

Wetland Wheel



Grade Level
4-12

Subject Areas
Botany, Environmental
Science, Art

Duration
One hour

Setting
Classroom

Skills
Organizing and analyzing

Charting the Course
Use this activity as a supplement to the dichotomous keys in "This Plant Key Is All Wet!" to identify plants on a wetland field trip. You will need to review characteristics of plants with your students. Follow this activity with "Tracking Plants and Keeping Track," a field exercise in plant sampling and herbarium preparation. Special wetland plant adaptations are examined in "Wetland Weirdos."

Vocabulary
dichotomous key, plant identification

Summary

How about a quick and easy way to identify plants in your local wetland?

Students construct a Wetland Wheel with all the answers!

Objectives

Students will classify selected wetland plants and learn to recognize those plants indigenous to wetlands.

Materials

- copies of wheel pieces and instructions
- several pairs of scissors with pointed blades
- straight pins
- paper fasteners
- paste or glue sticks
- transparent contact paper to laminate each piece of the wheel (optional)
- colored pencils (optional)
- colored ribbon or tape
- stapler (optional)

Making Connections

Students may have noticed many different types of plants and flowers in a field, on a mountaintop, or in a wetland. They may have wondered about the names of those interesting plants. Creating and using the Wetland Wheel sharpens observation and classification skills and helps students recognize wetland areas more readily.

Background

See the background section in "This Plant Key Is All Wet!" (p. 123) and "Tracking Plants and Keeping Track" (p. 138).

Procedure

Warm Up

Ask students what types of plants

they would expect to find in a wetland. Can they name a wetland tree, shrub, and vine, and an emergent plant and aquatic plant? How do they think these plants have adapted to a wet environment? What features make wetland plants unique?

Note: The species used in this activity are more common in the eastern United States and are most often found in fresh or slightly brackish water. However, some of these plants are common in most areas of the country. If you are visiting a salt marsh you will need to use a field guide. Since many species could not be included here, field guides will help in any case (see Resources, p. 327).

The Activity

Part I

Hand out the materials needed to construct the Wetland Wheel and give each student a copy of the How to Make a Wetland Wheel instruction card. Have them make a wheel.

You may want to white-out the numbers on the plant wheel to make identification more challenging. If your students are younger, it may be helpful to lightly color each of the five major groups of plants with unique colors to aid in plant identification. To do so, lightly color all the wedges on the large wheel marked "Emergent" and all the corresponding wedges on the small wheel with matching numbers with the same color. Choose a different color and do the same for each of the other plant groups. Have your students use the colors to match the wedges correctly. Similarly, you

could leave the numbers on the wedges as an aid to younger students.

Part II

Try to scout the field site and find the plants you want to use before doing this activity. Or, ask a naturalist who is familiar with local wetland vegetation to tell you which of the plants found on this wheel you might encounter at your field site. Plan to use only those plants you have prechosen on your field trip. Have the class look at pictures of the plants before the trip so that they will be more familiar with them in the field. When you arrive with your students, use a tape or ribbon to indicate the plants they are to identify with the wheels—without telling them the names of the plants.

Wrap Up

Have students discuss what they found. Was it easy to use the wheel? How might it compare with using a field guide? Encourage them to keep a tally of plants they have identified.

Assessment

Have students:

- construct a Wetland Wheel.
- use a Wetland Wheel to “key out” a wetland plant.

Extensions

Students can create a Wetland Wheel for any type of wetland. Have them research plants that might be on a Wetland Wheel for a New England bog, a North Dakota prairie pothole, a Florida cypress swamp, and a Missouri River riparian wetland.

After they have keyed out some wetland plants, have them create an herbarium of selected, common species (see p. 138).

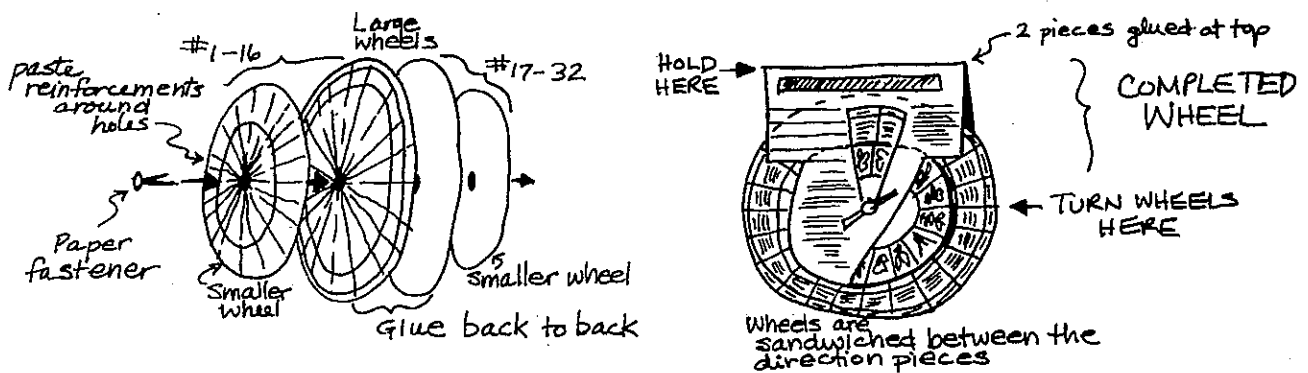
Have students find out Latin names for plants they key out. Using the “What’s Its Name” list on p. 137. Look up these plants in field guides.

