

# 2011 Ornithology (B/C) - Training Handout

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**DISCLAIMER** - This presentation was prepared using draft rules. There may be some changes in the final copy of the rules. The rules which will be in your Coaches Manual and Student Manuals will be the official rules.

- **BE SURE TO CHECK THE 2011 EVENT RULES** for EVENT PARAMETERS and TOPICS FOR EACH COMPETITION LEVEL
- **THE NATIONAL BIRD LIST** may be found at [www.soinc.org](http://www.soinc.org) under Event Information. States may modify the list for State and Regional Tournaments. See your state website.

## TRAINING MATERIALS:

- **Training Power Point** presents an overview of material in the training handout
- **Training Handout** presents introductory topic content information for the event
- **Sample Tournament** has sample problems with key
- **Event Supervisor Guide** has event preparation tips, setup needs and scoring tips
- **Internet Resource & Training Materials** are available on the Science Olympiad website at [www.soinc.org](http://www.soinc.org) under Event Information.
- **A Biology-Earth Science CD, the Peterson, *Birds of North America* field guide** as well as the **Division B and Division C Test Packets** are available from SO store at [www.soinc.org](http://www.soinc.org)

## THE COMPETITION:

### Content:

- **Taxonomic Scheme of the 2011 Official Science Olympiad Bird List is used in competition**
- **Identification, anatomy & physiology, reproduction, habitat characteristics, ecology, diet, behavior, ID calls, conservation, biogeography**

**Process Skills: observation, inferences, data and diagram analysis**

**The National (or Stated Bird) List will be used for taxonomy questions.**

**ORDERS AND FAMILIES OF BIRDS:** The bird lists are arranged by Orders and Families within the Order. The specie and common names are given for each bird within the Family.

**Learn the Order and Family characteristics and then species!!**

General tips on arrangement are: (Expect some exceptions of course.)

\*The families reflect how birds have evolved and have many distinctive features and behaviors.

\*Ocean, shore, game and predatory birds appear first, they are generally large birds.

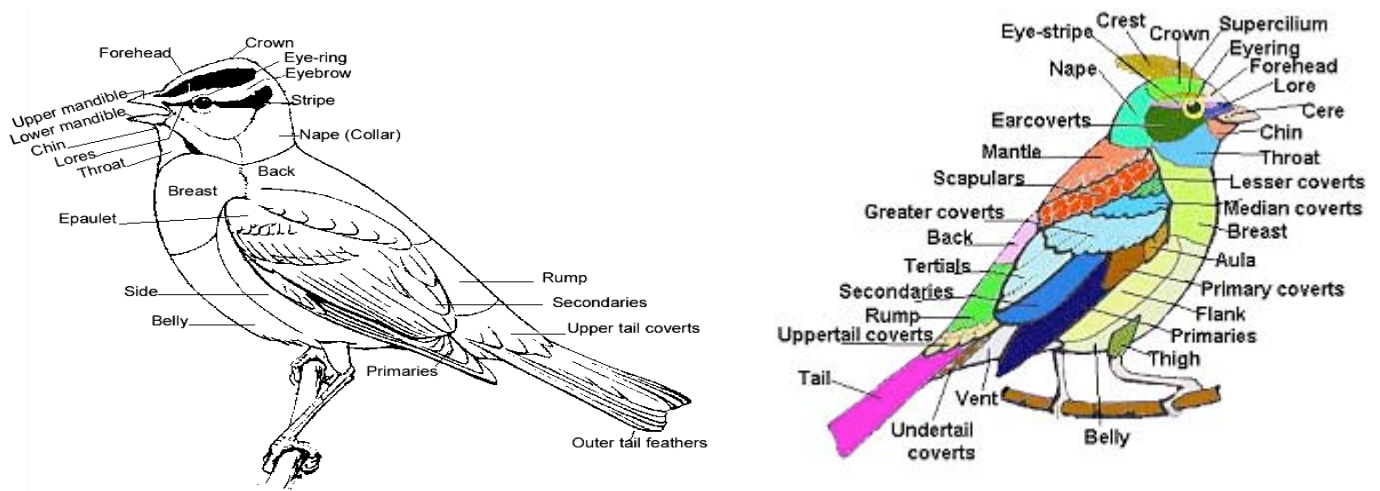
\*Next are hole-nesting birds without true songs, they are smaller.

\*Last come the song birds which are still smaller.

\*Generally the feeding habits go from eating fish and small mammals to eating seeds and insects.

