

Great Salt Lake State Park

Junior Ranger Activity Booklet



This book belongs to: _____

Age: _____

Date: _____

Welcome to Great Salt Lake State Park & Marina! Become a Junior Ranger and help protect Utah's State Parks

There are a few steps you must complete to earn your Junior Ranger badge for Great Salt Lake State Park. Every state park is different. Each has its own plants, animals, history, and ecosystem (such as desert or forest). Each has its own unique things to do, like hike, swim, or climb.

Step One: Choose one of the following

- a) Attend a ranger program

Name of the program: _____

My favorite thing I learned: _____

Ranger signature: _____

- b) Watch at least 10 minutes of the Visitor Center Video

My favorite thing I learned: _____

- c) Attend a boat tour

Captain signature: _____

Step Two: Circle which one fits you!



**For ages 4-6:
Complete at
least 4
activities**

**For ages 7-9:
Complete at
least 6
activities**

**For ages 10-13:
Complete at
least 8
activities**

**For ages 14+ :
Complete at
least 10
activities**

Junior Ranger Activity Checklist:

Choose your adventures! Circle your age group under Step Two and then check off the activities you completed below:

- | | |
|--|--|
| ☐ Connecting the Past | ☐ Water, Water Everywhere |
| ☐ History & Exploration | ☐ Letter to the Lake |
| ☐ Treasure Hunt Bingo | ☐ Food Web |
| ☐ Sailing GSL | ☐ Brine Shrimp Life Cycle |
| ☐ Undercover Botanist | ☐ What's that Smell? |
| ☐ Geology Match | ☐ A-maze-ing Migration |
| ☐ Why so Salty? | ☐ Life Cycle of a Brine Fly |
| ☐ Adapt to Your World | ☐ Nature Conservation |

Step Three:

Pick up some litter in the park. Have an adult initial that you completed this: _____

Step Four:

Hand in your booklet to the ranger in the Visitor Center to review, recite the GSL Junior Ranger Pledge, and get your badge!

Good luck and have fun!

The Great Salt Lake State Park & Marina Junior Ranger Pledge:

I pledge to respect and protect all the plants and animals that I see at Great Salt Lake State Park, to continue learning throughout Utah's State Parks, and to share what I've learned with others.

