
Reindeer	2,568	143	720	1,106
Nettiling	2,140	67	N/A	95
Winnipegosis	2,075	141	38	830
Nipigon	1,872	72	540	1,050
Manitoba	1,799	140	12	813
Champlain	435	120	400	96

**Note:** The level of Lake Champlain has actually been rising. The lake level given here is the mean lake level over the last 100 years. The maximum range between high and low averages in a year is 9.4 feet.

**Credit:** 1996 INFORMATION PLEASE ALMANAC.