

## Natural Resources

A Special Project of the South Dakota FFA Foundation

**Important Note:** Please thoroughly read the General Rules at the beginning of this handbook for complete rules and procedures that are relevant to all South Dakota FFA Career Development Events.

### Purpose

The purpose of the Natural Resources 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. Environmental and natural resource education has a responsibility to educate the public and prepare students to enter career in the environmental and natural resource industry.

### Objectives

- Identify common insects, birds, mammals, fish, and trees and shrubs of South Dakota.
- Understand the biological and scientific principles of soils, forestry, recycling, land management, energy resources, outdoor recreation, wildlife management, water resources management, wildlife habitats, and air resource management.
- Utilize different resources to answer problem-solving questions.

### Event Rules

Each team will be comprised of three or four members.

The top three individual scores will be used to determine the final team score.

### Event Format

The Natural Resources CDE will consist of a written test, a problem-solving activity, and the identification of 10 specimens within each of six different groups.

#### Written Test – 200 points

The written test will consist of 50 multiple-choice questions.

Each question will be worth four points.

One hour will be allowed to complete the written portion of the test.

The written test questions will be taken from the 5<sup>th</sup> edition of the test *Managing Our Natural Resources*, and will consist of questions from each of the following areas:

Air Resource Management	Recycling
Energy Resources	Soils
Forestry	Water Resources Management
Land Management	Wildlife Habitats
Outdoor Recreation	Wildlife Management

**Problem Solving Activity – 100 points**

The problem-solving activity will be taken from the *Managing Our Natural Resources* text and its workbook, the *South Dakota Hunting and Trapping Handbook*, and the *South Dakota Fishing Handbook*.

The problem-solving portion will consist of 10 multiple-choice questions.

Each question will be worth 10 points.

This phase will be limited to 30 minutes.

The problems will be selected from one or more of the following areas:

- |                            |                            |
|----------------------------|----------------------------|
| Conservation               | Shelter Belt Management    |
| Ecosystem                  | Soils                      |
| Energy                     | Upland Game                |
| Fish                       | Vegetation Cover           |
| Habitat                    | Water Pollution            |
| Hunter Ethics              | Wildlife Carrying Capacity |
| Population Dynamics        | Wildlife Management        |
| Recreation on Public Lands | Woodland Management        |

**Identification – 600 points**

Identification will consist of ten specimens in each of these six groups:

- insects
- waterfowl and upland game birds
- other birds
- mammals
- fish
- trees and shrubs

All specimens will be relative to South Dakota, as listed in the rules.

Specimens must not be handled by participants unless protected in tubes or boxes. If very small insects are used, they may be mounted under a binocular microscope.

All specimens will be represented by at least 5"x7" photographs. Study specimens may be used in addition to the photographs.

All birds in Group II will be males.

Twelve minutes will be allowed to identify specimens in each of the six groups.

**Scoring**

	Points Possible
Identification (10 points per specimen, 60 problems)	600
Written Test (60 questions, 4 points per question)	200
Problem Solving Activities(10 points per question, 10 questions)	100
<b>Total Possible Individual Score</b>	<b>900</b>
<b>Total Possible Team Score (3 participants)</b>	<b>2700</b>

## Tiebreakers

In the case of a team tie, the order to break the tie will be:

1. Total Written Test Score
2. Total Problem Solving Score

In the case of an individual tie, the order to break the tie will be:

