

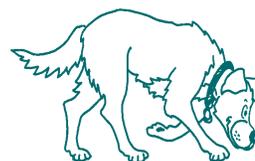


Field Notes of

Name

Collected on

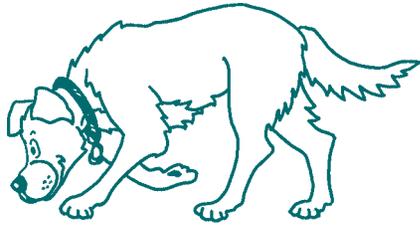
Date





Extra Notes

Nosing around: The Field Trip



Gearing Up



PERSONAL GEAR

Listen to a weather report before you go on your field trip.



- Will it be hot? Pack a hat, sunblock and drinking water.
- Will it be cold? A sweater and windbreaker will help keep you warm.
- Is there a chance of rain? Wrapping both yourself and your equipment in something waterproof may save the day.

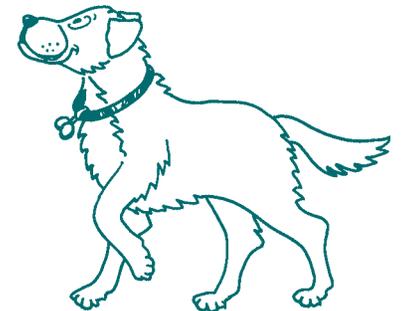


Wear rubber boots or old sneakers that you don't mind getting wet or dirty. Going with bare feet is not a good idea as there may be broken glass or other sharp objects at your monitoring site.



If mosquitoes or blackflies are a problem, it is better to wear lightweight, loose-fitting clothes that cover you up, instead of using a lot of bug spray.

WARNING: Bug spray on your hands will hurt or kill the little critters you will be catching – and pollute the water.





The Water Conservation Pledge

1. I will remember water is shared with all living things.
2. I will teach people about the value of water.
3. I will always look for ways to cut down on water use.
4. I will not run water without using it.
5. I will repair leaks as soon as they occur.
6. I will never pour poisons down the drain.
7. I will remember that fresh water is a limited resource.
8. I will shop wisely as everything I buy needed water to grow or to be made.
9. I will cover the Earth with plants to slow down the flow of water.
10. I will remember that I am part of the water cycle.

Your Signature

WATERSHED MONITORING SITE SURVEY

PHYSICAL DATA

3. Is your monitoring site:

- a. natural? b. human-made? c. changed by humans?

4. If humans have made changes, list them. Circle the changes you feel have been bad for the health of the monitoring site.

5. Do you see litter? a. yes b. no

6. If the land beside the water is not covered with plants, then the soil can wash away. This is called bank or shore erosion. Do you see signs of erosion?

- a. none b. some c. a great deal

7. What is the soil type beside the water? (You may have to carefully dig under plants to see this. Repair the hole.)

- a. dark mud b. brown soil
 c. sand d. no soil, just rocks



WATERSHED MONITORING SITE SURVEY

PLANT COVER

Collect Physical Data on Your Monitoring Site



GOOD PLANT COVER



POOR PLANT COVER

CHECK OUT THE PLANT COVER

Why?

Plant cover:

- prevents bank and shore erosion
- breaks down pesticides before they can get into the water
- uses fertilizers that are in runoff water
- provides habitat for animals
- is nature's way to shade and cool the land, and to break the force of wind and water

Bringing It Home

The most powerful tool to help take care of the watershed is **YOU**. No one but you can decide how you are going to live your life. It's a simple choice—either you are going to do things that improve the health of the watershed—or you're not. Your choice...

These are some water saving tips that you and your family can do.

- Turn off the water while brushing your teeth.
- Never flush wastes down the toilet that could have gone in the garbage.
- Wash only full loads in the dishwasher and washing machine.
- Keep drinking water in the refrigerator instead of running the tap for cold water.
- Wash fruit and vegetables in a bowl or half-filled sink instead of under running water.
- Collect rainwater from the roof and use it to water garden plants.
- Water your garden in early morning or evening—not when the sun is hot or on windy days.