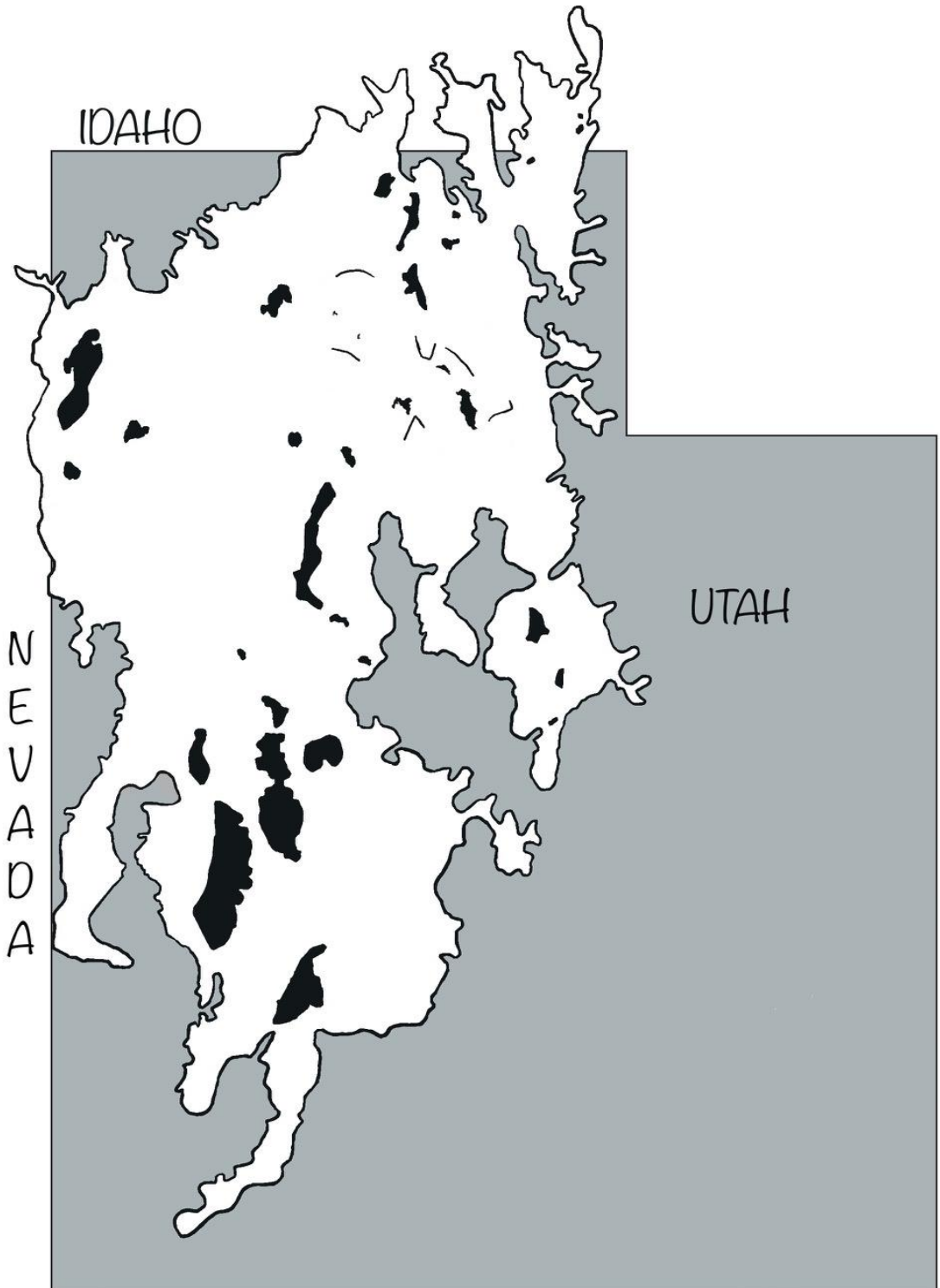
Connecting the Past

Great Salt Lake State Park used to be under a lot of water. Great Salt Lake is a remnant of Lake Bonneville, that existed about 32,000 years ago. Lake Bonneville covered almost a quarter of what is now the state of Utah.

**Draw where
Great Salt
Lake is in
comparison
to Lake
Bonneville.**

*Hint: There
are some
lines added
to assist*

To learn
more about
Lake
Bonneville
and levels of
Great Salt
Lake, check
out the
displays in
the Visitor
Center!



European History & Exploration

The first people began using the area around the lake as far back as 13,000 years ago. The Fremont Culture does not represent one group or language but encompasses many. Modern Tribes of the Great Salt Lake area are Ute, Paiute, Goshute, and Shoshone tribes.

The lake was first mentioned in European history by Silvestre Vélez de _____ after the Timpanogas Utes mentioned it.

1824- the lake was observed by Jim Bridger and Etienne Provost. _____ began to explore the area for furs

_____ - John C. Fremont lead an expedition but with the quick approach of winter their trip was cut short

1850- Howard Stansbury, Albert Carrington, and their exploratory party explored _____ miles of shoreline and its major islands.

Draw yourself at the lake & the date

Fill in the blanks using the best option below

WORD BANK

Trappers

Escalante

513

1843

Treasure Hunt Bingo

While you're exploring GSL State Park today, take a look around and see if you can complete any of these treasures. **Check off five in a row and you've got BINGO!** Try and find as many as you can, even if they aren't in a row.

B	I	N	G	O
Draw a geology feature* you see	Draw a flag you see	Hear the sounds of the marina	Find slag**	See a spider
Explore the beach	Touch the Great Salt Lake	See a mountain	Draw a spider web	See a map
See the brine shrimp	See a spider web	Draw your own observation	Explore Taz Point	Find something a bird could eat
Draw an animal you see	Explore the Visitor Center	See a boat	Touch the oolitic sand	What do you smell?
Speak with a ranger	Explore the Observation Deck	Draw a bird you see	Take a picture at the park sign	Draw a plant you see

*Geology feature: Earth's landscapes (Black Rock, Mountain, Beach, springs, etc)

