



Environmental Natural Resources

Career Development Event – Senior Division

I. OVERVIEW

The Environmental/Natural Resources CDE is a four-person team event. It is designed to develop an understanding of our state's natural resources while allowing students to explore and prepare for possible careers in Natural Resources and Environmental Science.

II. PURPOSE

Georgia possesses a vast wealth of Natural Resources. The purpose of the Environmental/Natural Resources CDE is to acquaint students with the different areas of the Natural Resources that are found throughout the State and to foster skill development in each student's chosen area of study.

III. ELIGIBILITY

This event is open to students in grades 9-12 who are agricultural education students, and are paid members of a chartered FFA chapter. Each member of the team must be a member of the chapter registering them, and each student's name must appear on the chapter's FFA roster at least 10 days prior to competition above the chapter level.

IV. SPECIAL NEEDS REQUEST

To report any special needs or request special services for a student to compete in a Career Development Event or FFA Award area (Area or State level), it is the responsibility of the FFA advisor to provide a detailed and specific request and explanation in writing. Requests should include written documentation from the school system verifying the IEP and need being requested. Written requests must be submitted to the CDE Superintendent prior to registering for the CDE/event (at least 3 weeks prior to the date of competition).

V. RULES

1. Team size shall be four members. All four members will be scored and all scores will count towards the team total score.
2. Under no circumstances will any participant be allowed to handle any of the items in the identification portion of the practicums. Any infraction of this rule will give sufficient cause to eliminate a team from the event.
3. Participants will be assigned to group leaders who will 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 leaders by the event superintendent.
4. All participants will be given an identification number that will designate them through the event.
5. The event will be conducted regardless of the weather conditions.
6. Written material will be furnished for the event.
7. Materials student must provide: Each participant must have a clean, note-free clipboard, two sharpened No. 2 pencils, and an electronic calculator. Calculators used in this event should be TI-30Xa or equivalent (no programmable calculators allowed). A GPS Unit such as the Garmin e-trex or equivalent.
8. Equipment provided: All other tools and equipment will be furnished for the event. Participants must use the tools and equipment furnished at the event.
9. No cell phones may be used during this competition.



VI. FORMAT

The Area CDE will involve:

- A. Exam (*all four students will take an exam as a team*)
- B. Identification (*all four students participate individually*)
- C. GPS practicum (*all four students participate individually*)

The State CDE will involve:

- A. Exam (*all four students take an exam individually*)
- B. Identification (*all four students participate individually*)
- C. GPS practicum (*all four students participate individually*)
- D. Team Activity (*all four team members will work together*)

Team Activity: Time – 90 minutes to complete.

The team activity will consist of problem solving stations. All four team members may work together and discuss problems and/or practicums to come up with the solution. The main focus of the team activity will center on the current team activity, which is rotated each year by the schedule that is listed in the National FFA CDE Handbook (see below). Problem solving activities from other components of this CDE may be included into this team activity.

All four team members can work together on the problem solving. The activity will be worth 200 points toward the team score.

REVISED The team activity will follow this rotation:

2021-2022 – Soils	2023-2024 – Ecosystems
2022-2023 – Water	2024-2025 – Waste Management

REVISED The reference for the written exam questions will come from the Georgia Agricultural Education Natural Resources Curriculum (see Reference section) and additional references will be supplemented that are specific to the main focus of the team activity annually at least 2 months prior to the state CDE.

Individual Activities:

1. Exam: Time – 45 minutes to complete (200 points) REVISED

At the Area CDE, the team will be able to work together on the exam and the exam will count 200 points.

At the State CDE, each individual will take an exam separately; there will be no collaboration among contestants. The exam will be worth 50 points per contestant for a total possible team score of 200 points.

REVISED The reference for the written exam questions will come from the *Managing Our Natural Resources* (see Reference section). Specific chapters will be assigned annually and sent to teachers prior to the CDE.



2. Identification (100 points) (45 minutes)

Students will identify 50 items from the following combined areas. Each item will count as 2 points. Students may be required to identify the item from the actual sample, a mounted or preserved sample, a photograph, a written description or a sign of the item, such as a track, scat, or a fruit or cone. A word bank will be provided to students at the competition.