Getting on the Barking Chain



Your data may show that your monitoring site is a healthy habitat for lots of living things—including you.

How can you keep it that way?

Perhaps you have discovered some problems.

How can you help solve the problems?

THE FIRST THING TO DO IS FORM AN ACTION PLAN.

ACTION PLAN!

FIND OUT THE FOLLOWING:

What is the problem?

Where and **when** does this problem occur?

What causes the problem?

Who are affected and **what** are their points of view?

How can the problem be solved, and **who** can help you?



WATERSHED MONITORING SITE SURVEY

PLANT COVER

How?

Decide which parts of your monitoring site are riparian and aquatic habitats. Fill in the data. You may check more than one box.

1. What types of plants are growing in the riparian habitats?

- a. grassy plants b. shrubs c. trees
 d. crops e. lawn f. no plants

2. What types of plants are growing in the aquatic habitats?

- a. underwater plants b. floating plants
 c. no plants d. plants growing out of the water
 e. lots of algae (smells bad)

Look at your data. Circle your checkmarks if you have checked any of the following: **crops, lawn, lots of algae, no plants**

So?

If you have circled one (or more) from both riparian and aquatic habitats, your monitoring site may not be as healthy as it should be.



WATERSHED MONITORING SITE SURVEY

LOOSESTRIFE

ACTION PLAN

LOOK FOR THE WATERSHED'S "PUBLIC ENEMY #1"

Purple Loosestrife

DESCRIPTION: Purple flowers on a long spike; 2 smooth-edged leaves attached on opposite sides of a square stem, 1–2 meters tall.

If you have access to the Internet, look for more information and pictures at <http://www.ducks.ca/> In the search box, type loosestrife.

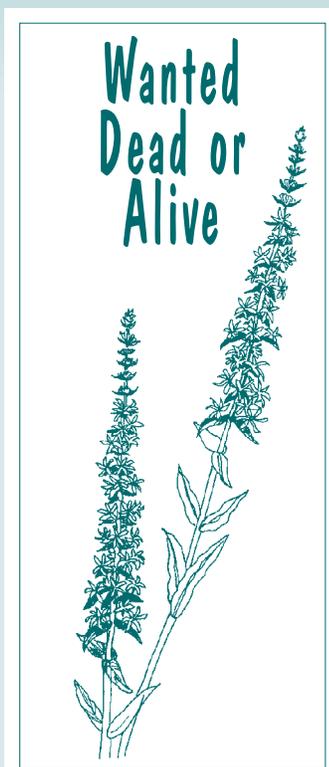
OCCUPATION:

Growing and growing and growing.

WANTED FOR:

Habitat destruction, water flow blockage.

CAUTIONARY DATA: One plant can produce over 2.5 million seeds. **DO NOT ATTEMPT TO REMOVE UNTIL FULLY BRIEFED ON DISPOSAL METHODS.**

**ACTION!****CLEAN UP**

How? Use a garbage bag provided to collect litter. **BE CAREFUL** of sharp objects or things that might have lots of germs. An older person with gloves might be needed to help with some of these things. Wash your hands with soap and water when you are finished.

So? How much litter did your group collect?

- a. less than half a bag b. more than half a bag
 c. one bag d. more than one bag

How many? _____

List the kinds of litter you found.

Have you made a difference by cleaning up the litter at your monitoring site?



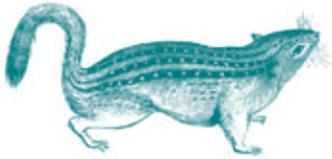
ACTION PLAN

WATERSHED MONITORING SITE SURVEY

LOOSESTRIFE

The Sad Truth About Litter

Why?



EVERYONE
can stop littering.
It makes a **REALLY BIG**
difference in the health
of our environment!

Litter hurts wildlife in terrible ways.

Deer are harmed when they eat cigarette butts,
cellophane wrappers and styrofoam cups.

Fishing line or the loops of six-pack can holders gets
tangled around the bills of birds so they can't eat.

Small animals get their heads stuck in cans
or get trapped in bottles.