1. Individual Written Test Score
2. Individual Written Identification Score

## References

- A. National FFA Core Catalog – Past CDE Materials (<http://shop.ffa.org/cde-materials-c1289.aspx>)
- B. *Introduction to Natural Resources*, 2003, Darold Hehn and Bob Newport, edited by Jim Steward, The Multistate Academic Vocational Curriculum Consortium, Inc. 1500 West Seventh, Stillwater, Oklahoma 74074-4364.
- A. *Managing Our Natural Resources, 5<sup>th</sup> edition*, 2009, Camp, William, G., Betty Heath-Camp: Delmar Cengage Learning, Clifton Park, NY 12065-2919.
- B. Workbook to Accompany *Managing Our Natural Resources, 5<sup>th</sup> edition*, 2009, Darold Hehn for William G. Camp and Betty Heath-Camp, Clifton Park, NY 12065-2919.
- C. The Audobon Society Field Guide Series: Mammals, Insects and Spiders, Trees, Birds (Eastern, Western Region), and Fishes, Whales, and Dolphins.
- D. SD Hunting and Trapping Handbook: <http://gfp.sd.gov/hunting/regulations/default.aspx>
- E. SD Fishing Handbook: <http://gfp.sd.gov/fishing-boating/rules-regs.aspx>
- F. U.S. Fish and Wildlife Service – National Digital Library: <http://digitalmedia.fws.gov/>
- G. NSU – Environmental Education in SD: <http://www3.northern.edu/natsource/index.htm>
- H. SD Birds and Birding: <http://sdakotabirds.com>
- I. Guide to the Fishes of SD: <http://gfp.sd.gov/fishing-boating/tacklebox/docs/FishesofSD-pub/index.html>

## South Dakota Insects, Birds, Mammals, Fish, Trees and Shrubs.

<b>Insects</b>		
001. <i>Aphidoidea</i> /Aphid	012. <i>Siphonaptera</i> /Flea	023. <i>Ephemeroptera</i> /Mayfly
002. <i>Notonectidae</i> /Back Swimmer	013. <i>Belostomatidae</i> /Giant Water Bug	024. <i>Culicidae</i> /Mosquito
003. <i>Scudderia</i> /Bush Katydid	014. <i>Acridoidea</i> & <i>Pyrgomorphidae</i> /Grasshopper	025. <i>Dendroctonus ponderosae</i> /Mountain Pine Beetle
004. <i>Camponotus</i> /Carpenter Ant	015. <i>Chrysopidae</i> /Green Lacewing	026. <i>Sphecidae</i> /Mud-Dauber Wasp
005. <i>Silphidae</i> /Carrion Beetle	016. <i>Carabidae</i> /Ground Beetle	027. <i>Zygoptera</i> /Narrow-winged Damselfly
006. <i>Cicadoidea</i> /Cicada	017. <i>Apis mellifera</i> /Honey Bee	028. <i>Limnephilidae</i> /Northern Caddis Fly
007. <i>Blattodea</i> /Cockroach	018. <i>Tabanidae</i> /Horse Fly	029. <i>Libellulidae</i> /Skimmer Dragonfly
008. <i>Chrysops</i> /Deer fly	019. <i>Musca domestica</i> /House Fly	030. <i>Plecoptera</i> /Stone Fly
009. <i>Malacosoma americanum</i> /Eastern Tent Caterpillar	020. <i>Phyllophaga</i> /June Beetle	031. <i>Corixidae</i> /Water Boatman
010. <i>Agrilus planipennis</i> /Emerald Ash Borer	021. <i>Coccinellidae</i> /Ladybird Beetle	032. <i>Gerridae</i> /Water Strider
011. <i>Gryllus</i> /Field Cricket	022. <i>Cicadellidae</i> /Leafhopper	033. <i>Vespula</i> /Yellow Jacket

<b>Birds: Group 1 - Waterfowl and Upland Game Birds</b>		
001. <i>Anas americana</i> /American Wigeon	009. <i>Anas crecca</i> /Green-winged Teal	017. <i>Aythya collaris</i> /Ring-necked Duck
002. <i>Anas discors</i> /Blue-winged Teal	010. <i>Aythya affinis</i> /Lesser Scaup	018. <i>Phasianus colchicus</i> /Ring-necked Pheasant
003. <i>Branta canadensis</i> /Canada Goose	011. <i>Anas platyrhynchos</i> /Mallard	019. <i>Oxyura jamaicensis</i> /Ruddy Duck
004. <i>Aythya valisineria</i> /Canvasback	012. <i>Zenaidura macroura</i> /Mourning Dove	020. <i>Bonasa umbellus</i> /Ruffed Grouse
005. <i>Mergus merganser</i> /Common Merganser	013. <i>Anas acuta</i> /Northern Pintail	021. <i>Tympanuchus phasianellus</i> /Sharp-tailed Grouse
006. <i>Anas strepera</i> /Gadwall	014. <i>Anas clypeata</i> /Northern Shoveler	022. <i>Chen caerulescens</i> /Snow Goose
007. <i>Perdix perdix</i> /Gray Partridge	015. <i>Tympanuchus cupido</i> /Greater Prairie Chicken	023. <i>Meleagris gallopavo</i> /Wild Turkey
008. <i>Anser albifrons</i> /Greater White Fronted Goose	016. <i>Aythya americana</i> /Redhead	024. <i>Aix sponsa</i> /Wood Duck

