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# **4-H Natural Science Project Records**

**for Leaders**

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## Contents

- 4-H Natural Science Project Record (4-H 303LR-a)
- 4-H Environment Observation Data Sheet (4-H 303LR-b)
- 4-H Forest Observation Data Sheet (4-H 303LR-c)
- 4-H Habitat Data Sheet (4-H 303LR-d)
- 4-H Issue Investigation Data Sheet (4-H 303LR-e)
- 4-H Marine/Tidal Data Sheet (4-H 303LR-f)
- 4-H Photo Monitoring Data Sheet (4-H 303LR-g)
- 4-H Range Data Sheet (4-H 303LR-h)
- 4-H Soil Observation Data Sheet (4-H 303LR-i)
- 4-H Water Data Sheet (4-H 303LR-j)
- 4-H Wildlife Observation Data Sheet (4-H 303LR-k)

### Dear Leaders,

This publication contains the 4-H Natural Science Project Record (4-H 303LR-a) and a complete set of specific project data sheets. In addition to the 4-H Natural Science Project Record, members may choose to use the specific data sheets with their project of choice. Please photocopy data sheets for members who wish to use them. Or, members can download the data sheet(s) of their choice from the Extension & Experiment Station Communications Web site.

Open [esc.oregonstate.edu](http://esc.oregonstate.edu), choose "Publications and videos," then choose "4-H Youth." Look under "4-H Record Sheets" by series number.



# 4-H Natural Science Project Record

Name \_\_\_\_\_ Boy \_\_\_\_\_ Girl \_\_\_\_\_ Grade in school \_\_\_\_\_ Date born \_\_\_\_\_ 19 \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ ZIP \_\_\_\_\_

Club leader \_\_\_\_\_ County \_\_\_\_\_

Year in 4-H \_\_\_\_\_ Year in this project \_\_\_\_\_ Date started \_\_\_\_\_, 20 \_\_\_\_\_ Date finished \_\_\_\_\_, 20 \_\_\_\_\_

*A record is part of your 4-H project. Keep your record neat, clean, and up-to-date. It's best to use a pencil. Write clearly. If you need help, ask your parents or leaders. If you need more space, add notebook paper to your record.*

## Projects I hope to do and learn this year

Project	Date accomplished
_____	_____
_____	_____
_____	_____

Project location (County, address, township, and range of each survey site)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Type of habitat studied (check all that apply)

☐ Water ☐ Marine life ☐ Soil ☐ Range ☐ Forest ☐ Wildlife

Types of activities to be conducted (check all that apply)

☐ Riparian study ☐ Observations ☐ Erosion control ☐ Weed control  
☐ Watershed study ☐ Monitoring ☐ Soil profile or type ☐ Pest management  
☐ Research study ☐ Stream survey ☐ Habitat improvement ☐ Disease control  
☐ Recycling projects ☐ Wetlands survey ☐ Habitat restoration ☐ Other

Below is a list of optional Data Sheets. Include with this Record any Data Sheets that you use in your project study.

- |  |  |
|--|--|
| 1. 4-H Environment Observation Data Sheet (Jr. Form) | 6. 4-H Habitat Data Sheet              |
| 2. 4-H Wildlife Observation Data Sheet               | 7. 4-H Marine/Tidal Data Sheet         |
| 3. 4-H Soil Observation Data Sheet                   | 8. 4-H Range Data Sheet                |
| 4. 4-H Forest Observation Data Sheet                 | 9. 4-H Water Data Sheet                |
| 5. 4-H Photo Monitoring Data Sheet                   | 10. 4-H Issue Investigation Data Sheet |

## Record of equipment used, bought, or made (optional)

Item (include equipment on hand)	Cost	Value	Item (include equipment on hand)	Cost	Value
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

## Summary of project

Include what you did and learned. *(Use more paper if necessary.)*

## How I have shared what I have learned about my project with others

Include presentations, photos, exhibits, displays, news articles, etc.

## Names of people who helped me

Name	How he/she helped me (letter, meeting, conversation, coaching, advice)

## Things I hope to do and learn next year

## Project review and comments

\_\_\_\_\_ has completed his/her records, and I have reviewed them with him/her.

