

# NATURAL SCIENCE

Superintendents: Fay & Sherm Sallee 541-451-5322

\*NOTE: Any educational displays exhibited in the Natural Science project areas must include an explanation to the judge outlined under Educational Displays in fairbook.

## CONSERVATION

1. Open to all 4-H members. Exhibit – an educational exhibit relating to conservation of soil, water, forests, marine life, range or wildlife. Exhibit may not exceed 30" in width, 24" in depth (front to back), and 36" in height. Include explanation to the judge as outline under Educations Display in fairbook.
2. Each exhibit piece must be labeled with member's name, county and class number.
3. Judging criteria are outlined on *4-H Educational Poster/Display Score Sheet (40-463)* available at the county Extension office or on the State 4-H website at <http://oregon.4h.oregonstate.edu/resources/materials.html>.

411200011 Conservation, Junior First Year, an educational exhibit relating to conservation of soil, water forests, marine life, range or wildlife.

Note: Fill in blank in class number ( ) with corresponding number for Junior, Intermediate, or Senior.

- 1 Junior, 2nd or 3rd Year
- 2 Intermediate
- 3 Senior

411 200 02\_ Conservation, an educational exhibit relating to conservation of soils and range.  
411 200 03\_ Conservation, an educational exhibit relating to conservation of water and marine life.  
411 200 04\_ Conservation, an educational exhibit relating to conservation of forest and wildlife.

### Basis for scoring conservation exhibits:

Attracts attention, holds interest 25 points  
Workmanship, arrangement, neatness 25 points  
Tells a story (educational value) 25 points  
Practical, teaches approved practices 25 points

## ENTOMOLOGY

1. Judging will be based on condition of specimens, mountings, labeling, attractiveness, correct number of specimens, correct identification and educational value of exhibit. All insects must be collected in the current year for Juniors First Year. At least 50% of the insects displayed by Juniors Second and Third Year, Intermediates and Seniors must have been collected in the current year. Additional information is found in the Entomology Project Manual (4H3221L-July 1995).
2. Judging criteria are outlined on the *Entomology Exhibit Score Card (40-605)*, available at The county Extension office or on the State 4-H website at <http://oregon.4h.oregonstate.edu/resources/materials.html>.
3. Some of the orders have changed in Entomology by combining old orders or making new ones. Be sure to use the current order names for the insects check with the Extension office or go to the State 4-H website at: <http://oregon.4h.oregonstate.edu/sites/default/files/2009insectorderschanges.pdf>

**Recommended reference for entomology orders** for identification of specimens, *Borror and DeLong's Introduction to the Study of Insects 7<sup>th</sup> Edition* written by Charles A. Triplehorn and Norman F. Johnson.

821 100 011 Entomology, Junior First Year, 10 insects at least 8 orders.  
821 100 021 Entomology, Junior Second and Third Year, 20 insects at least 10 orders.  
821 100 012 Entomology, Intermediate First Year, 15 to 35 insects at least 12 orders.  
821 100 022 Entomology, Intermediate Second and Third Year, 35 insects at least 12 orders.  
821 100 013 Entomology, Senior First Year, 25 to 50 insects at least 15 orders.  
821 100 023 Entomology, Senior Second and Third Year, 50 insects at least 15 orders

### OTHER ENTOMOLOGY EXHIBITS

In the following classes each exhibit piece must be labeled with the member's name, county and class number. First year exhibitors in a class may use insects collected in previous years. Succeeding years' exhibits in the same exhibit class must include some insects collected in the current year.

In addition, the collections should be labeled to explain their educational value and will be judged based on the scoring used for entomology exhibits (40-605) and *Educational Display Check Sheet (40-463)* size dimensions 30" wide, 24" deep, 36" high available from the county Extension office or on the State 4-H website at, <http://oregon.4h.oregonstate.edu/resources/materials.html>.

For those exhibits that will fit, members may use the standard collection boxes and label insects according to the directions under "Insect Collections" in the *4-H Entomology Project (4-H 3220)*. For those not applicable (such as insect plant damage and life histories), they may be mounted as Riker mounts. Follow instructions on page 18 in the *4-H Entomology Manual (4-H 3221)* for Riker mounts.

