

Unit A: Introduction to Poultry Science

Lesson 4: External Anatomy of Ducks

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Explain general information about ducks.
2. Identify external anatomy of ducks.

Recommended Teaching Time: 1 hour

Recommended Resources: The following resources may be useful in teaching this lesson:

- A PowerPoint has been developed for use with this lesson plan.
- <http://www.worldpoultry.net/>
- <ftp://ftp.fao.org/docrep/fao/010/t0314e/t0314e.pdf>
- <http://www.poultrypages.com/>

List of Equipment, Tools, Supplies, and Facilities

Writing surface
PowerPoint Projector
PowerPoint Slides
Transparency Masters
Student Worksheets
Live Poultry - Ducks

Terms: The following terms are presented in this lesson (shown in bold italics and on PowerPoint Slide #2):

Abdomen	Nape	Alula	Tertials
Bill	Nares	Greater Coverts	Tertial Coverts
Breast	Primaries	Lesser Coverts	
Culmen	Scapulars	Marginal Coverts	
Crown	Speculum	Middle Coverts	
Eye-ring	Tail	Post Humerals	
Flanks	Tarsus	Primaries	
Mantle		Secondaries	

Interest Approach: Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Ask the students what they know about ducks. Write these facts about ducks on the board. Use this information to lead into a discussion of Objective one.

Summary of Content and Teaching Strategies

Objective 1: Explain general information about ducks.

(PowerPoint Slide #3)

- I. Ducks are birds.
 - A. Ducks are also called “Waterfowl” because they are normally found in places where there is water like ponds, streams and rivers.
 - 1. Ducks are related to Geese and Swans.
 - 2. Ducks are smaller than their relatives (swans and geese).
 - 3. Ducks also have shorter necks and wings and a stout body.

(PowerPoint Slide #4)

- B. A female duck is called a 'hen', they are identified by their very-dull, brown feathers.
 - 1. The females have dull colored feathers so that they can hide from enemies and predators.
 - 2. They can also camouflage themselves in their nests and also protect their young.
 - 3. The females also molt. They replace all their feathers and get new ones after their ducklings are hatched.
 - 4. A hen makes a loud Quack sound.

(PowerPoint Slide #5)

- C. A male duck is called a 'drake', you can usually identify the male duck by its brightly colored feathers.
 - 1. They use these colored feathers to attract the female ducks for mating.
 - 2. However, they will lose or molt their colorful feathers when the females are busy hatching the eggs.
 - a. The males will now look like the female in color and will be unable to fly temporarily.
 - b. They will molt again in early Autumn and get back their colorful feathers and be able to fly again.
 - 3. The drake has a raspy muffled call.

Use PowerPoint Slide #6 to show the students a picture of a Mallard Drake and a Mallard Hen. Have the students compare and contrast the differences between the two birds. Discuss color differences between the drakes and hens raised in Afghanistan.

(PowerPoint Slide #7)

- D. Ducks have webbed feet, which are designed for swimming.
 1. Their webbed feet act like paddles for the ducks.
 2. Because their feet are webbed, they tend to 'waddle' instead of walking straight.
 3. Ducks cannot feel the cold in their feet even when swimming in icy cold water.
 4. The reason for this is because their feet have no nerves or blood vessels in them.
 5. The webbed feet are powerful and allows the duck to swim rather fast.

Use PowerPoint Slide #8 to show the webbed feet of a duck.

(PowerPoint Slide #9)

- E. A duck has water-proof feathers.
 1. There is a special gland called the 'Preen Gland' near the ducks tail.
 2. This tiny gland produces oil which the duck uses to coat its feathers.
 3. The duck picks up the oil with its head and beak, and then smears it all over its body to make the outer feathers waterproof.
 4. Without this protective barrier, a ducks feathers would become water-logged and because they spend their whole lives around and in water, this water-proof barrier is extremely important.
 5. Beneath the water-proof coat are fluffy and soft feathers which keep the duck warm.

(PowerPoint Slide #10)

- F. Ducks keep clean by preening themselves.
 1. Ducks do this by putting their heads in funny positions and putting their beaks into their body.
 2. Ducks preen themselves very often.
 3. Preening also removes parasites, removes scales which cover newly sprouting feathers and also involves the removal of spreading oil over clean feathers.

Show PowerPoint Slide #11 of a duck preening.

(PowerPoint Slide #12)

- G. The ducks mouth is called a bill or beak.
 1. It is usually broad and flat and has rows of fine notches along the edge called 'lamellae'.
 2. The lamellae helps the duck to grip its food so that it will not slip off.
 3. However, ducks beak comes in different shapes and sizes.
 4. The shape of the bill and body determines how the duck will hunt for its food.

Use PowerPoint Slide #13 to show the students a variety of different duck bills. If you look closely at the picture in the lower right corner you can see the lamellae on the duck's bill. If possible use a live duck to show a duck's bill up close.