(Name of member)

Comments by leader \_\_\_\_\_

Signed \_\_\_\_\_, 4-H Leader  
(Parent may sign for individual member)

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# 4-H Environment Observation Data Sheet



(For Junior Members)

Name \_\_\_\_\_ Boy \_\_\_\_\_ Girl \_\_\_\_\_ Grade in school \_\_\_\_\_ Date born \_\_\_\_\_ 19 \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ ZIP \_\_\_\_\_

Club leader \_\_\_\_\_ County \_\_\_\_\_

Year in 4-H \_\_\_\_\_ Year in this project \_\_\_\_\_ Date started \_\_\_\_\_, 20 \_\_\_\_\_ Date finished \_\_\_\_\_, 20 \_\_\_\_\_

A record is part of your 4-H project. Keep your record neat, clean, and up-to-date. It's best to use a pencil. Write clearly. If you need help, ask your parents or leaders. If you need more space, add notebook paper to your record.

Observe the study area, and write what you see and learn about air, water, soil, rocks, plants, and animals.

## Air

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## Water

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## Soil

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## Rocks

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## Plants

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## Animals

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## Project review and comments

\_\_\_\_\_, (Name of member) has completed his/her records and I have reviewed them with him/her.

Comments by leader \_\_\_\_\_

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Signed \_\_\_\_\_, 4-H Leader  
*(Parent may sign for individual member)*

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# 4-H Forest Observation Data Sheet

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Date \_\_\_\_\_ Crew members \_\_\_\_\_

Plot number \_\_\_\_\_ Weather \_\_\_\_\_ Temperature \_\_\_\_\_

Stand type (circle all that apply)    Regeneration    Young forest    Understory    Multi-layered    Older forest

## Plot site analysis

(Circle the ones that apply)

Elevation	Annual precipitation	% of slope	Soil type	Shade tolerance
0–500 ft	less than 20 inches	0–5%	sand	intolerant (full sun)
500–1,000 ft	20–40 inches	5–15%	silt	intermediate
1,000–2,000 ft	40–60 inches	15–25%	clay	tolerant (likes shade)
2,000–5,000 ft	60–80 inches	25–50%	loam	full shade
over 5,000 ft	over 80 inches	over 50%	rocky	

Possible sources of water (circle all that apply)    rain    stream/river    runoff    snow    condensation

Wind    speed \_\_\_\_\_ direction \_\_\_\_\_ any sign of wind damage \_\_\_\_\_

## Land use inventory

Land use activity \_\_\_\_\_ Why is or isn't this a good place to do this activity? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Plant inventory

Size of plot \_\_\_\_\_

Plant name	Plant type (check one)			Number found	Amount of plot covered by it (%)	Name any uses for this plant
	non-woody	shrub	tree			
Totals for all plants					%	

[illegible]

Type of damage or disease	Possible cause	Recommended action

[illegible]

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# 4-H Habitat Data Sheet

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Date \_\_\_\_\_ Crew members \_\_\_\_\_

Location \_\_\_\_\_ Plot no. \_\_\_\_\_ Elevation \_\_\_\_\_ Percent of slope \_\_\_\_\_

Season \_\_\_\_\_ Temperature \_\_\_\_\_ Annual precipitation \_\_\_\_\_ Soil type \_\_\_\_\_

## Type of habitat study area (check one)

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Temperate forest           | <input type="checkbox"/> High desert forest           | <input type="checkbox"/> Marsh/wetlands    |
| <input type="checkbox"/> Temperate grassland/meadow | <input type="checkbox"/> High desert grassland/meadow | <input type="checkbox"/> Pond/lake/stream  |
| <input type="checkbox"/> Cultivated land            | <input type="checkbox"/> High desert shrub land       | <input type="checkbox"/> Marine/tidal area |
| <input type="checkbox"/> Other:                     |   |  |

## Record general characteristics of the habitat related to wildlife needs.

1. Vegetation: Habitat type, vegetation name, general structure, and distribution.

Example: dense conifer forest (habitat type) of Douglas-fir and western red cedar, with a sparse understory of vine maple and red elderberry, and an abundance of sword fern, trillium, and ivy on the forest floor.

Habitat type: \_\_\_\_\_

Vegetation (name)	General structure (check one)			Distribution (check one)		
	canopy	understory	forest floor	sparse	moderate	dense

2. List and describe water sources. Note if they are permanent or seasonal.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. List non-living structures in the habitat (such as downed logs, snags, caves) which might provide cover and/or shelter.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Note climate and seasonal changes.

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5. How large is the habitat area? \_\_\_\_\_

6. Is it connected to other natural areas, or is it isolated? \_\_\_\_\_

### Human impact

Describe human activities that might impact habitat quality in a positive (+) or negative (-) way.

(Examples: development, urban setting, near a major traffic area, lots of human use of area, nesting boxes)

Human activity	Impact		Why? (Reason for positive or negative impact)
	+	-	

### Wildlife observations

Look for animal trails, scat, chew marks on plants, tracks, feathers, sounds, or actual sighting. List animal name, evidence of animal sign, how many, and how often seen.

