Connecticut Agricultural Education

Environmental/Natural Resources Career Development Event

Friday May 13th 2016

University of Connecticut

Contest Superintendent: Audra Leach – Glastonbury High School

Purpose:

Environmental and natural resource education has a responsibility to educate the public and prepare students to enter careers in the environmental and natural resource industry. The purpose of the environmental and natural resource career development event is to foster student interest, promote environmental and natural resource instruction in the agricultural education curriculum and provide recognition for those who have demonstrated skills and competencies as a result of environmental and natural resource instruction.

Event Rules:

- Each school team will be comprised of four students. All four scores will be added to determine the total team score. Advisors are asked to complete and submit a team registration form by March 31st for planning purposes (Registration from attached)*. Please e-mail or mail team list to Audra Leach by March 31st.
    - E-mail: leacha@glastonburyus.org
    - Address: Glastonbury Agriscience Program, 330 Hubbard Street, Glastonbury, CT 06033
- The contest will start at 9:00 am shortly after a greeting by UCONN representatives.
- Participants should come prepared with: sharpened #2 pencils, clipboards, GPS units (if necessary) and weather appropriate clothing/footwear. The event will be conducted regardless of the weather. Participants should have rainwear, warm clothes and appropriate footwear.
- Students should also bring an electronic calculator. Calculators used in this event should be battery operated, non-programmable and silent. Cell phones or any other electronic device cannot be used in place of a calculator.
- Teams will be broken down and contestants will be assigned to groups. Students will have specified time limits to complete each event. Students must stay on task and follow

instructions carefully. Answer sheets must be properly labeled, completed, and submitted following each even. Lost sheets are lost.

- Contestants caught cheating will have their team removed from the contest. Students are allowed to collaborate ONLY during the team event. All written material will be collected at the event. No written material shall be removed from the site.
- Cell phone/cell phone use is prohibited during the contest. If caught using a cell phone the team member will be disqualified from the contest.
- If time permits contest personnel will discuss event solutions at the completion of the contest.
- Scores will be released within a week of the contest via email and mail.

Event Format:

A three-year rotation for the event will be as follows:

2016	2017	2018
General Knowledge Test	General Knowledge Test	General Knowledge Test
Identification	Identification	Identification
Soil Profile	Soil Analysis	Soil Profile
GPS Practicum	Environmental Analysis	GPS Practicum
National/Global Issue: Water Analysis (Team Event)	National/Global Issue: Waste Management (Team Event)	National/Global Issue: Ecosystems (Team Event)

This year's contest will consist of the following five events.

1. General Knowledge Test	100 points
2. Identification	100 points
3. Soil Analysis	100 points
4. Environmental Analysis	100 points
5. Water Analysis (Team Event)	200 points

Contestants will compete in all five events. The team with the highest total score will represent Connecticut at the National FFA Convention in the fall.

Event Descriptions:

1. General Knowledge:

The general knowledge test will consist of 50 multiple-choice questions relating to natural resources and the environment. Questions will be drawn from:

Managing Our Natural Resources. Camp and Heath-Camp. Delmar Cengage Learning. 2008.

2. Identification

Students will identify fifty (50) items from the following combined areas:

a. Equipment
b. Mammals
c. Fish
d. Reptiles/Amphibians
e. Birds
f. Non-Native Invasive Species

During this event contestants will be provided with lists for each of the ID groups. They will have to identify the items by matching the letter affixed to them with their common names on the lists provided. The items may be presented as live specimens, scat, pelage, plumage, track, calls, or bone. Clues about habitat, feeding habit, or other niche related information may also be provided as clues for identification purposes. Tools, pictures, written descriptions, or other clues may also be provided. Identification list can be found below.

3. Soil Profile Test

Students will be furnished with a scorecard, an interpretation guide and a pre-dug soil pit or core/monolith to judge. The participants will identify soil horizons, textures, percentage course fragments, pH, horizon colors, slope, geologic origin, soil permeability, irrigation suitability and soil structure types of the soil present in the given example.