(PowerPoint Slide #14)

- H. Ducks are found in wetlands, marshes, ponds, rivers, lakes and oceans.
1. This is because ducks love the water.
 2. Some species of ducks migrate or travel long distances every year to breed.
 3. Ducks usually travel to warmer areas or where the water does not freeze so that they can rest and raise their young.
 4. The distance may be thousands of miles away.
 5. Ducks are found everywhere in the world except the Antarctica which is too cold for them.

(PowerPoint Slide #15)

- I. Ducks can live from 2 - 20 years, depending on species and whether they are wild ducks or ducks in captivity.
1. It's a fact that a wild duck can live 20 years or more.
 2. Domestic ducks typically live 10 - 15 years in captivity.
 3. The world record is a Mallard Drake that lived to a ripe old age of 27 years.

(PowerPoint Slide #16)

- J. Touching a duckling does not prevent the mother duck from taking care of it.
1. It is however best to leave ducklings alone so as not to scare the mother duck away or accidentally injure them.
- K. Ducks sleep with half their brains awake.
1. Ducks are more likely to sleep with one eye open when they are located on the edge of sleeping groups.
 2. Ducks can detect predators in less than a second.

(PowerPoint Slide #17)

- L. Duck eggshells have tiny holes (pores) that allow it to breathe.
1. A hen's eggs can have 7500 pores, most found at the blunt end of the egg.
 2. Respiratory gasses as well as water vapour travel through these pores allowing the egg to breathe.
- M. Baby ducks are precocial meaning they are born with their eyes wide open, with a warm layer of down and are not fully dependant on their parents for food.
1. Ducklings are ready to leave the nest within hours of hatching.

Use PowerPoint Slide #18 to show the various color of duck eggs and baby ducklings. If the students have seen baby ducklings ask them what color they were and how did they feel if they handled them.

(PowerPoint Slide #19)

- N. A 'clutch' is the total number of eggs laid by one bird during one nesting session.
1. Clutch size affected by hereditary and environmental factors.
 2. When food is abundant, birds lay more eggs.
 3. A brood is the total number of hatchlings, or ducklings in a clutch.
 4. Ducks have very good vision and they see in color.

Use PowerPoint Slide #20 to show the students a 'clutch' of eggs. Four different examples of nests are in the pictures. Have the students count the number of eggs and/or ducklings in each nest.

Objective 2: Identify External Anatomy of Ducks

(PowerPoint Slide #21)

II. The anatomy of a duck includes a study of both external and internal parts. Both can influence the way birds grow, reproduce and need to be managed.

A. The following external parts help describe the duck:

1. **Abdomen.** The abdomen is the ventral part of the bird, homologous to the human stomach region (also called the belly). It is comprised of the area between the vent and the posterior sternum. A bird will sleep with one foot tucked into its abdomen.
2. **Bill.** The hard, protruding portion of a duck's mouth, consisting of an upper beak and a lower beak.

(PowerPoint Slide #22)

3. **Breast.** The breast is the upper chest area of a duck. Underneath the breast is where the major flight muscles are located which are then attached to the wings to help the bird lift its own weight. The muscles are attached to an enlarged breastplate which is a skeletal part unique to birds.
4. **Culmen.** The ridge extending along the upper part of the bill.

(PowerPoint Slide #23)

5. **Crown.** The top of the duck's head, located between the forehead and the back of the head.
6. **Eye-ring.** A narrow ring of bare skin around the eye.
7. **Flanks.** The sides of the duck right above the legs.
8. **Mantle.** The plumage (feathers) located on the upper part of a duck's back.
9. **Nape.** The back of the neck.
10. **Nares.** The nostrils.

(PowerPoint Slide #24)

11. **Primaries.** The large flight feathers that are attached to the wing and extend beyond the duck's body.
12. **Scapulars.** A group of shoulder feathers that are located between the upper back and the primaries.
13. **Speculum.** A colorful patch on the back of the wing.
14. **Tarsus.** The straight part of a bird's foot above its toes.
15. **Tail.** The cluster of feathers closest to the duck's rear.

Use PowerPoint Slide #25 to show the external parts of the duck. A live bird can also be used if available. Copies of TM: 4-1 can also be distributed to the students or WS: 4-1 can be completed by the students as each external body part is discussed. PowerPoint Slide #26 can be used as a review by the teacher pointing to a specific body part and asking the students to raise their hand if they can identify the body part.

(PowerPoint Slide #27)

B. External Parts of a Wing.

1. **Alula.** The alula is a small joint on the bird's wing, similar to the human thumb, with three or four quill-like feathers attached. It is a necessity for low speed flight and maneuverability. The feathers function much like the slats on airplanes by basically increasing the camber of the wing and as such help the bird to land and take-off again.
2. **Greater Coverts.** The first row of feathers overlying the flight feathers, identified by the particular feathers they cover as primary, secondary, or tertial coverts.