- | | |
|---|--------------------------------|
| Equipment | Fish and other Aquatic Animals |
| Reptiles/Amphibians | Birds |
| Plants (Trees and Shrubs, Vines, and Grasses) | Non-Native Species |
| Wildlife | |

3. GPS Locations (100 points) (45 minutes)

- Students should bring a Global Positioning System (GPS) unit. Any 12 channel GPS unit can be used. The coordinate system used to designate points will be latitude and longitude in degrees/minutes/seconds. Map datum used to collect points will be NAD83. Using GPS unit, the participant will be required to walk to and locate the points.
- Students will then record a predetermined identification mark located at each point along with the common name that corresponds to a scientific name of a tree from the identification list at each point. *Misspelled scientific names will have 2 points deducted.*
- After the students return to the checkout station, time will stop and then they will write the common name of the GPS points on the score sheet. If they write the common name on the score sheet before checking back in the participant will not receive any credit. *Misspelled common names will have 2 points deducted.*
- Students shall know how to read longitude and latitude numbers and how to use a GPS unit.
- Students may also be asked to identify the latitude and longitude of a given point or set of points using a GPS unit and a map.
- Students may also be asked to identify boundaries of a given area including calculation of land area and linear feet of the boundary.
- After 30 minutes, students will have 2 points deducted for each minute up to 45 minutes. Time will be called at 45 minutes.

VII. SCORING

AREA LEVEL

Exam	200 points per team
Identification	100 points per student
GPS	100 points per student

Maximum score for an individual is 200 points. Maximum score for a team is 1000 points.

STATE LEVEL

Team Activity	200 points per team
Exam	50 points per student
Identification	100 points per student
GPS	100 points per student

Maximum score for an individual is 250 points. Maximum score for a team is 1200 points.



VIII. TIE BREAKER

Team tiebreaker will be settled in the following order:

1. Team with the highest exam score (Area)(total of the four individual exam scores at the state CDE)
2. Team with the highest identification score (total of the four individual scores)
3. Team with the highest individual score
4. Team with the next highest individual score (continue until tie is broken)

Individual tiebreaker will be settled in the following order:

1. Individual with the highest GPS score
2. Individual with the highest identification score
3. Individual with the highest exam score (at the state CDE)(at Area, the highest team exam score)
4. Individual on the team with the highest team activity score (at the state CDE)

IX. AWARDS

Awards shall be determined each year by the Board of Trustees of the Georgia FFA Foundation. This event at the state level is made possible through the Georgia FFA Foundation as a special project of an industry sponsor or from the Foundation general fund. Minimum awards will recognize the first four places of individuals in each activity, and the first and second place teams at the state level. Area awards will be dependent on sponsorship of these events.

X. REFERENCES

REVISED

Managing Our Natural Resources, 6th ed. William G. Camp and Betty Heath-Camp. (2016).

Cengage Learning

Georgia Ag Ed Natural Resources Curriculum

<https://www.georgiaffa.org/curriculum2/topic.aspx?ID=5&TID=34>

2021-2022 - Soils 4.1, 4.2 and 4.4

2023-2024 – Ecosystems Lessons 3.1 – 3.5

2022-2023 – Water Lessons 5.1, 5.2, 5.3, and 5.4

2024-2025 – Waste Management 6.1, 6.2, and 6.4

Cornell Lab of Ornithology <http://www.allaboutbirds.org/Page.aspx?pid=1189>

Savannah River Ecology Laboratory <http://srelherp.uga.edu/>

Fish of Georgia <http://fishesofgeorgia.uga.edu/index.php?page=home>

Georgia Department of Natural Resources, Environmental Protection Division

<https://adoptastream.georgia.gov/>



Environmental/Natural Resources CDE Identification List

Equipment

Water Quality

- 101. Refractometer
- 102. Secchi Disk (for measuring turbidity)
- 103. Thermometer
- 104. Water Bottle Samplers
- 105. Water Meter for physical/chemical parameters (pH, conductivity, and/or DO)

Aquatic Samplers

- 106. Aquatic net
- 107. Bottom dredges
- 108. Fish measuring board
- 109. Plankton net
- 110. Seines
- 111. Sieves
- 112. Stream bottom sampler

Wildlife

- 113. Animal tags/bands
- 114. Binoculars
- 115. Mammal traps
- 116. Radio telemetry unit
- 117. Snake/reptile stick

Geographical

- 118. GPS unit

Weather

- 119. Anemometer
- 120. Barometer
- 121. Rain gauge
- 122. Sling psychrometer

Forestry

- 123. Biltmore stick
- 124. Clinometer
- 125. Diameter tape
- 126. Logger's tape
- 127. Prism
- 128. Quadrant Compass
- 129. Tree increment borer

Wildlife

- 201. Armadillo
- 202. Bat
- 203. Beaver
- 204. Black Bear
- 205. Bobcat
- 206. Chipmunk
- 207. Coyote
- 208. Feral Hog
- 209. Fox (Red or Gray)
- 210. Mole
- 211. Muskrat
- 212. Opossum
- 213. Porcupine
- 214. Rabbit (Eastern Cottontail or Swamp)
- 215. Raccoon
- 216. Skunk
- 217. Squirrel (Fox or Gray)
- 218. Weasel
- 219. Whitetail Deer