**821 100 511 Other Entomology Exhibits, First Year Junior**, may exhibit 10 to 20 different insects in the categories of beneficial insects, harmful insects, insects attracted to lights, soil insects, aquatic insects, forest insects, specialize in an insect order, garden insects, insect plant damage (Riker mount) or other educational display.

**Note: Fill in blank in class number ( ) with corresponding number for Junior, Intermediate, or Senior.**

- 1 Junior, 2nd or 3rd Year (10 to 20 different insects)
- 2 Intermediate (15 to 35 different insects)
- 3 Senior (no more than 50 different insects)

**821 100 52\_ Other Entomology Exhibits**, may exhibit in categories of: Beneficial insects (e.g., pollinators or predators) insects attracted to lights, garden insects.

**821 100 53\_ Other Entomology Exhibits**, may exhibit in categories of: Harmful insects (e.g., parasite, pest or disease) insects plant damage (Riker mount) Specialize in insect order.

**821 100 54\_ Other Entomology Exhibits**, may exhibit in categories of: Soil insects, Forest insects, and aquatic insects.

**821 100 55\_ Other Entomology Exhibits**, may exhibit in categories of: Other Educational Display, size: 30" wide, 24" deep include (front to back) and 36" high. Examples could include experiments, surveys, photographs, life histories, purchased insects, etc.

## Forestry

### WHO MAY EXHIBIT

Junior, Intermediate and Senior members may make one or more exhibits - one mounted as a Forestry Specimen and one in each qualified Advanced Forestry exhibit class. Please refer to the *4-H Forestry Exhibit Requirements and Classes (4-H 33121)*. Note: Each exhibit must be labeled with the member's name, county and class number. For members who have previously been in 4-H forestry, exhibit all their mounts (the total number of mounts will be higher than listed in the division through 2010 fair), but only the 5 new ones will be judged. If you want to redo mounts to meet the new requirements you may do so.

Educational Display exhibits are scored using the *Educational Display Check Sheet (40-463)*, available at the county Extension office or on the State 4-H website at <http://oregon.4h.oregonstate.edu/resources/materials.html>. Include explanation to the judge as outlined under Educational Display in fair book. **Some of the Family names have changed, especially the flowering trees, shrubs and wildflowers as below:**

Current Family Name on Approved Species List	Change to: according to the Plants of the Pacific Northwest Coast Book
<b>Pea Family (Leguminosae)</b>	<b>Pea Family (Fabaceae)</b>
<b>Sunflower Family (Compositae)</b>	<b>Aster Family (Asteraceae)</b>
None of the other families have changed	

### MOUNTED FORESTRY SPECIMENS

Tree and shrub specimens exhibited must be listed on the official forestry specimens list available in *4-H Forestry Exhibit Requirements and Classes (4-H 33121)*. For Seniors exhibiting wildflowers and ferns use the "Other Reference Texts" list. Intermediate and Senior members must use the *Specimen Collection Site Analysis Sheet* for each specimen collected.

### JUNIOR DIVISION

441 100 011 Junior Forestry First Year, index, 5 mounts, all must be trees.

441 100 021 Junior Forestry Second & Third Year, index, 10-15 mounts, all must be trees. Only the index and 5 new mounts will be judged.

## INTERMEDIATE & SENIOR DIVISIONS

The number of mounts may vary depending on the number of years in the project. All mounts should be exhibited. The new mounts should be placed in front of the old mounts in the book. Only the index and 5 new mounts with site analysis sheets will be judged.

Intermediates new mounts may include trees and shrubs. Seniors new mounts may include trees, shrubs, ferns and wildflowers.

- 441 100 012 Intermediate Forestry, First Year, the number of mounts may vary from 5 to 20.  
441 100 022 Intermediate Forestry, Second & Third Year, the numbers of mounts vary from 10 to 30.  
441 100 013 Senior Forestry, First Year, the number of mounts may vary from 5 to 35.  
441 100 023 Senior Forestry, Second & Third Year, the number of mounts may vary from 10 to 45.

## ADVANCED FORESTRY EXHIBITS

These classes are open to all Forestry members. Members may exhibit in one topic or make one exhibit by combining topics. Junior and Intermediate members exhibit 10 or more specimens; Senior members exhibit 15 or more specimens. All must have been collected in the current 4-H year.