Notes:



How to Make a Wetland Wheel

1. Glue each *direction piece* to a manila folder or piece of tagboard. As a nice added feature, cover both sides of each piece with the contact paper. Cut through all thicknesses along the solid outline. Cut out the pie-shaped section in each direction piece to make a window. Place the pieces back to back, match them up, then glue or staple them together across the top only.
2. Carefully cut out *each of the four wheels* along the solid outline.
3. Poke pinholes in the center of each of the two large wheels, then use the pin to line up the two wheels back to back. Glue the wheel pieces together, back to back, so that centers match. Remove the pin. Cover both sides of the large double-sided wheel and each smaller one-sided wheel with contact paper, if desired.
4. Match the side of the large wheel #1 that has trees, shrubs, and vines with the small wheel #1 that has illustrations of trees, shrubs, and vines (numbers 1-16, if you have kept the numbers). Align the small wheel with the large wheel so that the edge of the small wheel lines up with the inside circle on the large wheel. Gently push a paper fastener through the center of the small wheel, then the large wheel. Now match small wheel #2 (emergents and aquatics, numbers 17-32) with the other side of the large wheel; thread it onto the paper fastener. You should now have a two-sided wheel. Remove the paper fastener, keeping the three wheels in alignment.
5. Slide the wheels between the two halves of the direction piece. Adjust the wheels and direction piece halves until all the centers line up. The outside edge of the large wheel should fit just behind the top edge of the window. Gently push the paper fastener through the top half of the direction piece, all three wheels, and the bottom half of the direction piece.
6. Fasten the paper fastener, and your Wetland Wheel is ready to use!





Direction Piece

Cut along solid outline.

Wetland Wheel

A Wheel-y Fun Way to Learn Wetland Plants!

What TYPE of plant is it? ⇨	
Description of plant: ⇨	
What is its NAME? ⇨	
What does it look like? ⇨	

Remember to look closely at the leaves and stem arrangement of each plant!

Leaf edges may be:

- entire (smooth)
- toothed (jagged) or wavy

Leaves may be:

- simple (one part)
- compound (many parts [leaflets]):
 - pinnate = like a feather
 - palmate = shaped like a hand

Leaf shape may be:

- round, oval, oblong, egg-shaped, etc.
- lance-shaped (long, pointy) or tapered
- lobed (edges curve inward in places, almost dividing leaf into parts)

Leaves may be arranged along the stem so that they are:

- opposite
- alternate
 - whorled (like spokes of a wheel)

Directions:

1. Find a wetland plant to identify.
2. Turn the small wheel until you find a picture that looks like the plant.
3. Turn the large wheel until you find a description that matches the plant. This will give you the name of the plant!

Hint: If your wheel has numbers, be sure the choices you line up in the window have the same number!