Animal name	Evidence of animal sign	How many?	How often?

Total number of species \_\_\_\_\_

List abundant food sources (include plant and animal).

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Using the list of animals and plants found in the habitat area, draw or outline a possible food chain for this habitat.

What, if anything, could be done to improve the habitat for the greatest diversity of native wildlife species or to improve the habitat for a specific species identified as desirable?

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# 4-H Issue Investigation Data Sheet

A record is part of your 4-H project. Keep your record neat, clean, and up-to-date. It's best to use a pencil. Write clearly. If you need help, ask your parents or leaders. If you need more space, add notebook paper to your record.

1. What natural resource issue did you investigate? Be specific.

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2. Who are the main stakeholders in this issue? (Examples: government agencies, businesses, general public, individuals, a specific community) List their names.

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3. Describe the different points of view of the various stakeholders regarding the use of this resource. List stakeholders and their specific points of view or beliefs below.

Stakeholder	Point of view or belief

4. Who makes the decisions regarding the use of this natural resource? (Check all that apply.)

- |  |   |
|--|---|
| <input type="checkbox"/> County planning and zoning                              | <input type="checkbox"/> Natural Resource Conservation District |
| <input type="checkbox"/> District Health Dept. office                            | <input type="checkbox"/> County or township board members       |
| <input type="checkbox"/> Local environmental organizations                       | <input type="checkbox"/> Watershed councils                     |
| <input type="checkbox"/> A business or industry                                  | <input type="checkbox"/> Oregon Dept. of Fish and Wildlife      |
| <input type="checkbox"/> U.S. Forest Service                                     | <input type="checkbox"/> Road commission                        |
| <input type="checkbox"/> Municipal water supply or wastewater treatment facility |   |
| <input type="checkbox"/> Other _____   |   |

5. What local, state, or federal regulations impact the use(s) of this natural resource?

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6. Who owns this natural resource? (Examples: federal public land, state land, individual landowner, organization, industry)

7. List sources of information you used in investigating this issue. (Examples: written material, surveys conducted, individuals or groups you spoke with)

8. After studying this issue, what is your recommendation for the use of this natural resource? Explain why.

9. Whom does your recommendation benefit, and whom does it hurt?

10. What are the trade-offs (ethical, scientific, legal, aesthetic, recreational, economic, political)? (Example: Are you giving up the aesthetic benefits of the resource in favor of economic gain?)

11. What are the short-term and long-term effects of your recommendation on the resource?

12. How do you propose that the issue could be resolved? What role can you play in resolving the issue?

13. What actions will you take at home and/or publicly?

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## 4-H Marine/Tidal Data Sheet

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Date	Crew members
1998-01-01	John Smith, Jane Doe
1998-02-01	John Smith, Jane Doe, Bob Johnson
1998-03-01	John Smith, Jane Doe, Bob Johnson, Alice Brown
1998-04-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White
1998-05-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green
1998-06-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black
1998-07-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue
1998-08-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow
1998-09-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow, Henry Purple
1998-10-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow, Henry Purple, Ivy Pink
1998-11-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow, Henry Purple, Ivy Pink, Jack Orange
1998-12-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow, Henry Purple, Ivy Pink, Jack Orange, Karen Red

Location \_\_\_\_\_ Plot no. \_\_\_\_\_

Season \_\_\_\_\_ Temperature \_\_\_\_\_ Annual precipitation \_\_\_\_\_

## Marine life

In the table below, identify the animal and plant specimens you found. Under “Description of where found,” indicate if it was in the dune zone, foredune zone, intertidal zone, sub-tidal zone, or open ocean.

[illegible]

## Water characteristics

Record the following water characteristics for each site that you tested.

Test site location (intertidal zone, sub-tidal zone, open ocean)	Tidal level	Temperature	pH	Salinity	Dissolved oxygen

Describe human disturbances to this marine environment and their potential impact.

Based on your data and observations, what can you say about the water quality at this location and why?

What other information would help you make a decision about the water quality?

What measures, if any, could be taken to improve the water quality and/or habitat at this location?