Exhibit may be flat board or three-dimensional. Three-dimensional display size maximum is 30" in length, 24" in depth (front to back) and 36" in height. The flat board maximum size is 22" by 28". Refer to guidelines in the "4-H Forestry Exhibit Requirements" (1998) for specific advanced forestry exhibit details. Include explanation to the judge as outlined under Educational Display in fair book.

- 441 200 511 Junior First Year Forestry, advanced exhibit. Topic include cones, tree seeds, conks, damage specimens, bark, wood mounts, lumber mounts or other educational display.

Note: Fill in blank in class number ( ) with corresponding number for Junior, Intermediate, or Senior. One exhibit per class number.

- 1 Junior, 2nd or 3rd Year
- 2 Intermediate
- 3 Senior

- 441 200 52\_ Advanced Forestry Exhibit, using one or combining the topics of cones, seeds and bark.  
441 200 53\_ Advanced Forestry Exhibit, using one or combining the topics of conks and damage specimens.  
441 200 54\_ Advanced Forestry Exhibit, using one or combining the topics of wood mounts and lumber mounts.  
441 200 55\_ Advanced Forestry Exhibit, educational display (i.e., management plans, tree farm maps, model camp sites, career opportunities, forestry concept or use your imagination to create your own display).

## GEOLOGY

At least 50% of the specimens must have been found by the exhibitor and at least five of the specimens must have been found, purchased, traded and or gifted during the current 4-H year. Polished or cut specimens should be exhibited under Geology Education Display except geodes ONLY may be cut—NOT POLISHED in the "regular" class.

Recommended reference materials for identification of specimens: *National Audubon Society Field Guide to Rocks and Minerals of North America* and *Dictionary of Geological Terms*, *American Geological Institute*, written by Robert L. Bates and Julia A. Jackson. Any identification of specimens using other sources are subject to disqualification by the judge.

- 421 100 011 Geology, Junior First Year 10 specimens.  
421 100 021 Geology, Junior Second and Third Year 15 to 20 specimens.  
421 100 012 Geology, Intermediate First Year 15 to 25 specimens.  
421 100 022 Geology, Intermediate Second and Third Year 20 to 35 specimens.  
421 100 013 Geology, Senior First Year 20 to 40 specimens.  
421 100 023 Geology, Senior Second and Third Year 25 to 50 specimens.

## GEOLOGY EDUCATIONAL DISPLAY

Score card for Geology Educational exhibit will be the *Educational Display Check Sheet (40-463)*, available at the county Extension office and on the State 4-H website at <http://oregon.4h.oregonstate.edu/resources/materials.html>.

An educational exhibit, relating to geology, may not exceed 30" in width, 24" in depth (front to back) and 36" in height.

- 421 200 011 Geology Educational Display, Junior  
421 200 012 Geology Educational Display, Intermediate  
421 200 013 Geology Educational Display, Senior

## OUTDOORS

451 200 011	Outdoor Science, Junior First Year
451 200 021	Outdoor Science, Junior Second and Third Year
451 200 012	Outdoor Science, Intermediate First Year
451 200 022	Outdoor Science, Intermediate Second and Third Year
451 200 013	Outdoor Science, Senior First Year
451 200 023	Outdoor Science, Senior Second and Third Year

Exhibit – an educational exhibit relating to out-of-doors. May not exceed 30" in width, 24" in depth (front to back) and 36" in height. \*Include an explanation of such things as how to use exhibit, how made, where found, identify parts, if appropriate to exhibit, etc. Example: a bird house exhibit could include plans for making it, where it would be used, species of birds, and an actual picture of where it will be used. Include explanation to the judge as outlined under Educational Display in fair book.

Score card for Outdoorsman exhibit:

Educational value	25 points
Workmanship, arrangement, neatness	50 points
Attractive, holds interest	25 points

## AQUATIC ECOLOGY & SPORTS FISHING

### FISHING POLES

Exhibit: An educational exhibit of a fishing rod or pole constructed by the member. May not exceed 108" in length. Include an explanation of cost of materials/components, where materials/components were purchased, how made, and number of hours required for construction. Identify all parts. Will be judged on neatness of labels and workmanship. Necessary components which must be included are grip, line guides, based on rod or pole manufacturer's specification, guide wraps, line, hook, hook keeper. Reel seat aligned with guides. Guide wraps of size A to D nylon thread. Guides aligned accurately down rod. Each exhibit piece must be labeled with the member's name, address and class number.