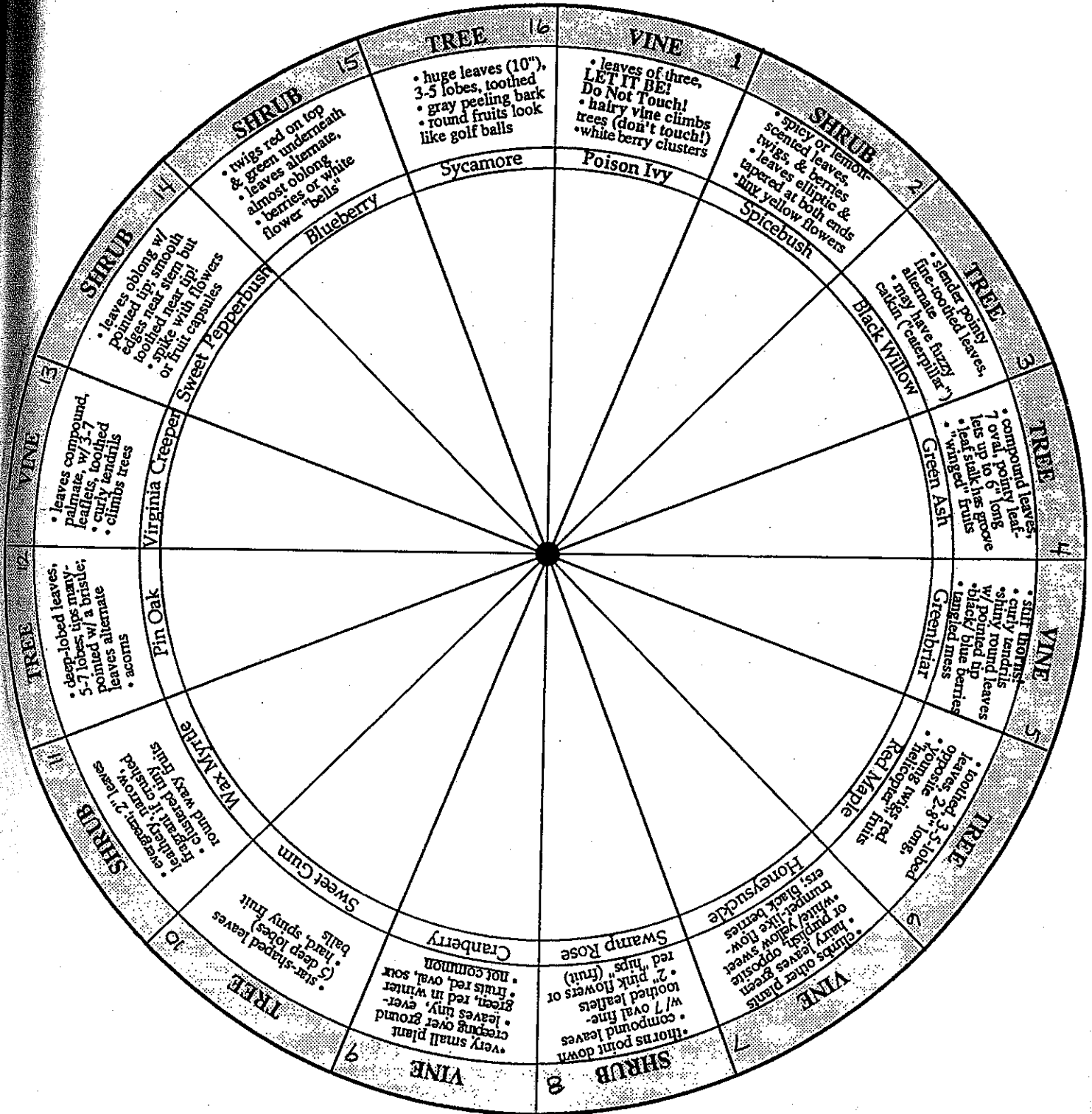


Large Wheel #1

Photocopy and cut one (1) per Wetland Wheel.

(Paste to Large Wheel #2, back to back.)

Cut along solid outline.



