



Pre Visit 1
What 's in your Water
6-8

Vocabulary

Purpose/Objective

Students will be able to identify vocabulary related to Florida water and wetlands

Materials

Word search copies
Pencils
Dictionaries

Procedure

1. Pass out the word search
2. Have students complete the word search and hidden phrase
3. Have students look up any words that they do not know

What's in Your Water

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

- ACID
- ALGAE
- AQUIFER
- BASE
- BLOOM
- DISSOLVED OXYGEN
- ECOSYSTEM
- GROUNDWATER
- HABITAT
- LIMESTONE
- NITRATES
- RUNOFF
- WETLAND

_____ ' _____



Pre Visit 2

What 's in your Water

6-8

pH

Purpose/Objective

Students will be able to identify acids and bases using pH indicators
Students will be able to identify household items that may end up in waterways and affect wetland health

Materials

pH paper or indicator solution
Common house hold cleaners and liquid items (DONOT INCLUDE BOTH BLEACH AND AMMONIA)
Beakers
Stirring rods
Data Sheet

Procedure

1. As a class, review pH
2. As a class discuss the pH of water and Aquatic animal health
3. Hand out data sheet
4. Students will be testing the pH of all the chemicals
5. They will write down each chemical on the proper place on the pH scale on their data sheet
6. Once students have tested and recorded pH values for all the liquids available to them, have them experiment with pH levels:
 - a. Lemon Juice pH 2, how much water would you have to add to 1ml of lemon juice to make it pH or 6?
 - b. Tooth Paste pH 9, how much water would you have to add to 1ml of toothpaste to make it pH7
7. Give them 3-5 of these experiments based on the chemicals you have provided them
8. When the lab is finished and cleaned up, have a discussion about the implications of what they just did. How can dilution help with pollution? How can knowing the pH of these items help diagnose a water quality problem? How would these particular chemical end up in the wetlands in the first place?
- 9.

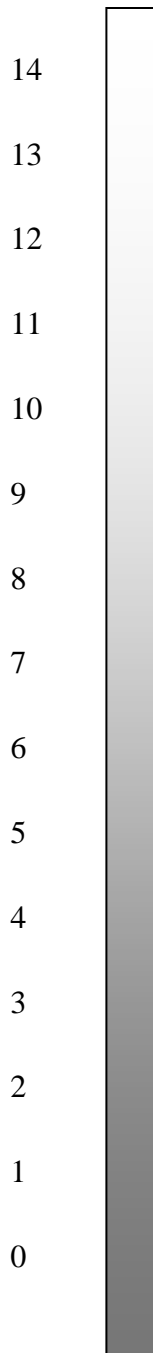
Limiting pH Values

Minimum	Maximum	Effects
3.8	10.0	Fish eggs could be hatched, but deformed young were often produced
4.0	10.1	Limits for the most resistant fish species
4.1	9.5	Range tolerated by trout
4.3	---	Carp died in five days
4.5	9.0	Trout eggs and larvae develop normally
4.6	9.5	Limits for perch
5.0	---	Limits for stickleback fish
5.0	9.0	Tolerable range for most fish
---	8.7	Upper limit for good fishing waters
5.4	11.4	Fish avoided waters beyond these limits
6.0	7.2	Optimum (best) range for fish eggs
1.0	---	Mosquito larvae were destroyed at this pH value
3.3	4.7	Mosquito larvae lived within this range
7.5	8.4	Best range for the growth of algae
10.		

Fun with pH

Name _____

Test each of the liquids in front of you with the pH indicator given to you by your teacher. Place the name of each liquid on the scale below by the corresponding pH value.





Pre Visit 2
What 's in your Water
6-8

Wetland Definition

Purpose/Objective

Students will be able to define the term 'Wetland'
Students will be able to use metaphor to describe household items as parts of a wetland

Materials

Sponge
Sieve/Strainer
Bed/pillow (doll house size)
Water filter pitcher
Food container
House/roof
Paper
Pencil

Procedure

1. Write 'wetland' on the board
2. In a think-pair-share have students come up with a working definition of a wetland (An area of land in which, at least some of the time, water saturates the soil)
3. Make a list of things that a wetland provides for wildlife and what it does for water
4. Hold up each of the household items, one at a time. Allow students time to write down what they use the item for at home:
 - a. Sponge: at home, cleaning stuff
5. Next to what they use the item for at home, have them write down what a wetland provides for water and wildlife that is similar to what that item does for the student at home.
 - a. Sponge: at home, cleaning stuff, like a wetland cleans water
 - b. Bed: at home, to rest or sleep in, like a wetland is a place for birds to rest and animals to rest
 - c. Sieve/Strainer: at home to catch the big stuff, like a wetland filters particulates out of the water
 - d. Water filter cleans out nutrients from the water
 - e. Food Container-provides food for animals
 - f. House: provides habitat for several types of animals

6. Make a list on the board of some of the ideas your students had
7. Have them rewrite their ideas as metaphors
 - a. Sponge: at home, cleaning stuff, like a wetland cleans water- A wetland is a sponge that cleans the water.
 - b. A wetland is a bed for the birds that migrate from one place to another, allowing them to rest safely.

What's In Your Water? Vocabulary

Dissolved Oxygen – the amount of oxygen dissolved in a body of water as an indication of the degree of health of the water and its ability to support a balanced aquatic ecosystem.

PH – the measurement of the acidity or alkalinity of a solution on a scale of 0 to 14.

Nitrates -

Aquifer - any geologic formation of sand, soil and gravel where groundwater is stored.

Wetland - a lowland area, such as a marsh or swamp that is saturated with moisture, especially when regarded as the natural habitat of wildlife.

Karst Topography - an area of limestone terrain characterized by sinks, ravines, and underground streams.

Limestone - a sedimentary rock consisting or mainly calcium that was deposited by the remains of marine animals.

Groundwater - the water beneath the surface of the ground, consisting largely of surface water that seeped down: the source of water in springs and wells.

Pollution - the introduction of harmful substances or products into the environment.

Runoff - water that does not become absorbed by the earth but flows across the surface of the land into a stream or lake.

Contaminate - to make impure or unsuitable by contact or mixture with something unclean, bad, etc.

Algae bloom – rapid increase in the population of algae in an aquatic system.

Eutrophic – an abundant accumulation of nutrients that support a dense growth of algae and other organisms.

Oligotrophic – a lack of nutrients and plant life resulting in sparse algae growth and other organisms.

Ecosystem - The interaction between organisms and their environment.

Habitat - A place that is natural for the life and growth of an organism.

Acid

Base