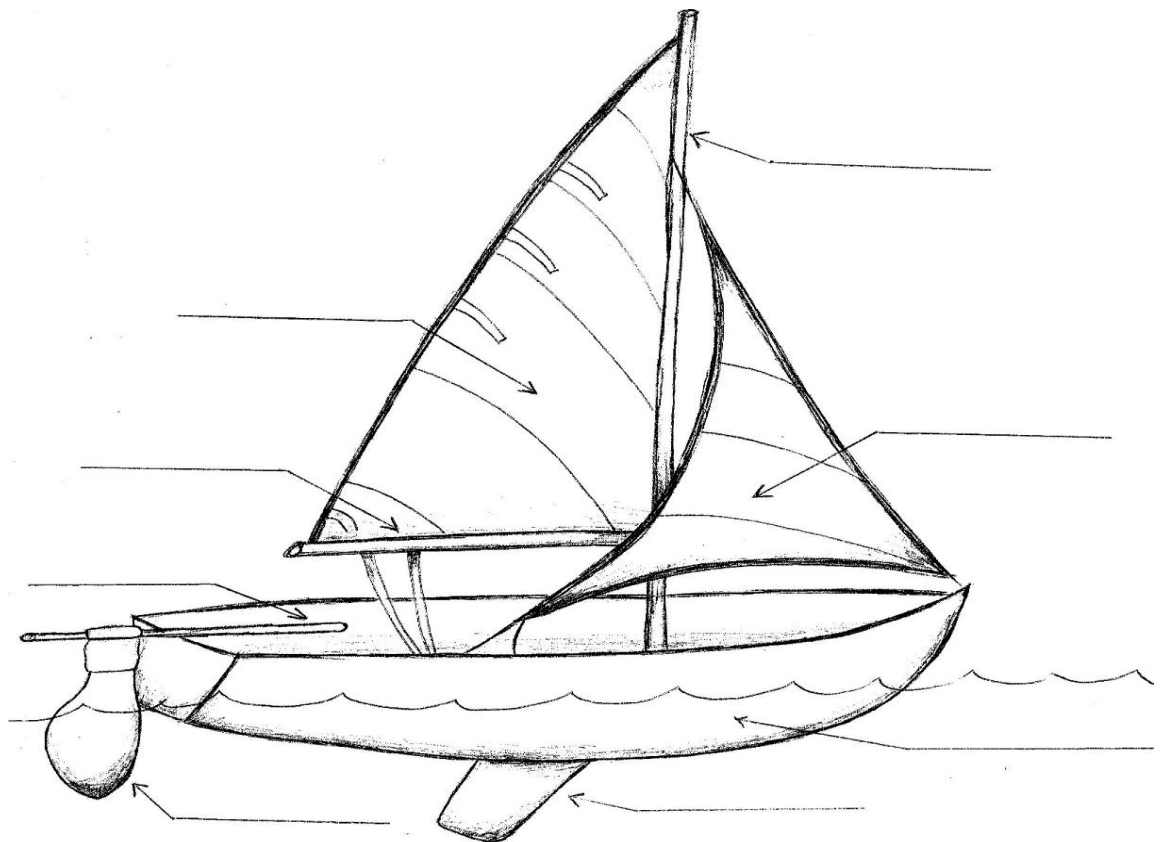
**Slag: the older byproduct from the Rio Tinto Kennecott smelter. Looks like a type of lava rock.

Sailing on Great Salt Lake

Great Salt Lake is a great place to go sailing! Sailboats have eight important parts:

- The **hull** is the shell of the boat, which holds all of the other parts of the boat, as well as the passengers.
- The **tiller** is what you use to steer the boat. It is attached to the **rudder**, and when you turn the tiller with your hand, it moves the rudder underwater to turn the boat left or right.
- The **mainsail** is the larger sail that captures the wind and uses the power of that wind to move the boat.
- The mainsail is attached to the **mast**, which is a long vertical pole in the middle of the boat.
- Attached to the mast is the **boom**, which is a horizontal pole that is also attached to the mainsail. The boom is moved back and forth to help the mainsail catch the wind.
- The **jib** is a smaller triangular sail that helps add power for the mainsail.
- The **keel** is a long, skinny plank that sticks out of the bottom of the hull, and helps to balance and keep the boat from tipping over.

Can you name
the eight
important
parts of this
sailboat?



What would you
take with you
on your sail?

Undercover Botanist

Be on the lookout for invasive phragmites, or the "common reed." This weed is problematic for many reasons:

- It easily takes over the habitat of native plant species.
- It's too thick for ducks to nest in.
- It reduces the habitat's available water and can clog canals and other waterways.



Draw a plant you see



I hereby name this plant: _____

What color is the plant? _____

How tall is the plant? _____

What type of plant is it? _____

If you need help identifying the plant there is a binder inside the Visitor Center of common plants of the park

Geology Match

Match the pictures to their descriptions



Oolitic Sand- This sand forms as calcium and magnesium carbonate particles in the salty water of Great Salt Lake harden around brine shrimp droppings, quartz grains or other tiny debris in the water. It is round and smooth.



Slag- Slag is usually a mixture of metal oxides and is the byproduct left behind from the smelting process. This is mistaken for "lava rock" around the park.



Mirabilite Mounds- During low lake levels these Sulphur based salt formations mound with specific winter conditions. These mound in a collection of small terraces.



Stromatolites- Living mounds of calcium and magnesium carbonate deposits produced by algae and other organisms. They provide important habitat for algae, as well as food and a morphing location for brine fly larvae, they can also serve as an additional food and oxygen source for brine shrimp.

Fun Fact: Mirabilite has only been documented in 3 other places in the world!

Why so Salty?

Fill in the blank spaces using the best fit from the word bank below

Great Salt Lake is a terminal lake, meaning there is no _____. Water leaves the lake through _____ and leaves minerals, such as _____ behind. Some parts of the lake are saltier than others. This is due to the man-made causeway that separates the _____ Arm from the South Arm of the lake or areas where the _____ rivers flow into the lake. Where Great Salt Lake State Park is located, the salinity is about 14%. Whereas the Farmington Bay area is 5% and the North Arm of the lake is _____. For comparison, the ocean is about 3-5% salinity.