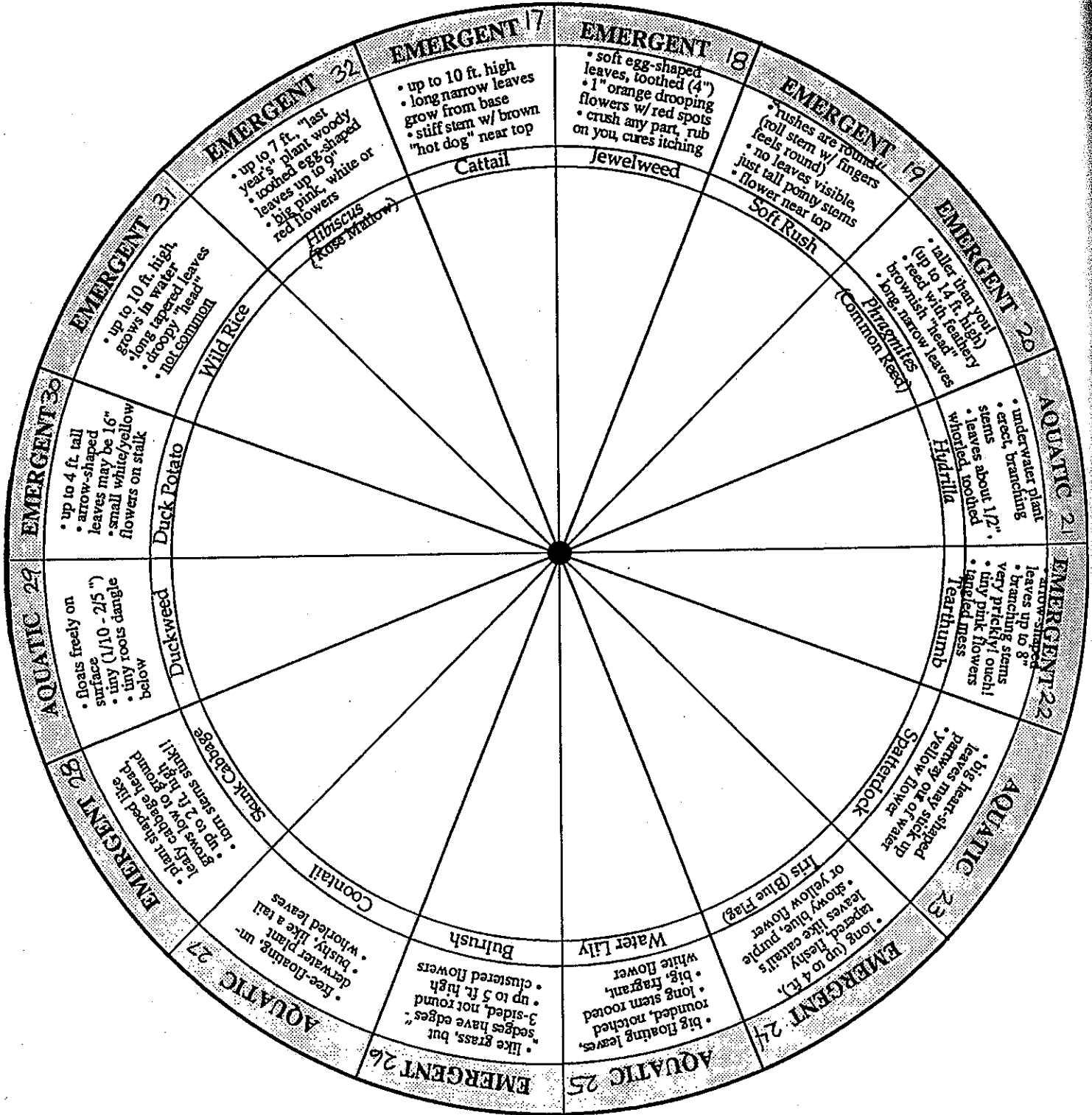


Large Wheel #2

Photocopy and cut one (1) per Wetland Wheel.

(Paste to Large Wheel #1, back to back.)

Cut along solid outline.





Small Wheel #1 (trees, shrubs, and vines)

Photocopy and cut one (1) per Wetland Wheel.

Cut along solid outline.