<b>Birds: Group 2 – Other Birds</b>		
001. <i>Botaurus lentiginosus</i> /American Bittern	025. <i>Accipiter cooperii</i> /Cooper's Hawk	049. <i>Falco peregrinus</i> /Peregrine Falcon
002. <i>Fulica americana</i> /American Coot	026. <i>Junco hyemalis</i> /Dark-eyed Junco	050. <i>Carduelis pinus</i> /Pine Siskin
003. <i>Corvus brachyrhynchos</i> /American Crow	027. <i>Phalacrocorax auritus</i> /Double-crested Cormorant	051. <i>Charadrius melodus</i> /Piping plover
004. <i>Falco sparverius</i> /American Kestrel	028. <i>Limnodromus scolopaceus</i> /Long-billed Dowitcher	052. <i>Progne subis</i> /Purple Martin
005. <i>Spinus tristis</i> /American Goldfinch	029. <i>Picoides pubescens</i> /Downy Woodpecker	053. <i>Melanerpes erythrocephalus</i> /Red-headed Woodpecker
006. <i>Turdus migratorius</i> /American Robin	030. <i>Tyrannus tyrannus</i> /Eastern Kingbird	054. <i>Buteo jamaicensis</i> /Red-tailed Hawk
007. <i>Haliaeetus leucocephalus</i> /Bald Eagle	031. <i>Sturnus vulgaris</i> /European Starling	055. <i>Agelaius phoeniceus</i> /Red-winged Blackbird
008. <i>Tyto alba</i> /Barn Owl	032. <i>Streptopelia decaocto</i> /Eurasian Collared Dove	056. <i>Larus delawarensis</i> /Ring-billed Gull
009. <i>Hirundo rustica</i> /Barn Swallow	033. <i>Buteo regalis</i> /Ferruginous Hawk	057. <i>Buteo lagopus</i> /Rough-legged Hawk
010. <i>Megaceryle alcyon</i> /Belted Kingfisher	034. <i>Leucophaeus pipixcan</i> /Franklin's Gull	058. <i>Archilochus colubris</i> /Ruby-throated Hummingbird
011. <i>Chlidonias niger</i> /Black Tern	035. <i>Aquila chrysaetos</i> /Golden Eagle	059. <i>Megascops asio</i> /Eastern Screech Owl
012. <i>Poecile atricapillus</i> /Black-capped Chickadee	036. <i>Ardea herodias</i> /Great Blue Heron	060. <i>Asio flammeus</i> /Short-eared Owl
013. <i>Cyanocitta cristata</i> /Blue Jay	037. <i>Ardea alba</i> /Great Egret	061. <i>Buteo swainsoni</i> /Swainson's Hawk
014. <i>Euphagus cyanocephalus</i> /Brewer's Blackbird	038. <i>Bubo virginianus</i> /Great Horned Owl	062. <i>Tachycineta bicolor</i> /Tree swallow
015. <i>Toxostoma rufum</i> /Brown Thrasher	039. <i>Eremophila alpestris</i> /Horned Lark	063. <i>Cygnus columbianus</i> /Tundra Swan
016. <i>Molothrus ater</i> /Brown-headed Cowbird	040. <i>Carpodacus mexicanus</i> /House Finch	064. <i>Bartramia longicauda</i> /Upland Sandpiper
017. <i>Athene cunicularia</i> /Burrowing Owl	041. <i>Passer domesticus</i> /House Sparrow	065. <i>Sturnella neglecta</i> /Western Meadowlark