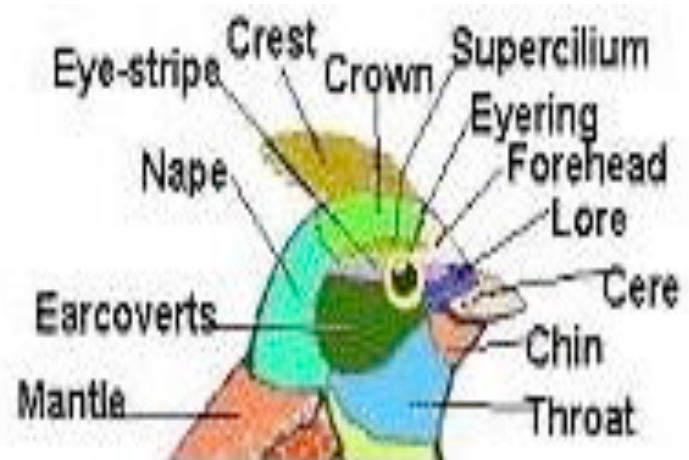
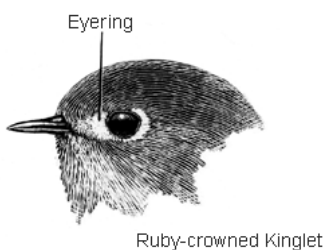
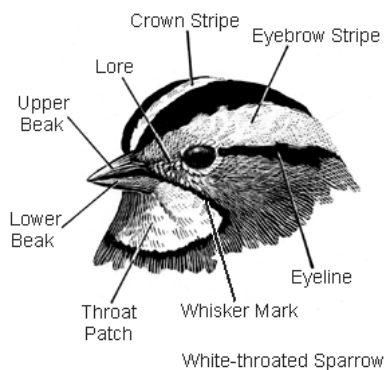
\*Special modifications in morphology allow birds to succeed in their environment. These are very helpful in identifying families, species, and their unique behaviors.

**GENERAL MORPHOLOGY:** The outline or silhouette of the bird in flight or at rest can identify many families of birds.



**PLUMAGE:** The color pattern of the feathers along the body varies. It is often unique for a species.

- \* It is usually brighter in males than females with young of both sexes resembling the female.
- \* It is usually brightest during the mating season (spring and summer for most birds).



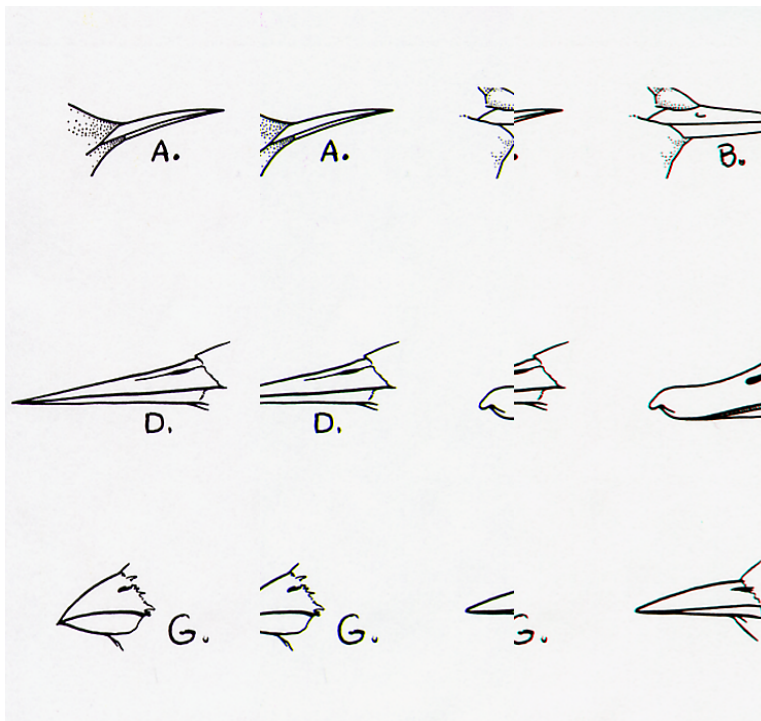
**HEAD:** Many have distinctive stripes or colored patches on their head.

- \* **Crown** = tip of the head and **Cap** = a distinctively colored crown as black-capped chickadees.
- \* **Crest** = a projection or tuft on the head often brightly colored as cardinals.
- \* **Lores** = space between eye and bill and **spectacles** = distinctive eye rings or eye stripe.
- \* Size of eye – large eyes are hints that the bird is nocturnal or feeds at night.
- \* Color of eye – they may be red, yellow, brown, black, etc.
- \* **Ear tufts** = projections near ear region as horned owls (birds do not have visible ears).
- Auricle region** = feathers covering the opening of the ears.
- \* **Chin** = the area around the bill
- \* **Throat** = the area between the bill and the breast. It may be highly brightly colored as the ruby throated humming birds.