Using the information from the scorecard and interpretation guide, the student will then identify the most appropriate use for the given area and the erosion control practice that best fits the designated use for the land. Connecticut Soil Manual and FFA Rubric are included in a separate file.

4. Soil Analysis

Students will be given a small soil sample and a soil test kit. They will have to determine the current levels of Nitrogen, Potassium, pH, and Phosphorus.

Students will use this information along with an extension service crop sheet provided to analyze and make recommendations for what amendments should be made to the soil to grow a given crop.

5. GPS Practicum

Participants will utilize the global position system (GPS) unit (supplied by the team) to complete one of the following:

- Identify the longitude and latitude of a given set of points using a GPS unit and a map.
- Identify boundaries of a given area including calculation of land area and linear feet of boundary.
- Use GPS unit and topographic map to layout the location of fence line, pond, drainage structure or other related facility.
- Use a GPS unit to mark the location of a path or road through a given area.
- Use GPS unit to determine slope of land area for installation of drainage and or other related facilities.

6. Environmental Analysis

Areas that could be analyzed are as follows: forest ecosystems, grassland ecosystems, aquatic ecosystems, wetland ecosystems, and farm land ecosystems. Any of these areas could be bordered by industry, urban development, recreational areas, etc. Basic ecological concepts, management of ecosystems, and non-native species effect on ecosystems will be discussed. A rubric that may be used is attached.

Students will address the following five aspects:

a. 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.
b. Non-living components (shelter, nutrients): students will inventory resources such as water, shelter, etc. upon which resident species depend on survival.
c. Food web: students will define relationships among the plants and animal species that are found or introduced in the study area.
d. 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.
e. Situation analysis: students will determine whether a healthy balance exists between the environmental and the species that depend upon it. They will also check remediation practices where needed.

7. National/Global Issue Team Activity

Students will be provided with a scenario that deals with an environmental/natural resource problem. The scenario will deal with one or a combination of the following areas: water, ecosystems or waste management.

Water

This year's team event is based on **water**. Possible scenarios could revolve around:

a. Water Testing
    a. Using measuring devices, each team will measure a sample of water for quality analysis. The following categories can be tested: dissolved oxygen, nitrates, nitrites, pH, temperature, phosphates, water hardness, chlorine, and ammonia.
b. Water Analysis
    a. Analyze results of measurements & determine if it is suitable for specific use.
c. Importance of water quality
d. Factors that influence the quality of water
e. Measures to ensure water quality
f. Management practices used to ensure water quality or improve water quality

Scenario and directions will be posted in March 1, of 2016.

Waste Management

The team event in 2017 will be based on **waste management.** Participants will be presented with a scenario (agricultural producer, neighborhood, office building, manufacturing plant, etc.) that generates waste material creating environmental threats.

Possible scenarios could revolve around:

a. Preventing and reducing solid waste
b. Disposing of waste
c. Manure management
d. Hazardous Waste

Participants will evaluate the nature of waste output to identify plausible options for reducing the rate of waste generation, recycling or providing potential alternative uses for waste, treating the waste or disposing of the waste.

Participant should be able to identify at least one benefit and one deterrent for each possible option that is offered.

Scenario and directions will be posted in February of 2017.

Ecosystems

The team event in 2015 will be based on **ecosystems.** Participants will be presented with a scenario that is occurring in an ecosystem.

Possible scenarios revolve around :

a. Basic Ecological Concepts
b. Management of Ecosystems
c. Grassland Ecosystems
d. Forestry Ecosystems
e. Aquatic Ecosystems
f. Wetland Ecosystems
g. Non-native species effect on ecosystems

Scenario and directions will be posted in February of 2018.

NOTE: Rubrics and Directions that are not included in this document for 2016 - 2018 events will be posted separately to the website.