Word Bank:

26

salt

evaporation

freshwater

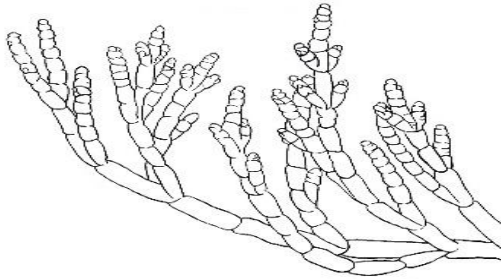
North

outlet

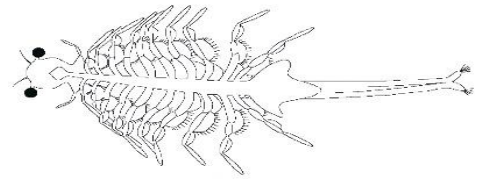
Adapt to Your World

Living in a salty environment means life around the lake has certain adaptations to survive.

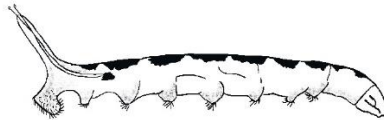
Pickleweed- Holds the toxic salt water in little cell pockets (vacuoles). The plant can then use the water it needs and store the salt it doesn't.



Brine Shrimp- When they feed on algae, salt water is ingested. Water and nutrients are able to pass through their system while salt is removed through the gills.



Brine Fly- Eggs and larvae of brine flies use the lake for food and as a molting location.



Draw your own adaptation

Water, Water Everywhere?



Most of Utah is a desert. That means water conservation is very important. Conservation means using only what you need, in order to make sure there is enough for everyone.

Do you know how much water you and your family use?

Gallons of Water Used	Times per Day	Gallons per Day
Shower: 2 gallons per minute	(Minutes showering per day)	
Wash face or hands: 4 gallons		
Loads of laundry: 30 gallons		
Flushing the toilet: 5 gallons		
		Total Used: _____

DID YOU KNOW? The average family of four uses 400 gallons of water a day! 2,000,000 (two million) people live in the Wasatch Valley. That's 500,000 families! How many gallons of water are used in Wasatch Valley per week?

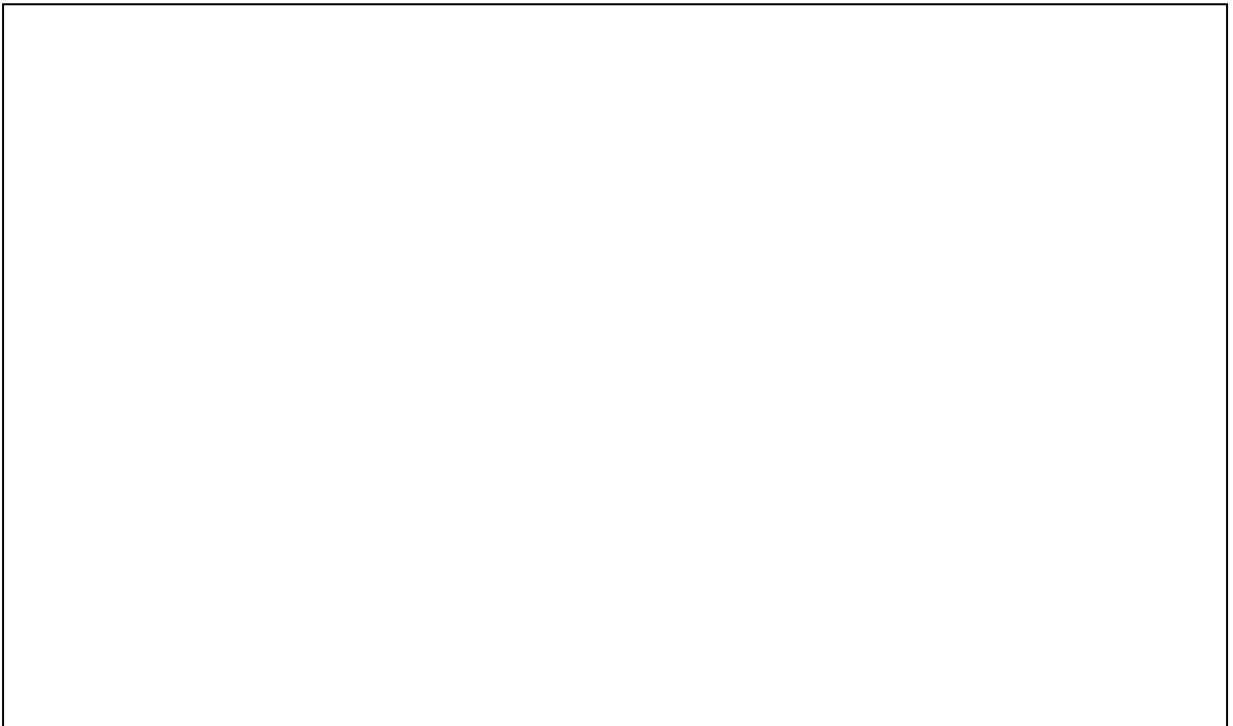
Answer: _____

Write ONE thing you can do today to save more water:

Letter to the Lake

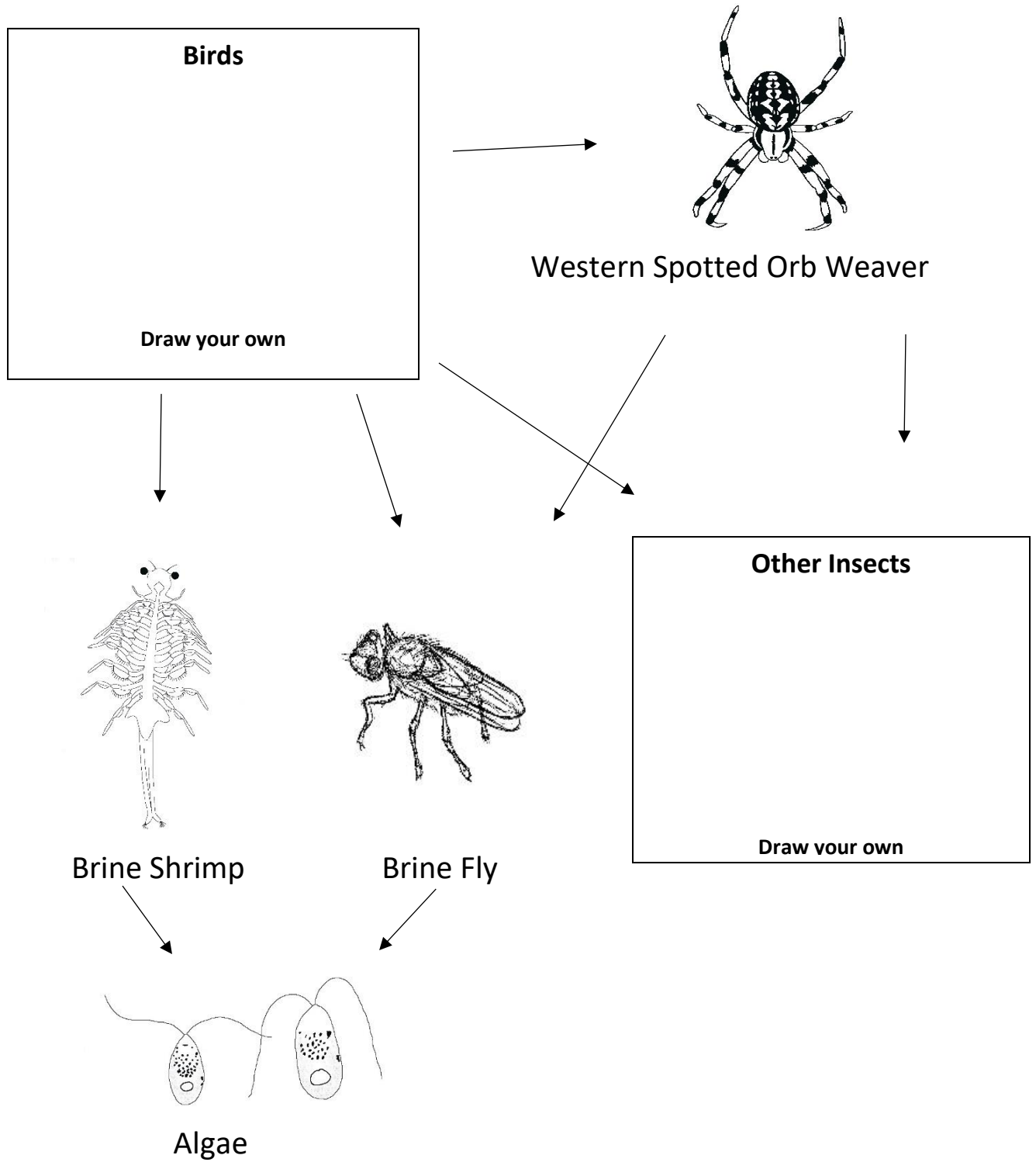
This is an opportunity to “speak” to the lake. What do you want to tell it? How does it make you feel to see it?

