

ENVIRONMENTAL AND NATURAL RESOURCES CAREER DEVELOPMENT EVENT

Purpose

To foster cooperation and teamwork and provide a natural resource education experience for participants. Five member teams are tested on their basic knowledge in soils, aquatics, wildlife, forestry, plus a current topic, which changes each year. Additionally, the purpose of the event is to promote natural resource education in a manner that succeeding generations will be more environmentally literate, with the skills and knowledge to make informed decisions regarding the environment.

Objectives

Participant will demonstrate their knowledge of:

- The effect individual actions have on environmental problems.
- The interactions and interdependencies of our environment.
- Current environmental issues.
- The agencies available to assist in resource protection matters.
- The need to become environmentally aware and action orientated adults.

General Rules

1. A chapter team consists of four members. All four members will be scored individually and the top three scores will count towards the total team score. The total team score is comprised of the three top members' exam and practicum scores.
2. Under no circumstance will any participant be allowed to handle any of the items in the identification portion of the practicum. Any infraction of this rule will be sufficient to eliminate the entire team from the event.
3. Participants will be assigned to a group leader to escort them to various event-staging sites. Each participant is to stay with his or her assigned group leader throughout the event or until told to change by the event superintendent.
4. Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of the weather. Participants should have rainwear, warm clothes and appropriate footwear.
5. All written material will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the site.

6. The event will include:
 - a. **Objective Written Exam General Knowledge Examination (100 pts.)**
Fifty objective-type multiple-choice questions will be written that cover the areas the in the event objectives. This phase of the event will test participants' knowledge and understanding of basic biological and scientific principles of environmental science and natural resource management. Each participant will be allowed 45 minutes to complete this phase of the event. Each answer has a value of two points.
 - b. **Identification of Material Identification of Plant Materials (90 pts.)**
Thirty specimens from the Identification List (included with the scorecard) will be displayed for participants to identify. Each specimen will be designated by a number. Three points will be awarded for each specimen that is correctly identified. Each participant will be allowed 45 minutes to complete this phase of the event.
 - c. **Individual Practicums:** Each participant will be allowed 30 minutes to complete each of two selected practicums..

Event Format

1. **Equipment - Materials student must provide** - Each participant must have a clean, free of notes clipboard, two sharpened No. 2 pencils, and an electronic calculator. Calculators used in this event should be battery operated, non-programmable, and silent with large keys and large displays. Calculators should have only these functions- addition, subtraction, multiplication, division, equals, percent, square root, +/- key, and one memory register. No other calculators are allowed to be used during the event.
2. **Equipment provided** - All other tools and equipment will be furnished for the event. Participants must use the tools and equipment furnished at the event.
3. **Rotational Practicums** - Students will participate in two of the four of the following practicums each year. Practicums may vary from year to year.
 - a. **Water Analysis - (100 points)**
 1. Using measuring devices, each participant will measure a sample of water for quality analysis and contaminants.
 2. Analyze the results of measurements.
 3. Name possible causes of the particulate or other contaminant:
 - a. are they natural.
 - b. are they pollutants (what level is acceptable).
 4. Describe the effects on the environment of the pollutants.
 5. List the sources of the pollutants.
 6. Discuss ways the water quality can be improved.
 - b. **Soil Nutrient Test - (100 points)**

1. Students will be furnished with a sample of soil and test kit. They will have to determine the current levels of: Nitrogen Ph and Potassium Phosphorus
2. Students will use this information along with an extension service crop sheet provided to make suggestions for what fertilizers need to be added to grow a given crop. (*Example of crops, corn, wheat, potatoes*)

c. *GPS Locations - (100 points)*

1. Students will be furnished with a Global Positioning System (GPS) unit and a map with points identified in longitude and latitude.
2. Using the GPS unit, participant will be required to walk and locate certain points.
3. Participants will then record a predetermined identification mark located at each point.
4. Participants shall know how to read longitude and latitude numbers, how to use a GPS unit and understand differential corrections.

d *Environmental Analysis - (100 points)* - Students will address the following five aspects:

1. Living Organisms - students will identify and list as many living organisms (both native and invader) as they can find within the marked boundaries of the site. Additional species may be artificially introduced as mounted or preserved specimens.
2. Non-living components (shelter, nutrients) – students will inventory resources such as water, shelter, etc. upon which resident species depend for survival.
3. Food Web - students will define relationships among the plants and animal species that are found or introduced in the study area.
4. Ecological Succession - students will identify the stages of succession of various grasses, shrubs and trees. They will also identify causes of changes in succession patterns.
5. Situation Analysis - students will determine whether a healthy balance exists between the environment and the native species that depend upon it. They will also check remediation practices where needed.

4. Tie-breaker -

- 1) Team with the highest individual score
- 2) Individual on the highest team,
- 3) Total practicum scores
- 4) Identification practicum

Identification List

Equipment

Water Quality

- 101. refractometer
- 102. secchi disk
- 103. thermometer
- 104. water bottle samplers
- 105. water meter for physical/chemical parameters (pH, conductivity, and/or DO)

Aquatic

- 106. aquatic net
- 107. bottom dredges
- 108. fish measuring board
- 109. plankton net
- 110. seines
- 111. sieves
- 112. stream bottom sampler

Wildlife

- 113. binoculars
- 114. mammal traps
- 115. snake/reptile stick
- 116. radiotelemetry unit
- 117. animal tags/bands

Geographical

- 118. GPS unit

Weather

- 119. barometer
- 120. sling psychrometer
- 121. rain gauge
- 122. wind speed meter

Forestry

- 123. biltmore stick
- 124. diameter tape
- 125. prism
- 126. tree increment borer