Broken glass cuts the feet of animals.

Purple Loosestrife

Why? Purple loosestrife came to North America from Europe over 100 years ago. It has no natural enemies here, so it chokes out native plants. It grows so thick that it looks like a sea of purple flowers. This is not good habitat. The area invaded by purple loosestrife is almost empty of animals.

How? Look for purple loosestrife. If you find it, fill in the following table.

How many plants? NUMBER PLANTS/SQUARE METRE Circle the approximate number			
Less than 20	20 - 99	100 - 999	More than 1000

So? If purple loosestrife is present, contact the appropriate agency in your region to report the occurrence and to obtain further direction. Contact information is provided at the back of the book.



WATER MONITORING SITE SURVEY

WILDLIFE

WATER MONITORING SITE SURVEY

MONITORING SITE

SEARCH FOR CLUES: WHOSE HOME IS IT ANYWAY?

Why? Seeing animals or finding the signs they have left behind will let you know what is using the riparian areas for habitat.

- Wild animals are signs of a healthy riparian habitat.
- Many signs of domestic animals could mean that riparian habitat is disappearing.

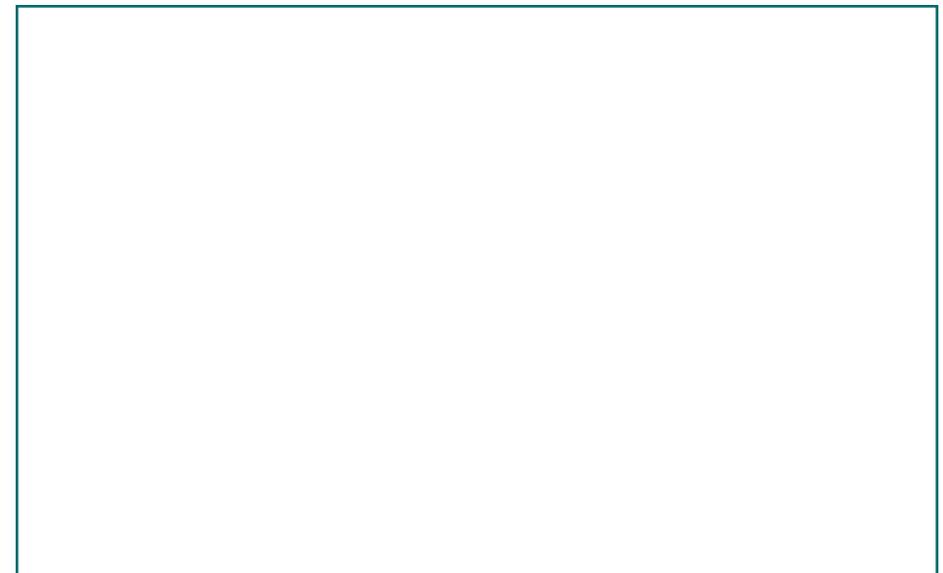
How? Animals need space—just like you. When you arrive at your monitoring site, animals will move away. The more noise you make, the further away animals will move. If you are quiet and move slowly, you will see more wildlife.

Even when the animals are hiding or gone, they will leave signs. Search for trails, chewed plants, droppings, remains of kills, nests and burrows.

Draw a Map for Your Monitoring Site

Why? A map is a good record of your monitoring site. You can show it to people so they can learn about your monitoring site.

How? Sketch the outline of the water. Use the symbols in the legend to show the location of different natural or human-made objects. Add your own symbols for objects you want to include. Add words right on the map, if you wish. You may want to show where you saw animals or their signs, or where you did sampling.