Draw how it makes you feel



Food Web

Complete the Food Web



Brine Shrimp Life Cycle

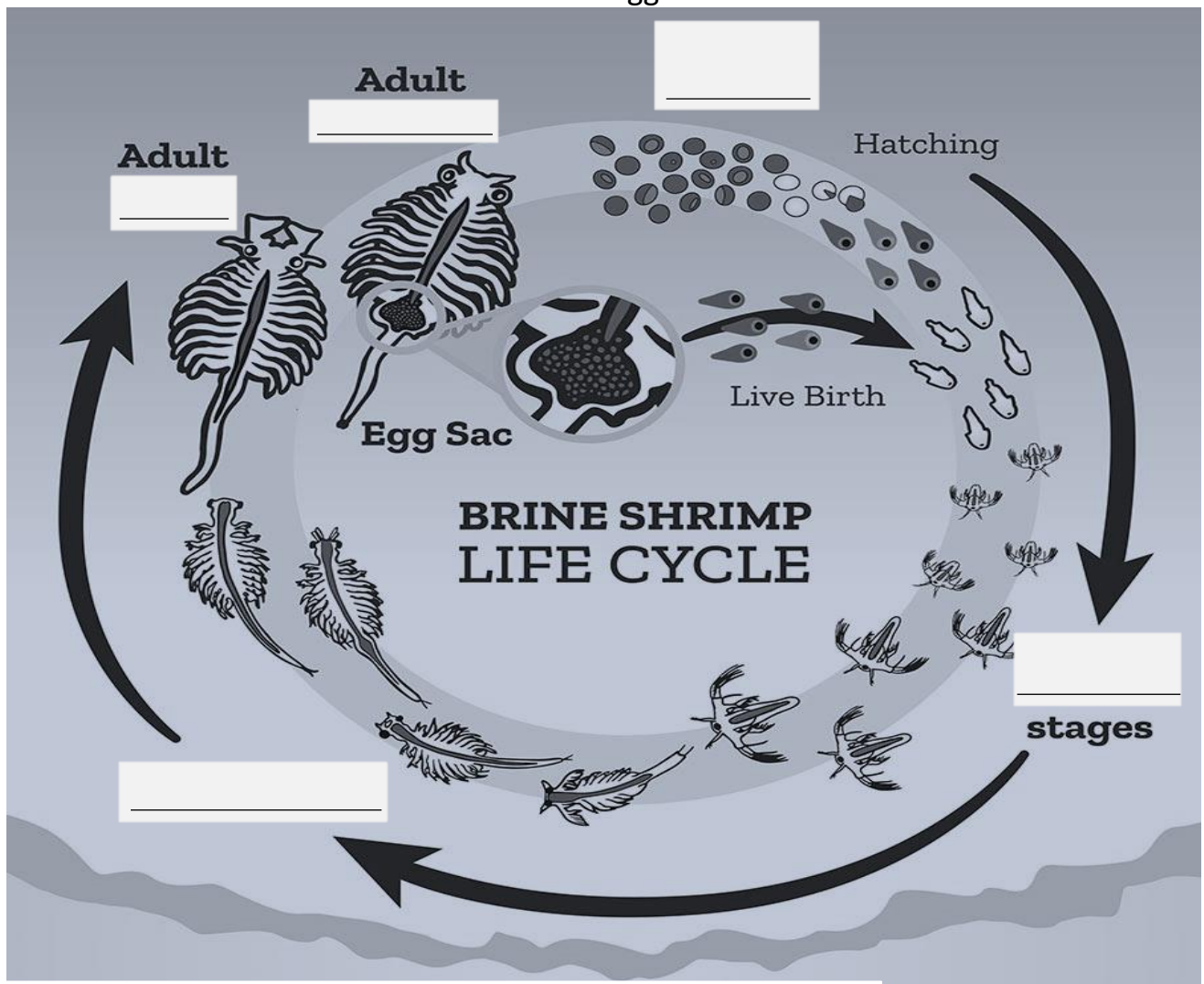
Brine shrimp have a life cycle, just like all other living things!

When brine shrimp are stressed, they produce hard eggs called **cysts**.

The rest of the time they have live births. Once a baby brine shrimp is out of the egg sac or the cyst, it is called a **nauplius**

These grow into juveniles with just a couple of legs, which then grow to **sub-adults** (teenagers). This is the life stage when you can usually tell if a shrimp is a male or female.

Females grow egg sacs to hold cysts and nauplii; **males** grow large claspers on the tops of their heads. By the time the brine shrimp are full-grown adults, the egg sacs and claspers are easy to see. You might even be able to see cysts or nauplii in the female's egg sac!



Fill in the blanks using the **bolded** words above

What's that Smell?

Visitors often ask what causes the strong odor along the shores of the Great Salt Lake. The smell varies in intensity depending upon temperature, season, wind direction, and weather conditions. This smell is caused by one or both of the following

Oolitic Sand:

Oolitic sand consists primarily of dead biomass (in this case brine shrimp egg casings, dead brine shrimp, bird droppings, etc) that has sunk to the bottom of the lake. It remains there “preserved” by the salt in the water, rolling around and collecting sediments until the grains become perfectly shaped little spheres. It is not unlike a jaw breaker with a solid color center surrounded by multi-colored layers.

When this Oolitic sand is exposed to heat, light, and wave action along the shore, the outer layers start to erode and the material decomposes (and smells). It can also vary in color from green to light brown

Bacteria:

Bacteria are microscopic organisms that feed upon organic matter causing it to decompose. Most freshwater lakes and rivers contain aerobic bacteria which use oxygen and does not smell.