018. <i>Colaptes auratus</i> /Common Flicker	042. <i>Troglodytes aedon</i> /House Wren	066. <i>Pelecanus erythrorhynchos</i> /White Pelican
<b>Birds: Group 2 – Other Birds Continued</b>		
019. <i>Quiscalus quiscula</i> /Common Grackle	043. <i>Charadrius vociferus</i> /Killdeer	067. <i>Sitta carolinensis</i> /White-breasted Nuthatch
020. <i>Gavia immer</i> /Common Loon	044. <i>Sternula antillarum</i> /Least tern	068. <i>Tringa semipalmata</i> /Willet
021. <i>Chordeiles minor</i> /Common Nighthawk	045. <i>Numenius americanus</i> /Long-billed Curlew	069. <i>Phalaropus tricolor</i> /Wilson's Phalarope
022. <i>Carduelis flammea</i> /Common Redpoll	046. <i>Limosa fedoa</i> /Marbled Godwit	070. <i>Xanthocephalus xanthocephalus</i> /Yellow-headed Blackbird
023. <i>Gallinago gallinago</i> /Common Snipe	047. <i>Circus hudsonius</i> /Northern Harrier	071. <i>Dendroica petechia</i> /Yellow Warbler
024. <i>Sterna hirundo</i> /Common Tern	048. <i>Icterus galbula</i> /Oriole	072. <i>Tringa melanoleuca</i> /Yellowlegs

<b>Mammals</b>		
001. <i>Taxidea taxus</i> /Badger	015. <i>Urocyon cinereoargenteus</i> /Grey fox	029. <i>Cynomys ludovicianus</i> /Black-Tailed Prairie dog
002. <i>Castor canadensis</i> /North American Beaver	016. <i>Mus musculus</i> /House mouse	030. <i>Antilocapra americana</i> /Pronghorn
003. <i>Mustela nigripes</i> /Black-footed ferret	017. <i>Lepus townsendii</i> /White-tailed Jackrabbit	031. <i>Procyon lotor</i> /Raccoon
004. <i>Ovis canadensis</i> /Bighorn sheep	018. <i>Microtus pennsylvanicus</i> /Meadow vole	032. <i>Vulpes vulpes</i> /Red fox
005. <i>Lynx rufus</i> /Bobcat	019. <i>Neovison vison</i> /American Mink	033. <i>Tamiasciurus hudsonicus</i> /American Red Squirrel
006. <i>Sylvilagus floridanus</i> /Eastern Cottontail	020. <i>Scalopus aquaticus</i> /Common Mole	034. <i>Ictidomys tridecemlineatus</i> /Thirteen-lined ground squirrel
007. <i>Canis latrans</i> /Coyote	021. <i>Puma concolor</i> /Mountain lion	035. <i>Blarina brevicauda</i> /Northern Short-Tailed Shrew
008. <i>Peromyscus maniculatus</i> /Deer mouse	022. <i>Oreamnos americanus</i> /Mountain goat	036. <i>Spilogale putorius</i> /Eastern Spotted skunk
009. <i>Tamias striatus</i> /Eastern chipmunk	023. <i>Odocoileus hemionus</i> /Mule deer	037. <i>Mephitis mephitis</i> /Striped skunk

010. <i>Cervus canadensis</i> /Elk	024. <i>Ondatra zibethicus</i> /Muskrat	038. <i>Mustela frenata</i> /Long-tailed Weasel
011. <i>Glaucomys sabrinus</i> /Northern Flying squirrel	025. <i>Rattus norvegicus</i> /Brown rat	039. <i>Odocoileus virginianus</i> /Whitetail deer
012. <i>Sciurus niger</i> /Fox squirrel	026. <i>Didelphis virginiana</i> /Virginia Opossum	040. <i>Marmota monax</i> /Woodchuck
013. <i>Poliocitellus franklinii</i> /Franklin's ground squirrel	027. <i>Geomys bursarius</i> /Plains Pocket gopher	
014. <i>Sciurus carolinensis</i> /Eastern Gray squirrel	028. <i>Hystricomorph hystricidae</i> /Porcupine	