LEGEND



or



Tree



Building



Road



Grassy Plants



Shrub



Fence



WATER QUALITY SURVEY

INVERTEBRATES

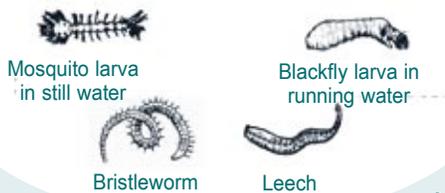
WATER MONITORING SITE SURVEY

WILDLIFE

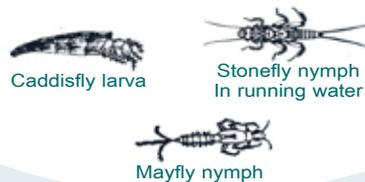
1. How many different kinds of aquatic invertebrates did you circle on Pages 19 & 20?
2. How many different kinds did you catch that weren't on these pages? Add together _____. If you have many different kinds, your monitoring site is probably healthy.
3. Do you have many tolerant aquatic invertebrates and no intolerant ones? _____. If yes, there may be a pollution problem at your monitoring site.

If you decide that your monitoring site has fewer types of aquatic invertebrates than you would expect, try to determine which critical habitat components may be a limiting factor. Use the data you collected on Pages 3, 4 & 6 to help.

**TOLERANT
I CAN TAKE IT!
I CAN TAKE IT!**



**INTOLERANT
I CAN'T TAKE IT!
I CAN'T TAKE IT!**



Look for tracks in the mud beside the water.

You might see the tracks of songbirds
or ducks or geese.



Perhaps a deer came to drink before the sun rose.



Look for signs of beaver. You may see the hand-like prints along the shore.

Don't forget to look for the tracks of small animals as well.

Mice, frogs, salamanders and even insects will leave a message for you in the mud, telling you they were there.



Can you think of some other signs of animals you might find?



WATERSHED MONITORING SITE SURVEY

WILDLIFE

WATER QUALITY SURVEY

INVERTEBRATES

Search your monitoring site. Walk carefully so plants are not broken, and habitat is not destroyed. Look for animals or signs of animals. Record the data.



Animals Seen

1. List the wild animals you see. Look carefully so that you don't miss very small animals such as insects. Beside each name, write down how many you saw.

2. List the domestic animals you see. Beside each name, write down how many you saw.

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Signs of Animals

3. List the signs of animals you find. If you know what animal made the sign, write the name beside it. If you don't know the name, write UNKNOWN. If there are many of one type of a sign, circle it.

So? What does your data tell you about how much wild and domestic animals make use of your monitoring site? _____

HOW BIG?

Circle the aquatic invertebrates that you find in your samples. Beside their name, write down how many you caught.

 Nematode 0.1-0.5 cm long	 Horsehair worm 10-70 cm long	 Bristleworm 0.1-3 cm long	 Leech 0.5-10 cm long
 Clam 0.2-20 cm long	 Coil-shelled snail 0.2- 3 cm long	 Spiral-shelled snail 0.2-6 cm long	 Water mite 0.04-0.3 cm long
 Water flea 0.02-0.3 cm long	 Copepod 0.03-0.5 cm long	 Sideswimmer 0.5-3 cm long	 Crayfish about 7 cm long





WATER QUALITY SURVEY

INVERTEBRATES

WATERSHED MONITORING SITE SURVEY

WILDLIFE

HOW BIG?

Circle the aquatic invertebrates that you find in your samples. Beside their name, write down how many you caught.

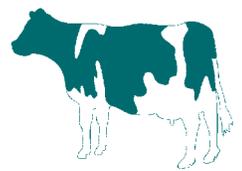


 Springtail 0.3 cm long (jumps on surface)	 Mayfly nymph about 1.5- cm long	 Dragonfly nymph about 2.5 cm long	 Damselfly nymph about 3 cm long
 Stonefly nymph about 2 cm long	 Water strider about 1.5 cm long (on surface)	 Giant water bug about 5 cm long	 Backswimmer about 3 cm long
 Water boatman about 1.5 cm long	 Whirligig beetle about 0.5 cm long	 Predacious diving beetle larva about 2.5 cm long	 Predacious diving beetle adult about 2 cm long
 Caddisfly larva about 2 cm long	 Mosquito larva about 0.6 cm long	 Mosquito pupa about 0.5 cm long	 Blackfly larva about 0.8 cm long

Both Wild and Domesticated Animals use riparian and aquatic habitats.



WILD ANIMALS



DOMESTIC ANIMALS

Plants and animals living in overlapping habitats form communities.