***Registration Form**

Connecticut Agriculture Science and FFA Education

Environmental/Natural Resources - Career Development Event

University of Connecticut

May 13, 2016

Directions: Please email/mail this registration form to Audra Leach by March 31st for planning purposes. Also, please bring this registration form to the CDE event.

Chapter Name:

Advisor/Coach Name & Email:

Chapter No:

Students Number	Students Name	FFA Member (Yes or No)

Identification List

Equipment

1. Abney Level
2. Air Pollution Testing Kit
3. Altimeter
4. Anemometer
5. Animal Control Pole
6. Aquatic Net
7. Bailer
8. Barometer
9. Biltmore stick
10. Binoculars
11. B.O.D. Apparatus
12. Bottom Dredge
13. Clinometer
14. Depth Sounder/Sounding Line
15. Diameter tape
16. Erosion Control Blanket
17. Fiberglass or Steel Tape
18. Fish Measuring Board
19. Flowmeter
20. Gill Net
21. GPS Unit
22. Hand Compass
23. Insect Net
24. Killing Jar
25. Live Trap
26. Magnifying Glass
27. Plankton Net
28. Prism
29. Radio telemetry unit
30. Rain Gauge
31. Refractometer
32. Secchi Disc
33. Seines
34. Sieves
35. Silt Fence
36. Sling Psychrometer
37. Snake/reptile stick
38. Soil Color Charts
39. Soil Gas Vapor Probe Kit
40. Soil Sampler
41. Soil Testing Kit
42. Spring Scale
43. Stereoscope
44. Stream bottom sampler
45. Thermometer
46. Topographic Map
47. Tree increment borer
48. Water Bottle Sampler
49. Water Testing Kit
50. Water Testing Meter
51. Wildlife Tagging/Tracking Equipment

Mammals

52. Big Brown Bat
53. Hoary Bat
54. Beaver
55. Black Bear
56. Bobcat
57. Chipmunk
58. Eastern Coyote
59. Whitetail Deer
60. Fisher
61. Gray Fox
62. Red Fox
63. Mink
64. Mole
65. Moose
66. Mountain lion
67. Deer Mouse
68. Muskrat
69. Opossum
70. River Otter
71. Porcupine
72. Eastern Cottontail Rabbit
73. Raccoon
74. Striped Skunk
75. Eastern Gray Squirrel
76. Red Squirrel
77. Meadow Vole
78. Long-Tailed Weasel
79. Woodchuck

Birds

80. Bluebird
81. Blue Jay
82. Canvasback
83. Cardinal
84. Double-Crested Cormorant
85. American Crow
86. Dove
87. American Black Duck
88. Mallard Duck
89. Ruddy Duck
90. Wood Duck
91. Bald Eagle
92. Golden Eagle
93. Great Egret
94. Snowy Egret
95. Peregrine Falcon
96. Common Goldeneye
97. Canada Goose
98. Northern Goshawk
99. Ruffed Grouse
100. Coopers Hawk
101. Red-shouldered Hawk
102. Red-tailed Hawk
103. Sharp-shinned Hawk
104. Great Blue Heron
105. Hummingbird
106. American Kestrel
107. Belted Kingfisher
108. Common Loon
109. Hooded Merganser
110. Osprey
111. Barn Owl
112. Great Horned Owl
113. Screech Owl
114. Pelican
115. Purple Martin
116. Bobwhite Quail
117. Redhead
118. Great Scaup
119. Blue-Winged Teal
120. Green-Winged Teal
121. Least Tern
122. Brown thrasher
123. Wild Turkey
124. Turkey Vulture
125. American Woodcock