<b>Fish</b>		
001. <i>Anguilla rostrata</i> /American eel	012. <i>Etheostoma nigrum</i> /Johnny Darter	023. <i>Oncorhynchus mykiss</i> /Rainbow trout
002. <i>Pomoxis nigromaculatus</i> /Black crappie	013. <i>Pimephales promelas</i> /Fathead minnow	024. <i>Ambloplites rupestris</i> /Rock bass
003. <i>Ictalurus furcatus</i> /Blue catfish	014. <i>Pylodictis olivaris</i> /Flathead catfish	025. <i>Sander canadensis</i> /Sauger
004. <i>Lepomis macrochirus</i> /Bluegill	015. <i>Notemigonus crysoleucas</i> /Golden shiner	026. <i>Lepisosteus platostomus</i> /Shortnose gar
005. <i>Salvelinus fontinalis</i> /Brook trout	016. <i>Lepomis cyanellus</i> /Green sunfish	027. <i>Micropterus dolomieu</i> /Smallmouth bass
006. <i>Salmo trutta</i> /Brown trout	017. <i>Salvelinus namaycush</i> /Lake trout	028. <i>Scaphirhynchus platyrhynchus</i> /Shovelnose Sturgeon
007. <i>Ameiurus melas</i> /Black Bullhead	018. <i>Micropterus salmoides</i> /Largemouth bass	029. <i>Sander vitreus</i> /Walleye
008. <i>Lota lota</i> /Burbot	019. <i>Esox masquinongy</i> /Muskellunge	030. <i>Pomoxis annularis</i> /White crappie
009. <i>Cyprinus carpio</i> /Common Carp	020. <i>Esox lucius</i> /Northern pike	031. <i>Catostomus commersonii</i> /White sucker
010. <i>Ictalurus punctatus</i> /Channel catfish	021. <i>Polyodon spathula</i> /American Paddlefish	032. <i>Perca flavescens</i> /Yellow perch
011. <i>Semotilus atromaculatus</i> /Creek chub	022. <i>Osmerus mordax</i> /Rainbow smelt	

<b>Trees and Shrubs: Hardwoods</b>		
001. <i>Ulmus americana</i> /American elm	010. <i>Populus deltoides</i> /Eastern Cottonwood	019. <i>Quercus rubra</i> /Red oak
002. <i>Tilia americana</i> /American linden	011. <i>Fraxinus pennsylvanica</i> /Green ash	020. <i>Elaeagnus angustifolia</i> /Russian olive
003. <i>Acer ginnala</i> /Amur maple (Ginnala maple)	012. <i>Celtis occidentalis</i> /Hackberry	021. <i>Carya ovata</i> /Shagbark hickory
004. <i>Prunus serotina</i> /Black cherry	013. <i>Gleditsia triacanthos</i> /Honeylocust	022. <i>Acer saccharinum</i> /Silver maple
005. <i>Juglans nigra</i> /Black walnut	014. <i>Carpinus Caroliniana</i> /Ironwood	023. <i>Acer saccharum</i> /Sugar maple
006. <i>Acer Negundo</i> /Boxelder	015. <i>Syringa vulgaris</i> /Lilac	024. <i>Quercus alba</i> /White oak
007. <i>Quercus Macrocarpa</i> /Bur oak	016. <i>Betula papyrifera</i> /Paper birch	025. <i>Salix exigua</i> /Narrowleaf Willow
008. <i>Juglans cinerea</i> /Butternut	017. <i>Populus tremuloides</i> /Quaking aspen	
009. <i>Caragana arborescens</i> /Caragana	018. <i>Acer rubrum</i> /Red maple	
<b>Trees and Shrubs: Softwoods</b>		
026. <i>Pinus nigra</i> /Austrian pine	030. <i>Juniperus virginiana</i> /Eastern red cedar	034. <i>Pinus ponderosa</i> /Ponderosa pine
027. <i>Picea pungens</i> /Blue spruce	031. <i>Pinus strobus</i> /Eastern white pine	035. <i>Pinus sylvestris</i> /Scotch pine
028. <i>Pseudotsuga menziesii</i> /Douglas fir	032. <i>Thuja occidentalis</i> /Northern white cedar	036. <i>Abies concolor</i> /White fir
029. <i>Larix laricina</i> /Eastern larch	033. <i>Picea abies</i> /Norway spruce	037. <i>Picea glauca</i> /White spruce

\*Leaves and/or pictures of leaves will be used for identification.