Just like people in communities, the plants and animals are dependent on each other in their communities. For example, plants shelter animals.

The living things in a community also affect one another. For example, too many cattle drinking at the same place will trample all the plants.

1. What is the habitat at your site?

2. Who lives in the community at this site?



WATER QUALITY SURVEY

TEMPERATURE

WATER QUALITY SURVEY

NITRATES

Collect Physical Data on Water Quality

TO SEE OR NOT TO SEE

Why? How the water looks can sometimes tell you if there is water pollution. Remember things that are dissolved or carried in water can pollute it.

How? Look at the water. Put a check mark beside the answer that best describes how the water looks.

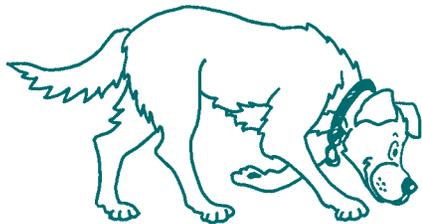
1. The water is:

- a. clear b. slightly turbid c. very turbid

2. The water surface has:

- a. thick foam b. an oily sheen c. nothing

So? If you checked very turbid, thick foam or an oily sheen, the water may be polluted.



Hint: Look in the info files if you have forgotten what turbid means.

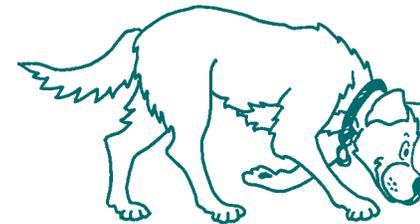
HOW MUCH FOOD IS IN THE GREEN LANE?

How? Measure the nitrate in the water by following the instructions in your kit. Record the data.

→ Nitrate = _____ mg/l

So? Compare your data to the information on this sheet. Is the nitrate in an acceptable range?

Nitrate	What happens?
Greater than 90 mg/l	Most fish die
Greater than 7 mg/l	Water may be getting extra nitrates
Less than 10 mg/l	You can drink it IF this water came out of a tap



The amount of nitrate in water is measured by how much (mg) in what volume of water (l).



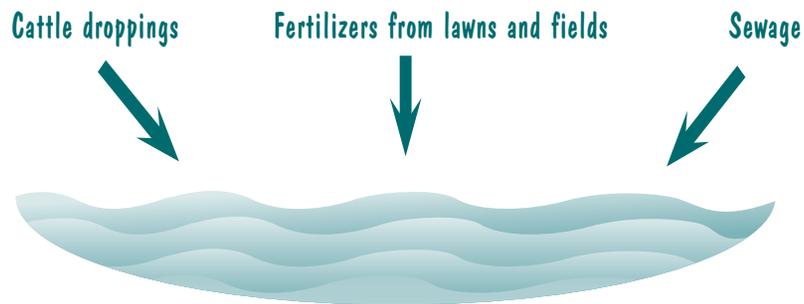
WATER QUALITY SURVEY

NITRATES

HOW MUCH FOOD IS IN THE GREEN LANE?

Why? Living things that are GREEN use nutrients such as nitrates and phosphates for the same reasons that you use the nutrients in apples and peanut butter—to build bodies and stay healthy.

Some water bodies such as ponds may contain lots of nutrients and still be healthy; others such as mountain streams may have very few nutrients and be healthy. However, TOO many nutrients end up in the water from human-made causes.



Adding extra nitrates and phosphates (polluting) can set off a whole chain of unwanted events in aquatic habitats, such as too much plant and algae growth causing low dissolved oxygen and death of some aquatic animals.