Judging criteria are outlined on *4-H Educational Display Check Sheet, Fishing (40-649)*, available at the county Extension office or on the State 4-H website at, <http://oregon.4h.oregonstate.edu/resources/materials.html>.

451 200 101	Spinning Pole, Junior, one piece
451 200 102	Spinning Pole, Intermediate, two piece
451 200 103	Spinning Pole, Senior, three or four piece
451 200 111	Bait Casting Pole, Junior, one piece
451 200 112	Bait Casting Pole, Intermediate, two piece
451 200 113	Bait Casting Pole, Senior, three or four piece
451 200 121	Fly Rod, Junior, one piece
451 200 122	Fly Rod, Intermediate, two piece
451 200 123	Fly Rod, Senior, three or four piece

### FLIES

Flies are defined as wet and dry and fall into the following categories: dry, nymph, poppers, and streamers. Materials (recipes) used may include but are not limited to: hackle, lead wire, dubbing, hook, copper wire, flash, quill, floss, chenille, thread, and hair.

Entries may include but are not limited to: \*Wooly Worm, Wooly Bugger, Streamer (Micky Fin): \*\*Caddis, Caddis Pupa, Hellgramite, Scud, Grass Hopper; \*\*\*Hare's Ear, Bead Head Pheasant, Gray Hackle Peacock, Royal Coachman, Parachute Adams, Blue Wing Olive. Entries must be accompanied by a *4-H Sports Fishing and*

*Aquatic Ecology Explanation Card* available at the Extension office or on the State 4-H website at, <http://oregon.4h.oregonstate.edu/resources/materials.html>.

(\*=low difficulty, \*\*=moderate difficulty, \*\*\*=high difficulty)

451 200 131	Flies, Junior, 2 total (1 nymph and 1 dry) use recipes requiring #4-6 hook.
451 200 132	Flies, Intermediate, 4 total (2 nymphs and 2 dry) use recipes requiring #6-8 hook.
451 200 133	Flies, Senior, 6 total (2 nymphs, 2 dry, and 2 using body dubbing) use recipes requiring #8-14 hook, 2 using body dubbing and recipes requiring #12-14 hook.

### LURES

Lures are defined as Spoons, Spinners, Rooster Tails, Jigs, Plugs, and Spinner Baits. Materials used may include but are not limited to the following:

Spoons: metal body, split ring, hook, weed guard, thin spoon, heavy spoon, thick solid, and spinner blades.

Spinners: hook, body, beads, clevis, blade, plastic minnow, spinner used with bait.

Rooster Tails: hook, blade, bead, feather skirt, hair skirt, rubber skirt, body, clevis, Colorado blade, willow blade.

Jig: eye, assorted jig lead head, hook, feathered skirt, fur skirt, hair skirt, rubber skirt.

Plugs: metal lip, hook hanger, eye, body, hooks, propellers, joined plug, plug lip.

Spinner Bait: fluted blade, hook, Colorado blade, clevis, arm, body, skirt, eye, twin arms and blades.

A *4-H Sport Fishing and Aquatic Ecology Explanation Card* must accompany entries available at the Extension Offices and or on the State 4-H website, <http://oregon.4h.oregonstate.edu/resources/materials.html>.

451 200 141 Lures, Junior, 1 Spoon plus 1 additional choice.

451 200 142 Lures, Intermediate, 1 Spoon, 1 Spinner, and 2 additional choices.

451 200 143 Lures, Senior, 1 Spoon, Spinner, 1 Rooster Tail, and 3 additional choices.

## COMMON KNOTS

Knots are defined as those needed to secure line from a reel seat or line holder to terminal tackle. They are limited to clinch, palomar, surgeons, surgeon's end loop, blood, nail, snell, and arbor.

Each endeavor must be represented in two mediums. One knot must be tied using white cotton cordage no smaller than 1/8" and no larger than 1/4". The second is to be tied using the appropriate material as it would be used in fishing (monofilament, Dacron backing, fly line, etc.) Knots should be displayed on an 8.5" X 11" black matte board.