Birds

- 301. American Kestrel
- 302. Bald Eagle
- 303. Bluebird (Eastern or Mountain)
- 304. Blue Jay
- 305. Brown Pelican
- 306. Brown Thrasher
- 307. Canada Goose
- 308. Cardinal
- 309. Cooper's Hawk
- 310. European Starling
- 311. Great Blue Heron
- 312. Great Horned Owl
- 313. House Sparrow
- 314. Hummingbird
- 315. Mallard Duck
- 316. Mourning Dove
- 317. Northern Bobwhite
- 318. Purple Martin
- 319. Red-tailed Hawk
- 320. Ruffed Grouse
- 321. Wild Turkey
- 322. Woodcock
- 323. Wood Duck



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Reptile/Amphibians

- 401. Alligator
- 402. Alligator Snapping Turtle
- 403. Black Rat Snake
- 404. Bullfrog
- 405. Canebrake Rattlesnake
- 406. Common Snapping Turtle
- 407. Copperhead Snake
- 408. Coral Snake
- 409. Corn Snake
- 410. Cottonmouth
- 411. Eastern Diamondback Rattlesnake
- 412. Fence Lizard
- 413. Garter Snake
- 414. Gopher Tortoise
- 415. Green Anole Lizard
- 416. Green Treefrog
- 417. Ringneck Snake
- 418. Red-Eared Slider
- 419. Scarlet Kingsnake
- 420. Slider Turtle

Fish

- 501. Black Crappie
- 502. Bluegill
- 503. Bowfin
- 504. Brook Trout
- 505. Brown Trout
- 506. Chain Pickerel
- 507. Channel Catfish
- 508. Crab
- 509. Crayfish
- 510. Flathead Catfish
- 511. Freshwater Shrimp
- 512. Grass Carp
- 513. Hybrid Striped Bass
- 514. Largemouth Bass
- 515. Rainbow Trout
- 516. Redbreast Sunfish
- 517. Redear Sunfish
- 518. Shad (Gizzard or Threadfin)
- 519. Smallmouth Bass
- 520. Striped Bass
- 521. Walleye
- 522. Warmouth

Non-Native Species

- 601. Chinese Privet
- 602. Chinaberry
- 603. English Ivy
- 604. Fire Ant
- 605. Hydrilla
- 606. Kudzu
- 607. Mimosa
- 608. Nutria



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Plants

Participants may be required to identify by common names the following trees, shrubs, vines, and grasses. Specimens could include full trees, freshly cut foliage, herbarium sheets with pressed foliage, photographs, foliage, bark, limbs, fruits, nuts, cones, seeds, or any other plant parts.

Trees

Common Name

701. American Beech
702. American Holly
703. Black Cherry
704. Black Locust
705. Black Walnut
706. Blackgum
707. Catalpa
708. Chestnut Oak
709. Crabapple
710. Eastern Redcedar
711. Flowering Dogwood
712. Honeylocust
713. Live Oak
714. Loblolly Pine
715. Longleaf Pine
716. Mockernut Hickory
717. Mulberry
718. Pecan
719. Persimmon
720. Post Oak
721. Sassafras
722. Sawtooth Oak
723. Slash Pine
724. Southern Red Oak
725. Turkey Oak
726. Virginia Pine
727. White Oak
728. Yellow-Poplar

Scientific Name

- Fagus grandifolia*
Ilex opaca
Prunus serotina
Robinia pseudoacacia
Juglans nigra
Nyssa sylvatica
Catalpa bignonioides
Quercus prinus
Malus spp.
Juniperus virginiana
Cornus florida
Gleditsia triacanthos
Quercus virginiana
Pinus taeda
Pinus palustris
Carya tomentosa
Morus spp.
Carya illinoensis
Diospyrus virginiana
Quercus stellata
Sassafras albidum
Quercus acutissima
Pinus elliotii
Quercus falcata
Quercus laevis
Pinus virginiana
Quercus alba
Liriodendron tulipifera

Shrubs & Vines & Grasses

Common Name

801. American Beautyberry
802. Blackberry
803. Common Lespedeza
804. Greenbriers
805. Highbush Blueberry
806. Japanese Honeysuckle
807. Mistletoe
808. Partridge pea
809. Pokeweed
810. Ragweed
811. Sparkleberry
812. Vetch
813. Viburnum

Scientific Name

- Callicarpa americana*
Rubus spp.
Lespedeza spp.
Smilax spp.
Vaccinium spp.
Lonicera japonica
Loranthaceae spp.
Cassia fasciculata niticans
Phytolacca americana
Ambrosia spp.
Vaccinium arboreum
Vicia spp.
Viburnum spp.