WATER QUALITY SURVEY

TEMPERATURE

Collect Physical Data on Water Quality

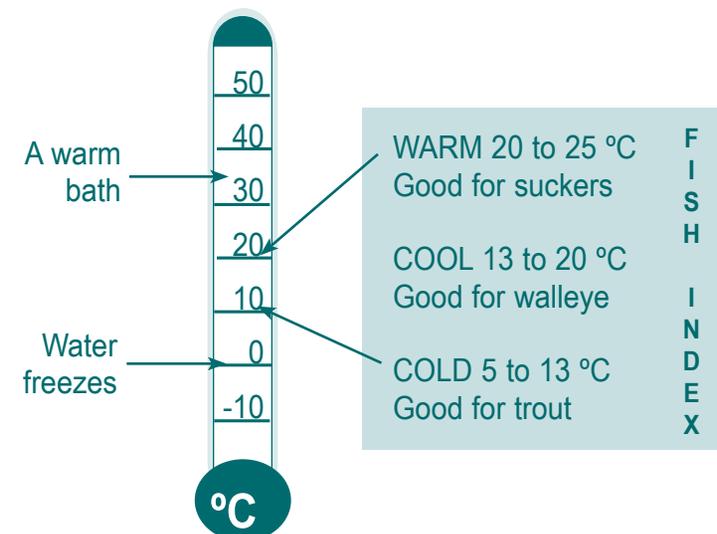
GO FOR A DIP?

Why? Temperature is included in water quality monitoring because it affects how chemicals dissolved in the water are going to act.

How? Keep the thermometer in the water for 2 minutes. Read the temperature RIGHT away. Record the data.

Temperature \longrightarrow ____°C

So? What kind of fish would find the temperature just right?





WATER QUALITY SURVEY

ACID

WATER QUALITY SURVEY

ACID

Collect Chemical Data on Water Quality

DO THE ACID TEST

Why? The pH test tells you how acidic or basic the water is. This quality of water affects the health of the living things in aquatic habitats. Air pollution from car exhaust and factories gets into the water cycle and makes the water too acidic.

How? Measure the pH of the water by following the instructions in your kit. Record the data.

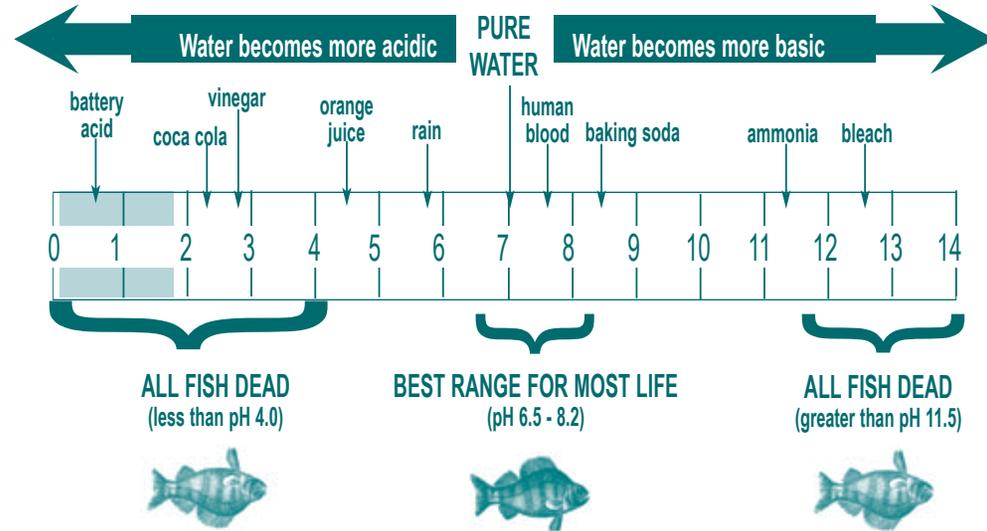
→ pH = _____

So? Compare your data to the information on this sheet. Is the pH in an acceptable range? _____



When water is neutral, everyone is HAPPY!

Collect Chemical Data on Water Quality



pH	What happens?
4.0-4.5	More tolerant fish begin to die, most frogs and insects absent
5.5-6.0	Less tolerant fish and tadpoles begin to die (dead at less than pH 5.5)
6.0-6.5	Snails begin to die (dead at less than pH 6.0)
6.5-8.2	Best range for most life
9.0	Perch and trout begin to be harmed at greater than pH 9.0
10.5-11.0	Less tolerant fish begin to die (dead at greater than pH 11.0)
11.0-11.5	More tolerant fish begin to die



BEST