Date	Crew members
1997-01-01	John Smith, Jane Doe
1997-02-01	John Smith, Jane Doe, Bob Johnson
1997-03-01	John Smith, Jane Doe, Bob Johnson, Alice Brown
1997-04-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White
1997-05-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green
1997-06-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black
1997-07-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue
1997-08-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow
1997-09-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow, Henry Purple
1997-10-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow, Henry Purple, Ivy Pink
1997-11-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow, Henry Purple, Ivy Pink, Jack Orange
1997-12-01	John Smith, Jane Doe, Bob Johnson, Alice Brown, Charlie White, David Green, Emily Black, Frank Blue, Grace Yellow, Henry Purple, Ivy Pink, Jack Orange, Karen Red

Location \_\_\_\_\_ Plot no. \_\_\_\_\_ Elevation \_\_\_\_\_

Season \_\_\_\_\_ Temperature \_\_\_\_\_ Annual precipitation \_\_\_\_\_

Taking photographs is one of the most basic monitoring techniques. Photographs cannot tell the whole story about a project, but you can gather much information from photographs taken at the same point over a number of years.

## Record of best photos

[illegible]

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Place photo here

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Comments (weather conditions, grazing (before/after), wildlife activity, and general thoughts)

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Comparison to prior years (for example, indications of trend, management changes, seeding programs, fencing)

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Note: You can add extra photo pages to this record by copying this page.

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# 4-H Range Data Sheet

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Date \_\_\_\_\_ Crew members \_\_\_\_\_

Location \_\_\_\_\_ Plot no. \_\_\_\_\_ Elevation \_\_\_\_\_ Percent of slope \_\_\_\_\_

Season \_\_\_\_\_ Temperature \_\_\_\_\_ Annual precipitation \_\_\_\_\_ Soil type \_\_\_\_\_

## Type of habitat study area (check one)

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Temperate forest           | <input type="checkbox"/> High desert forest           | <input type="checkbox"/> Riparian          |
| <input type="checkbox"/> Temperate grassland/meadow | <input type="checkbox"/> High desert grassland/meadow | <input type="checkbox"/> Marine/tidal area |
| <input type="checkbox"/> Cultivated land            | <input type="checkbox"/> High desert shrub land       | <input type="checkbox"/> Oak savanna       |
| <input type="checkbox"/> Other: _____               |   |  |

## Range observations

Record vegetation (all species), litter (dead material), rock (greater than 1 inch), and bare ground of the study area. You will need a 25-foot tape measure, clipboard, pencil, and this check sheet. **Repeat the observations four times at different locations throughout the study**

**area.** Measure with the tape in 1-foot increments. When the tape touches any vegetation, litter, rock, or bare ground, put a ✓ in the correct box. (Example: If your tape touches any vegetation in the first foot, put a ✓ in the 1-foot row, first column, under "Vegetation.")

# feet into study area	Vegetation				Litter				Rock				Bare ground			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
1																
2																
3																
4																
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23																
24																
25																

## Summarize your data

Item	Observations				Total	Percent (%)*
	1st	2nd	3rd	4th		
Vegetation					a.	
Litter					b.	
Rock					c.	
Bare ground					d.	
Total					e.	

\* Percent (%) = the total of each item (4 observations) divided by the total of all items.

Example: Total a. ÷ Total e. = Percent a.

1. Is there evidence of soil erosion? Yes \_\_\_\_\_ No \_\_\_\_\_ If yes, please describe.

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2. Does the vegetation appear vigorous?

Yes \_\_\_\_\_ No \_\_\_\_\_

Do there appear to be multiple species of vegetation?

Yes \_\_\_\_\_ No \_\_\_\_\_

Does there appear to be recruitment of young plants?

Yes \_\_\_\_\_ No \_\_\_\_\_

Is the study area effectively capturing, storing, and releasing water?

Yes \_\_\_\_\_ No \_\_\_\_\_

3. Observe and list the type(s) of management activity within the study area. Example: grazing, fire, timber harvest, seeding)

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4. Do the management activities seem to be in balance with the condition of the range? Why?

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5. Based on the above observations, how would you classify the condition of the range?

Excellent \_\_\_\_\_ Good-to-fair \_\_\_\_\_ Poor \_\_\_\_\_

If you classified the range "Good-to-fair," is the trend upward, toward "Excellent," or downward, toward "Poor"?

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6. Based on the above observations, what recommendations would you make to help improve the condition of the range?

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# 4-H Soil Observation Data Sheet

A record is part of your 4-H project. Keep your record neat, clean, and up-to-date. It's best to use a pencil. Write clearly. If you need help ask your parents or leaders. If you need more space, add notebook paper to your record.