Fish and Aquatics

126. Largemouth Bass
127. Rock Bass
128. Smallmouth Bass
129. Striped Bass

130. Blackfish
131. Bluefish
132. Bluegill
133. Atlantic Bonito
134. Brown Bullhead
135. Carp
136. Channel Catfish
137. Yellow bullhead catfish
138. Clam
139. Cobia
140. Atlantic Cod
141. Crab
142. Crayfish
143. Black Crappie
144. Cunner
145. Dolphin
146. American Eel
147. Summer Flounder
148. Winter Flounder
149. Banded Killifish
150. Lobster
151. Atlantic Mackerel
152. Atlantic Menhaden
153. White Perch
154. Yellow Perch
155. Chain Pickerel
156. Northern Pike
157. Pumpkinseed
158. Atlantic Salmon
159. Scup
160. American Shad
161. Shrimp
162. Atlantic Silverside
163. Atlantic Sturgeon
164. White Sucker
165. Redbreast Sunfish
166. Brown Trout
167. Brook Trout
168. Rainbow Trout
169. Walleye
170. Weakfish

Reptiles and Amphibians

171. Black Racer
172. Black Rat Snake
173. Northern Copperhead Snake
174. Eastern Ribbon Snake
175. Garter Snake
176. Hognose Snake
177. Northern Brown Snake
178. Northern Water Snake
179. Rattlesnake
180. Ring Neck snake
181. Scarlet king snake/Milk Snake
182. Smooth Green Snake
183. Box Turtle
184. Musk Turtle
185. Northern Diamond Terrapin
186. Painted Turtle
187. Snapping Turtle
188. Spotted Turtle
189. Wood Turtle
190. Bullfrog
191. Gray tree frog
192. Green Frog
193. Leopard Frog
194. Pickerel Frog
195. Spring Peeper
196. Dusky Salamander
197. Marbled Salamander
198. Redback Salamander
199. Red Spotted Newt
200. Spotted Salamander
201. Eastern Spadefoot Toad
202. Fowler's Toad
203. Woodhouse's Toad

Non-Native Invasive Species

204. American Water Lotus
205. Autumn Olive
206. Asiatic Bittersweet
207. Black Locust
208. Brittle Water Nymph
209. Common Buckthorn
210. Common Reed
211. Common Water Hyacinth
212. Curly Leaved Pondweed
213. Cyprus spurge
214. Dame's Rocket
215. Dwarf Honeysuckle
216. Eurasian Water Milfoil
217. Fanwort
218. Forget Me Not
219. Garlic Mustard
220. Giant Hogweed
221. Giant Knotweed
222. Giant Salvinia
223. Glossy Buckthorn
224. Hydrilla
225. Japanese Barberry
226. Japanese Honeysuckle
227. Japanese Knotweed
228. Japanese Siltgrass
229. Kudzu
230. Mile a minute
231. Multiflora rose
232. Non-Native Honeysuckles
233. Norway maple
234. Onerow yellow cress
235. Oriental Bittersweet
236. Pond Water-Starwort
237. Purple Loosestrife
238. Russian Olive
239. Tree of Heaven
240. Variable-leaf Milfoil
241. Water Chestnut
242. Watercress
243. Winged Euonymus
244. Yellow Floating Heart
245. Yellow Flag Iris
246. Asian Longhorned Beetle
247. Gypsy Moth
248. Hemlock Woolly Adelgid
249. Japanese Beetle
250. Japanese Cedar Longhorn Beetle
251. Mexican Bean Beetle
252. Asiatic clam
253. Chinese Mitten Crab
254. Common Carp
255. Emerald Ash Borer
256. English Sparrow
257. European Starling
258. Green Crab
259. Goldfish
260. House Finch
261. House Sparrow
262. Mute Swan
263. Norway rat
264. Ring neck pheasant
265. Rainbow Trout
266. Sea Lamprey
267. Zebra Mussel

Environmental Analysis Scorecard

Name: _____ Participant No:_____
School: _____ Team No:_____

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

Question	Possible Points	Score
List ten (10) biotic organisms that you observed within the marked boundaries of this site:	20	
List ten (10) abiotic organisms that you observed within the marked boundaries of this site	20	
List five (5) relationships (food web) found among the biotic factors in this environment	20	
Identify the stages of succession found in this ecosystem.	20	
Is this a balanced ecosystem? – Yes or No (circle) – Why or Why Not? – Provide four reasons.	20	