The Great Salt Lake is so salty that it reduces the level of oxygen in the water and does not support aerobic bacteria.

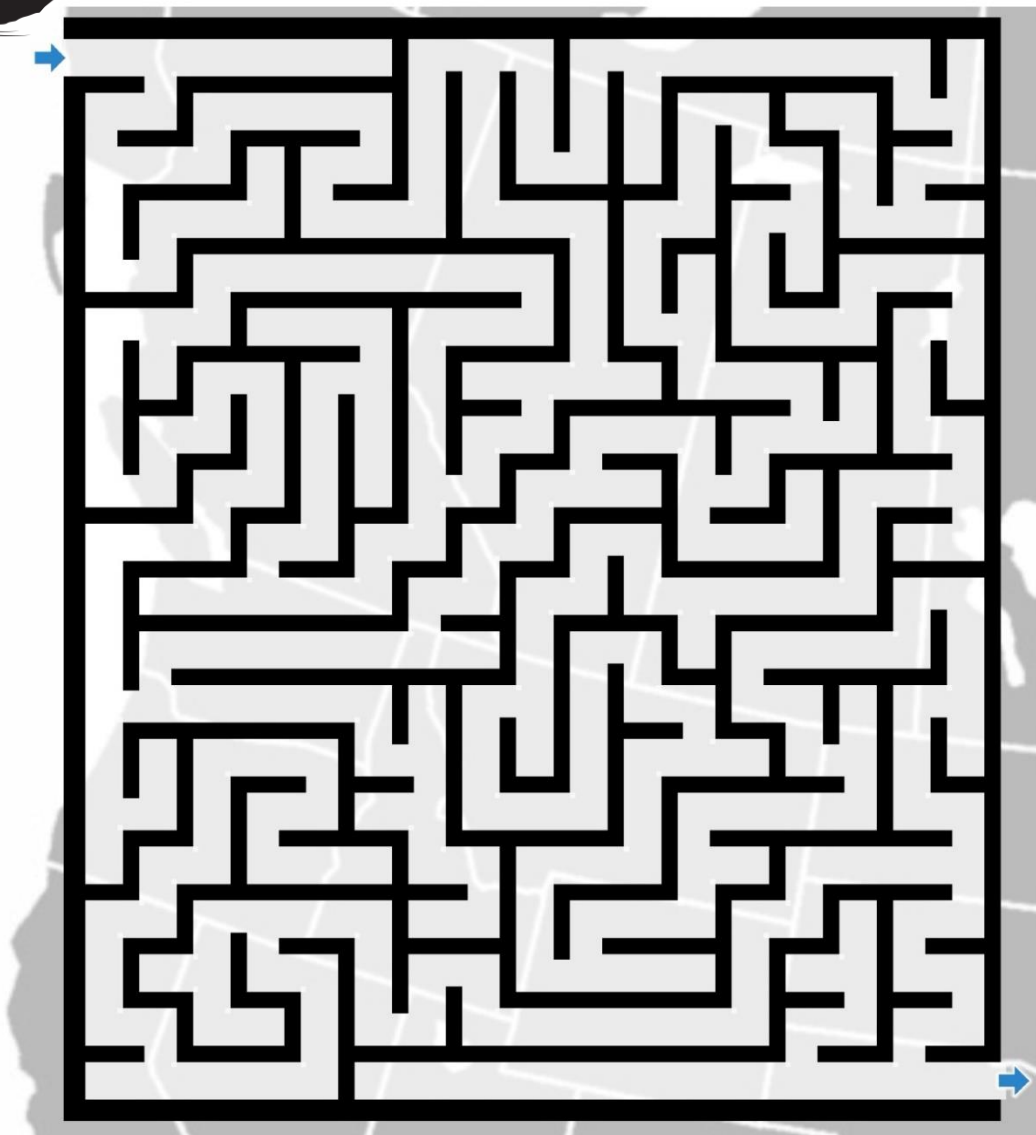
Instead anaerobic bacteria (which doesn't need oxygen) thrive here. It effectively decomposes the organic matter, but unfortunately produces a rotten egg smell in the process.

What do you smell?

A-maze-ing Migration

Get the Wilson's Phalarope from its nesting grounds to Great Salt Lake!

Every year, thousands of Wilson's Phalaropes scatter across western Canada and the northern United States to nest. After nesting, about one-third of the world's population funnel to Great Salt Lake. Here they forage on invertebrates, like brine shrimp, and store energy reserves as they migrate to their wintering grounds. Phalaropes famously spin in circles while jabbing at food vortexed to the surface by the rapid paddling of their feet. They continue their travels, flying 5,000 miles in 54 hours to reach their destination. This epic non-stop journey usually ends somewhere in Argentina, Bolivia, Peru, or Chile at inland saline lakes.