Date \_\_\_\_\_ Crew members \_\_\_\_\_

Plot no. \_\_\_\_\_ Location \_\_\_\_\_ Weather \_\_\_\_\_

## General data

Air temperature: 3 feet above ground \_\_\_\_\_ just above ground \_\_\_\_\_

Soil temperature: in organic layer \_\_\_\_\_ 3 inches deep into mineral soil \_\_\_\_\_

What is the soil moisture content of the mineral soil? (*circle one*) wet moist dry

How does the soil texture feel? (*circle one*) gritty (sand) smooth (silt) sticky (clay)

List the soil name (type) and map symbol according to the soil survey for your county. Include any important information (for example, percent of sand, silt, or clay).

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List plants growing in this plot.

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What is the relationship between the soil texture (sand, silt, or clay content) and plants?

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What is the slope of this plot? (*circle one*) none (flat ground) 5–25% 25–50% over 50%

List any erosion concerns.

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Explain how land use (recreation, construction, logging, tree planting, grazing) could affect the soil resources in this plot.

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## Analyzing soil horizons

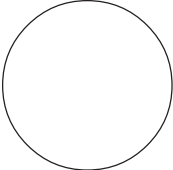
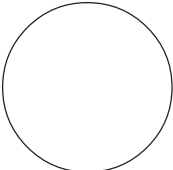
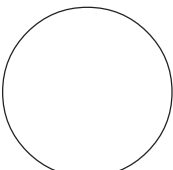

### Contents of layers above top soil (if existing)

Select an area about 2 or 3 feet square on the ground. Sift through the top 3 inches, recording the evidence of plants and animals you observe. Replace the ground in as near original condition as possible.

Term and definition	Name or description of item in the soil	Quantity	Describe the characteristics (example: feel, smell, color)
Litter (identifiable dead plant or animal material on surface)			
Duff (partially decomposed, identifiable organic matter compacted)			
Humus (almost completely decomposed, non-identifiable organic matter)			

### Soil horizons data

Sketch your soil profile, label the horizon, and record the data.

	Horizon _____	Depth _____	Color _____
	Texture _____	Structure _____	pH _____
	Plant roots visible _____		
	Horizon _____	Depth _____	Color _____
	Texture _____	Structure _____	pH _____
	Plant roots visible _____		
	Horizon _____	Depth _____	Color _____
	Texture _____	Structure _____	pH _____
	Plant roots visible _____		
	Horizon _____	Depth _____	Color _____
	Texture _____	Structure _____	pH _____
	Plant roots visible _____		

### Parent material (C horizon)

Describe type of rock in the bedrock (if present)



## Stream flow data record

To determine stream flow (cubic feet per second = ft<sup>3</sup>/sec), observers should take measurements at three different sites along the section of stream they

are studying. The measurements will include width, depth, velocity, and streambed roughness. Use the following table to help with your calculation.

Site #	Width (w)	Depth (d) (average of 5 locations across stream)					Avg.	Velocity (v)	*Streambed roughness (a)
		1	2	3	4	5			
Site 1									
Site 2									
Site 3									
Average									

\*Streambed roughness—rubble, gravel, or plant: a = 0.8; smooth mud, silt, or bedrock: a = 0.9

To calculate stream flow rate (r), use the information on the above data chart. Use the **average** value of each measurement at the three sites in the formula:  $r = w \times d \times v \times a$

$$\text{Stream flow} = \frac{r}{w} \times \frac{d}{d} \times \frac{v}{v} \times \frac{a}{a} = \text{ft}^3/\text{sec}$$

## Temperature data record

	Air temperature				Water temperature		
	°C	°F	Time		°C	°F	Time
Site 1							
Site 2							
Site 3							

Note:

$$\frac{9 \times (^\circ\text{C} + 32)}{5} = ^\circ\text{F}$$

$$\frac{5 \times (^\circ\text{F} - 32)}{9} = ^\circ\text{C}$$

## pH data record

	Sample 1	Sample 2	Sample 3	Average
Site 1				
Site 2				
Site 3				

## Dissolved oxygen (DO) data record

	Sample 1	Sample 2	Sample 3	Average	Time
Site 1					
Site 2					
Site 3					



# 4-H Wildlife Observation Data Sheet

Species no.	Date	Time	Weather	Kind of wildlife	How many seen?	Where seen?	What was the animal doing?	Where does the animal live/hide?
Example	6/7/02	6:45 am	sunny	Douglas squirrel	2	in bird feeder	eating sunflower seeds	in bigleaf maple tree
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

#### 4-H Wildlife Observation Data Sheet (continued)

Species no.	Date	Time	Weather	Kind of wildlife	How many seen?	Where seen?	What was the animal doing?	Where does the animal live/hide?
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

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