**BILL:** The two parts are the upper and lower mandibles. Often mistakenly called a beak.

- \* **Beak** = the hooked bill of a hawk or parrot.
- \* The bill is modified for eating a specific type of food. Some common modifications are:

#### Shape of Bill (diagrams) Function



- A. probing flowers for nectar
- B. drilling into trees for insects
- C. scooping fish
- D. catching fish
- E. straining food from the water
- F. capturing prey and tearing flesh
- G. cracking seeds
- H. capturing worms and insects
- I. opening seeds from pine cones

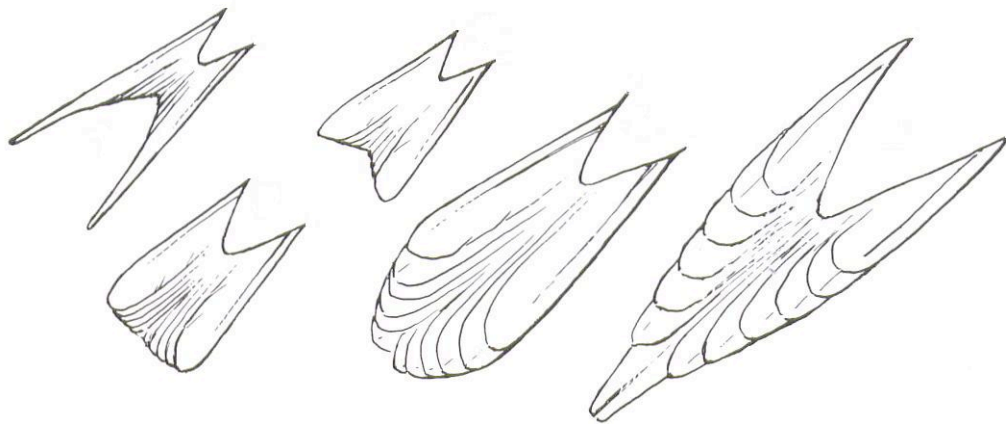
**NECK:** Most birds have short necks but some such as the crane are long.

**BODY:** Some birds are stout while others are slender bodied.

- \* **Back** = upper surface and **rump** = area closest to the tail.
- \* **Breast** (chest) = underside near head and **belly** = underside around legs.
- \* **Sides** = belly under wings.
- \* Many birds have distinctive plumage patterns but remember that stripes are head to head or lengthwise while bars are wing to wing or crosswise.

**TAIL:** The tail is used for steering and breaking during flight. It can also be used in courting displays.

- \* The shape and color pattern is useful in identification.
- \* The tail can be long or short and its shape can be square, rounded, pointed, elongated, forked or notched.



**WINGS:** Wings are used for true flight as well as gliding, balance during hovering and perching, and during courtship. Many have distinctive white or colored patches.

- \* Wings can be long or short, pointed or rounded.
- \* **Shoulder** = part of wing nearest to the body. There are two sets of flight feathers.
- \* **Primaries** = from bend outward to tip and **secondaries** = from bend toward shoulder.

**LEGS:** The length and thickness of the legs as well as the shape of the foot are clues to the way the bird lives.

- \* Some birds extend their legs during flight while others hold them under their body.
- \* The feet are modified for perching, clinging, walking or swimming.
- \* Some common modifications are:

#### Foot Shape (diagrams)



#### Function

- A. perching
- B. wading
- C. climbing or clinging
- D. swimming
- E. preying

**VOCALIZATION:** Many birds have distinctive calls and songs. They can help to identify birds not visible.

- \*Calls are short and simple to signal alarm or distress while songs are more complex and are used for ownership of feeding territory and courtship. In most species only males sing.
- \* Books and field guides attempt to put sounds into words. Many have slightly different word translations so be careful about these. Listen to the actual sounds or recordings to learn them.

**WHERE IT IS OBSERVED:**

- \*The type of ecosystem tells a lot about the types of birds living there as well as their modifications and behaviors.
- \*Common ecosystems include open ocean, sea shore, salt marsh, freshwater marsh, lakes, rivers, ponds, beaches, swamps, grasslands, deserts, deciduous forests, coniferous forest, suburban areas and city parks.

**BEHAVIOR:** What a bird is doing can tell a lot about its identity and role in its ecosystem.

- \* Is it alone or in a flock? Is it shy or social or aggressive? Where is it most of its time?
- \* How does it fly? Is it soaring, gliding, flapping or fluttering? Is there a flock flight pattern ?
- \* Is it swimming, dappling, diving, perching, walking, and/or hopping?
- \* How does it feed and what does it eat? Where does it nest? How do the young act?
- \* How does it react to other birds of its specie, other species or other animals?
- \* Does it have any unique behaviors?

**Bird Ecology – Roles of birds in the ecosystem**

- Indicators of environmental health
- Food source for humans and animals
- Flower pollinators
- Insect control – they eat mosquito larva and reduce many pests
- Disseminate seeds
- Scavengers and Cleaning Carcasses of Dead Animals
- Clean parasites off animals

**2009 - The State of the Bird     *United States of America***

Cooperative Effort of Government and Private Ornithology Agencies and Societies:

- North American Bird Conservation
- Initiative, U.S. Committee
- American Bird Conservancy
- Association of Fish and Wildlife Agencies
- Cornell Lab of Ornithology
- Klamath Bird Observatory
- National Audubon Society
- The Nature Conservancy
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

**Challenges to Bird Population health and long-term survival**

- Habitat loss
- Residential and commercial development
- Agriculture
- Energy production and mining
- Natural resource use
- Pollution
- Climate change