Complete the maze to get the Wilson's Phalarope safely to Great Salt Lake

The Life Cycle of a Brine Fly

Brine flies are an important part of Great Salt Lake's **ecosystem**. They can often be found in the **marina**, flying along the shorelines in big swarms. But don't be afraid of them—they are harmless to humans! Brine flies go through several **phases** in their life:

1. First, brine flies lay their **eggs** on the surface of **Great Salt Lake**.



2. The eggs then hatch into **larvae**, which eat the **algae** in the lake as they grow.



3. The larvae then form a **pupal casing**, which is like a little cocoon where they change into an adult fly.



4. When the fly is ready to hatch, it floats to the surface of the water in an air **bubble** and flies away!



The adult **brine fly** only lives for 3-5 days! **California gulls** run along the **shorelines** with their bills open, scooping up the adult flies and eating them.

Orb weavers also eat the brine flies when they get caught in their **webs**

Find the **Bolded** words from the life cycle in the word search below

T	H	X	V	H	U	Q	I	M	S	G	H	E	N	S
D	Z	Z	R	V	N	J	P	E	F	I	N	K	E	L
A	L	G	A	E	L	H	N	P	E	D	F	A	S	L
T	P	Q	W	T	Z	I	P	K	K	J	Z	L	B	U
J	X	U	O	E	L	P	C	L	O	N	F	T	U	G
P	Y	T	P	E	L	P	T	H	A	Q	Y	L	B	A
F	S	F	R	A	M	S	E	S	A	H	P	A	B	I
R	W	O	K	A	L	H	L	Q	U	U	J	S	L	N
X	H	I	R	K	M	C	D	V	H	J	T	T	E	R
S	Y	I	Q	C	D	Y	A	B	D	Y	B	A	J	O
T	N	O	A	M	L	J	U	S	V	R	F	E	D	F
A	P	L	E	S	W	W	H	V	I	N	C	R	K	I
O	K	U	C	R	G	Y	E	N	W	N	V	G	U	L
Q	V	H	O	K	K	G	E	B	G	D	G	D	E	A
J	P	A	S	M	M	F	E	I	S	N	U	A	M	C
K	L	O	Y	J	L	L	G	C	H	I	V	P	B	X
D	B	D	S	Y	N	E	X	W	S	R	R	O	W	I
L	E	X	T	O	R	B	W	E	A	V	E	R	S	O
H	D	G	E	M	O	E	C	L	C	G	S	K	H	T
Q	Z	O	M	D	A	I	Y	U	L	M	D	V	Y	C



Nature Conservation

Junior Rangers are considerate of their stays at Utah State Parks. They also share what they know with others so they can do the same. Follow the “Leave No Trace” principles below

1. **Know before you go.** Be prepared. Know the rules or concerns of the area you’ll visit. Pack clothes to protect you from the weather. Always carry a map of the area.
2. **Travel and camp on durable surfaces.** Stay on the trail to protect the park and yourself. Good campsites are marked not made.
3. **Dispose of waste properly.** Pack it in and pack it out. Keep the park #BeUTAHful by picking up any trash you may see.
4. **Leave what you find.** Take only pictures and memories. Leave natural objects as you find them.
5. **Minimize campfire impacts.** Where fires are allowed, use only existing fire rings. Put out the fire completely before leaving.
6. **Respect wildlife.** Observe wildlife from a distance. Never feed animals. Keep your pets leashed at all times.
7. **Be kind to other visitors.** Be courteous in the park. You share the park with other people. Listen to nature, and avoid loud voices or noises.

How can you practice these at Great Salt Lake State Park?

Congratulations!

You are almost done, double check all the steps have been completed and then return to the Visitor's Center for review and to get a badge.

You are now a Junior Ranger; Great Salt Lake State Park welcomes you as a member of our team!

What is your role as a Junior Ranger?

Junior Rangers help park rangers to protect and preserve our State Parks. You can do this in many ways:

- Talk to your friends and family about the many important and interesting natural resources in the park.
- Help to clean up the park and other natural areas, and teach others about the importance of keeping our environment clean.
- Do your best to help protect the plants and animals that share the park with us.
- Attend Junior Ranger Programs to update your skills and learn new ones.
- Challenge yourself to become a Junior Ranger at other parks!

We challenge you to take what you have learned at Great Salt Lake State Park and Marina with you when you leave the park, and share it with others. We hope that you enjoyed your visit and that you come back and see us again soon!

Check out other Utah state parks at <https://stateparks.utah.gov/parks/>

Great Salt Lake State Park and Marina Junior Ranger Certificate

This certifies that

Has completed the Great Salt Lake State Park and Marina Junior Ranger Program, and is now a

JUNIOR RANGER

A Junior Ranger respects and protects our earth's natural resources, from the water and the soil to the plants and the animals.

Great Salt Lake State Park & Marina

Date