Native Species

Wildlife

- 127. bighorn sheep
- 128. badger
- 129. beaver
- 130. bison
- 131. black bear
- 132. bobcat
- 133. chipmunk
- 134. cottontail
- 135. coyote
- 136. elk
- 137. Columbia Ground squirrel
- 138. gray squirrel
- 139. gray wolf
- 140. grizzly bear
- 141. jack rabbit
- 142. mole
- 143. moose
- 144. mountain goat
- 145. mountain lion
- 146. muskrat
- 147. opossum
- 148. porcupine
- 149. pronghorn
- 150. raccoon
- 151. red fox
- 152. skunk
- 153. weasel
- 154. whitetail deer
- 155. yellow bellied marmot

Birds

- 159. bald eagle
- 160. blue jay
- 161. Canada goose
- 162. Cooper's hawk
- 163. great horned owl
- 164. great blue heron
- 165. golden eagle
- 166. kestrel
- 167. mallard duck

- 168. mountain bluebird
- 169. osprey
- 170. purple martin
- 171. quail
- 172. red-tailed hawk
- 173. turkey
- 174. white pelican
- 175. wood duck

- 204. English sparrow
- 205. European starling
- 206. ring neck pheasant
- 207. zebra mussel

Reptiles/Amphibians

- 176. bullfrog
- 177. collared lizard
- 178. fence lizard
- 179. garter snake
- 180. rubber boa snake
- 181. rattlesnake

Fish & Other Aquatic Animals

- 182. bream/bluegill
- 183. channel catfish
- 184. crappie
- 185. crayfish
- 186. bull trout
- 187. largemouth bass
- 188. Chinook salmon
- 189. smallmouth bass
- 190. sturgeon
- 191. rainbow trout
- 192. walleye
- 193. bullhead catfish
- 194. brook trout

Invasive/Non-Native Species

Plants

- 195. rush skeletonweed
- 196. spotted knapweed
- 197. eurasion milfoil
- 198. yellow starthistle
- 199. leafy spurge
- 200. purple loosestrife

Animals

- 201. brown trout
- 202. carp
- 203. chukkar

**ENVIRONMENTAL AND NATURAL RESOURCES CAREER
DEVELOPMENT EVENT SCORECARDS**

ENVIRONMENTAL AND NATURAL RESOURCES IDENTIFICATION SCORECARD

PARTICIPANT NUMBER _____

Directions: Identify plant specimens by matching the correct plant number from list provided to the sample spaces below.

- | | |
|-----------|-----------|
| 1. _____ | 21. _____ |
| 2. _____ | 22. _____ |
| 3. _____ | 23. _____ |
| 4. _____ | 24. _____ |
| 5. _____ | 25. _____ |
| 6. _____ | 26. _____ |
| 7. _____ | 27. _____ |
| 8. _____ | 28. _____ |
| 9. _____ | 29. _____ |
| 10. _____ | 30. _____ |
| 11. _____ | |
| 12. _____ | |
| 13. _____ | |
| 14. _____ | |
| 15. _____ | |
| 16. _____ | |
| 17. _____ | |
| 18. _____ | |
| 19. _____ | |
| 20. _____ | |

SCORING DIRECTIONS:

Each identification is worth 3 points. Deduct the total incorrect from 90 points possible and record the final score at the bottom of the card.

SCORE: _____

Environmental and Natural Resources

Participant Name: _____ Chapter: _____

Participant No.: _____

SOIL NUTRIENT TEST SCORECARD

Your job today is to take a soil sample from the given area. You will need to run an analysis to determine the levels of nitrogen, phosphorus, potassium and pH. Using these results you will also need to use the given Extension Service crop sheet and make a recommendation for the amount and type of fertilizer that should be added to grow the designated crop.

Category	Level	<i>Possible Points</i>	<i>Score</i>
Nitrogen		25	
Potassium		25	
pH		20	
Fertilizer Recommendations:		30	
	Total Score:	100	

Environmental and Natural Resources

Participant Name: _____ Chapter: _____

Participant No.: _____

WATER ANALYSIS SCORECARD

Your job today is to analyze the given water sample. You will need to find the given levels of dissolved oxygen, nitrates, pH and the current temperature. Using this information you will need to describe the effects on the environment, limiting factors and discuss ways that water quality can be improved.

CATEGORY	ANSWERS	POSSIBLE POINTS	SCORE
PH		010	
Dissolved Oxygen		010	
Nitrates		010	
Temperature		010	
Effects on the Environment:	xxxxxxxxxxxxxxxxxxxxxx xx	20	
Limiting Factors:	xxxxxxxxxxxxxxxxxxxxxx xx	20	
How can Water Quality be improved?		20	
Total Score:		100	

Environmental and Natural Resources

Participant Name: _____ Chapter: _____

Participant No.: _____

GPS LOCATION SCORECARD

List your numbers for each location point following the latitude and longitude given. Note: Variance for differential corrections are noted on condition sheet.				
LOCATION POINT	POINT NUMBER		POSSIBLE POINT	SCORE
1			20	
2			20	
3			20	
4			20	
5			20	
			<i>Total Points: 100</i>	

Environmental and Natural Resources

Participant Name: _____ Chapter: _____

Participant No.: _____

ENVIRONMENTAL ANALYSIS SCORECARD

Your assignment is to analyze the given ecosystem with the following four aspects in mind:

QUESTION	POSSIBLE POINTS	SCORE
Identify and list as many organisms (both native and invader) that can be found within the marked boundaries of this site.	20	
Identify and list all non-living components found with the marked site.	20	
Describe the food web presented in this marked ecosystem.	20	
Identify the stages of succession of various grasses, shrubs and trees.	20	
Determine whether a healthy balance exists and recommend remediation where needed.	20	
Total Score:	100	