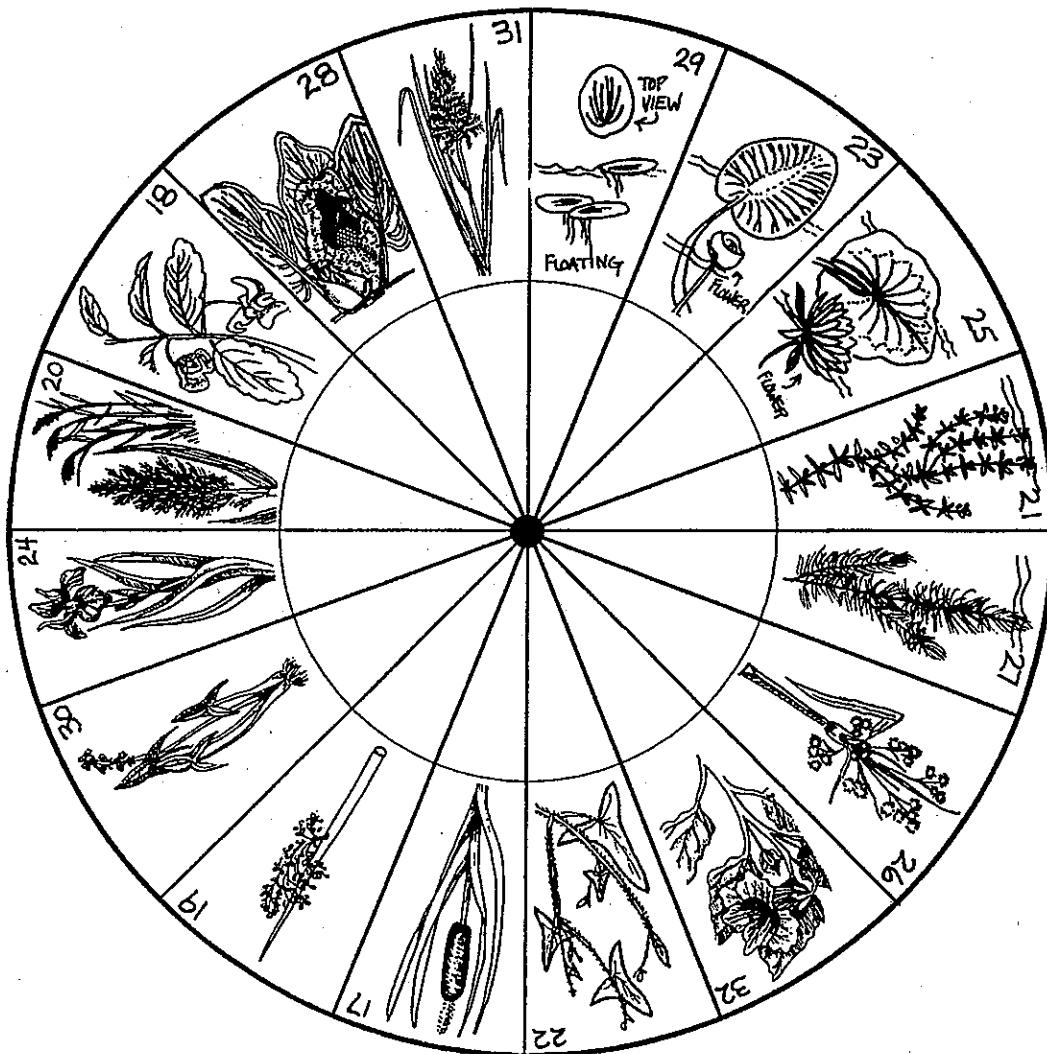




Smaller Wheel #2 (aquatics and emergents)

Photocopy and cut one (1) per Wetland Wheel.

Cut along solid outline.





What's Its Name?

This is a reference list of plant names when looking up plants in field guides or other reference books. Common names often differ from region to region, so use the latin names (*Genus, species*) to locate plants in books. The plants are used in the Wetland Wheel and dichotomous keys.

Category of Plant	Common Name	Latin Name
Emergent	Coontail	<i>Ceratophyllum demersum</i>
Emergent	Hydrilla	<i>Hydrilla verticillata</i>
Emergent	Spatterdock	<i>Nuphar lutea</i>
Emergent	Water Lily	<i>Nymphaea odorata</i>
Emergent	Duckweed	<i>Spirodela polyrhiza</i>
Emergent	Hibiscus or Rose Mallow	<i>Hibiscus palustris (moscheutos)</i>
Emergent	Jewelweed	<i>Impatiens capensis</i>
Emergent	<i>Phragmites</i> (Common Reed)	<i>Phragmites australis</i>
Emergent	Skunk Cabbage	<i>Symplocarpus foetidus</i>
Emergent	Duck Potato (Arrowhead)	<i>Sagittaria latifolia</i>
Emergent	Cattail	<i>Typha angustifolia (latifolia)</i>
Emergent	Soft Rush	<i>Juncus effusus</i>
Emergent	(Green) Bulrush	<i>Scirpus atrovirens</i>
Emergent	Wild Rice	<i>Zizania aquatica</i>
Emergent	(Halbred-leaved) Tearthumb	<i>Polygonum arifolium</i>
Emergent	Iris or Blue Flag	<i>Iris versicolor</i>
Shrub	Sweet Pepperbush	<i>Clethra alnifolia</i>
Shrub	Spicebush	<i>Lindera benzoin</i>
Shrub	Blueberry	<i>Vaccinium corymbosum</i>
Shrub	Wax Myrtle	<i>Myrica cerifera</i>
Shrub	Swamp Rose	<i>Rosa palustris</i>
Tree	Sycamore	<i>Platanus occidentalis</i>
Tree	Red Maple	<i>Acer rubrum</i>
Tree	Sweet Gum	<i>Liquidambar styraciflua</i>
Tree	Pin Oak	<i>Quercus palustris</i>
Tree	Green Ash	<i>Fraxinus pennsylvanica</i>
Tree	Black Willow	<i>Salix nigra</i>
Vine	Poison Ivy (<i>Do not touch!</i>)	<i>Toxicodendron radicans</i>
Vine	Virginia Creeper	<i>Parthenocissus quinquefolia</i>
Vine	Greenbriar	<i>Smilax rotundifolia</i>
Vine	(Japanese) Honeysuckle	<i>Lonicera japonica</i>
Vine (trailing plant)	Cranberry	<i>Vaccinium macrocarpon</i>