A *4-H Sport Fishing and Aquatic Ecology Explanation Card* must accompany entries available at the Extension Offices and on the State 4-H website, <http://oregon.4h.oregonstate.edu/resources/materials.html>.

451 200 151 Common Knots, Junior, any 3 knots.

451 200 152 Common Knots, Intermediate, any 5 knots.

451 200 153 Common Knots, Senior, any 7 knots.

## AQUATIC MACRO-INVERTEBRATE (M-I) SPECIMENS

Aquatic specimens are defined as those invertebrates or vertebrates, regardless of developmental stage, that serve as an energy source in fresh water (lakes, ponds, streams, rivers) fisheries. They include but are not limited to: eggs, larvae, nymphs, scuds, leeches, stoneflies, caddisflies, mosquito, dragonflies, hellgrammites, minnows, etc. Preserved specimens, photos or drawings of aquatic specimens may be displayed. Photos and drawings must be the original work of the exhibitor.

Preserved specimens are to be displayed in specimen jars in display boxes. Each specimen requires a label outside the jar for easy reading. Labels on preserved specimens, photos or drawings are to include the name of the collector, date collected/photographed/drawn, scientific name, common name, name of body of water from which specimen was found, county and state.

### Label Example:

Collector/Date:	J. Smith 01/01/01
Order Name:	Ephemeroptera
Common Name/State:	Mayfly Adult or nymph
Body of Water:	Lost Lake
County/State:	Hood River OR

A *4-H Sport Fishing and Aquatic Ecology Explanation Card* must accompany entries available at the Extension Offices and on the State 4-H website, <http://oregon.4h.oregonstate.edu/resources/materials.html>.

## AQUATIC MACRO-INVERTEBRATE (M-I) SPECIMENTS

451 200 181 Aquatic M-I Specimens, Junior, 1<sup>st</sup> year/10 specimens; Junior 2<sup>nd</sup> and 3<sup>rd</sup> year 20.

451 200 182 Aquatic M-I Specimens, Intermediate, 1<sup>st</sup> year/15-35 specimens; Intermediate 2<sup>nd</sup> & 3<sup>rd</sup> year 35.

451 200 183 Aquatic M-I Specimens, Senior, 1<sup>st</sup> year/25-50 specimens; Senior 2<sup>nd</sup> & 3<sup>rd</sup> year 50.

## FISH PRINTS

May be printed using, but not limited to: water color, tempera, acrylic, oil, and ink. May be printed on material (fabric or paper) of choice or wearable clothing. Prints on non-wearable clothing. Prints on non-wearable clothing may not exceed 22" x 28".

Exhibitors are to make fish prints using real or model fish. Non-fish images are not acceptable.

A *4-H Aquatic Ecology and Sport Fishing Explanation Card* must accompany entries available at the Extension Offices and on the State 4-H website, <http://oregon.4h.oregonstate.edu/resources/materials.html>.

451 200 161 Fish Prints, Junior, 1 print on material or wearable clothing.

451 200 162 Fish Prints, Intermediate, 1 print on material and 1 wearable clothing or 2 wearable clothing. One print must be labeled with the parts of the fish and names of the fins. Labels may be permanent or removable.

451 200 163 Fish Prints, Senior, 3 prints total, in any combination. One print must be labeled with the parts of the fish and names of the fins. Labels may be permanent or removable.

## **EDUCATIONAL DISPLAY FOR AQUATIC ECOLOGY & SPORT FISHING**

Exhibits are limited in size to 30" wide, 24 " deep, 36" high. Judging criteria are outlined on *4-H Rod/Pole Fishing Educational Display Score Sheet (40-649)*. Displays may be presented as a poster or in three-dimensions. They must relate to Sport Fishing and Aquatic Ecology. Exhibits may include but are not limited to pictures, models, diagrams, and actual articles. A *4-H Sport Fishing and Aquatic Ecology Educational Display Card* must accompany each display and is available at the Extension office or on the State 4-H website <http://oregon.4h.oregonstate.edu/resources/materials.html>.

451 200 171 Aquatic Ecology/ Sports Fishing Educational Display, Junior

451 200 172 Aquatic Ecology/ Sports Fishing Educational Display, Intermediate

451 200 173 Aquatic Ecology/ Sports Fishing Educational Display, Senior