(PowerPoint Slide #28)

3. **Lesser Coverts.** The lesser secondary coverts are the relatively short feathers overlying the median secondary coverts on the top of the wing. They are located near the shoulder and can be seen as the "first row" of feathers on the bird's wing.
4. **Marginal Coverts.** The marginal coverts are feathers overlying the base of the median secondary coverts and are also called lesser secondary coverts or shoulder. They are positioned at the top edge of the wing closest to the body of the bird.
5. **Middle Coverts.** The next row of coverts.

(PowerPoint Slide #29)

6. **Post Humerals.** Feathers attached to the humerus. They lie between the tertials and scapulars, usually molting with adjacent body feathers.
7. **Primaries.** The primaries are the flight feathers specialized for flight. They are attached to the "hand" equivalent part of the wing.
8. **Secondaries.** The secondaries are flight feathers attached to the equivalent of the human elbow. They come behind the primaries in importance and location when viewed from the outermost edge of the wing.

(PowerPoint Slide #30)

9. **Speculum.** The speculum is the brightly colored area on the wing (secondaries of the wing) on several duck species.
10. **Tertials.** The tertials are quill feathers that are attached to the basal joint of the wing of a bird. They are located next to the secondaries.
11. **Tertial Coverts.** Those greater coverts that overlie the tertials. Designated separately here because they are sexually dimorphic in adults of several species and usually molt with the adjacent body feathers.

Use PowerPoint Slide #31 to show the external parts of a duck's wing. A live bird can also be used if available. Copies of TM: 4-2 can also be distributed to the students or WS: 4-2 can be completed by the students as each part of the wing is discussed. PowerPoint Slide #32 can be used as a review by the teacher pointing to a specific part of the wing and asking the students to raise their hand if they can identify the wing part.

Review/Summary: Use the student learning objectives to summarize the lesson. There are also Review Questions on PowerPoint Slide #33. Have students explain the content associated with each objective. If possible bring a couple of ducks to class or take the students outside to view a Drake and hen to discuss the different characteristics about ducks and to review their external anatomy.

Application: Application can involve the student activity in identifying external parts of live ducks and or completing WS 4-1 and WS 4-2.

Evaluation: Evaluation should focus on student achievement of this lesson's objectives. Use WS: 4-1 and WS: 4-2 as an evaluation or ask the students to identify the external anatomy of the duck. A sample written test is attached.

Answers to Sample Test:

Part One: Matching

1. B
2. I
3. F
4. D
5. G
6. A
7. H
8. C
9. E

Part Two: Completion

10. Eye-ring
11. Bill
12. Nares
13. Breast
14. Flanks
15. Abdomen
16. Tarsus
17. Speculum
18. Tail
19. Scapulars
20. Mantle

Test

Lesson A-4: External Anatomy of Ducks

Part One: Matching

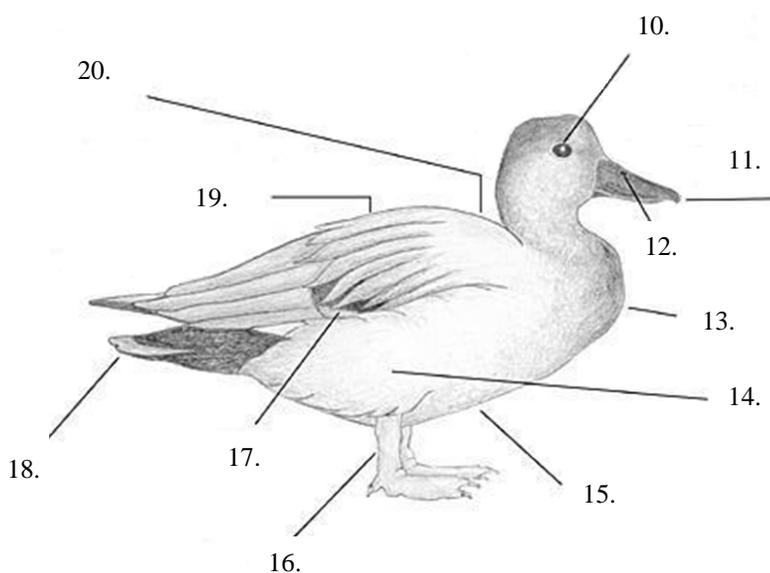
Instructions: Match the term with the correct response. Write the letter of the term by the definition.

- | | | |
|--------------|--------------|--------------|
| a. Waterfowl | b. Preening | c. Bill |
| d. Drake | e. Hen | f. Clutch |
| g. Nares | h. Primaries | i. Ducklings |

- ___ 1. Term used when ducks are cleaning themselves
- ___ 2. Name used for baby ducks.
- ___ 3. Total number of eggs laid by one duck during the nesting season.
- ___ 4. Name given to a male duck.
- ___ 5. .Another term for nostrils.
- ___ 6. Another name for ducks.
- ___ 7. These are known as the flight feathers specialized for flight.
- ___ 8. .The hard, protruding portion of a duck’s mouth.
- ___ 9. Name given to a female duck.

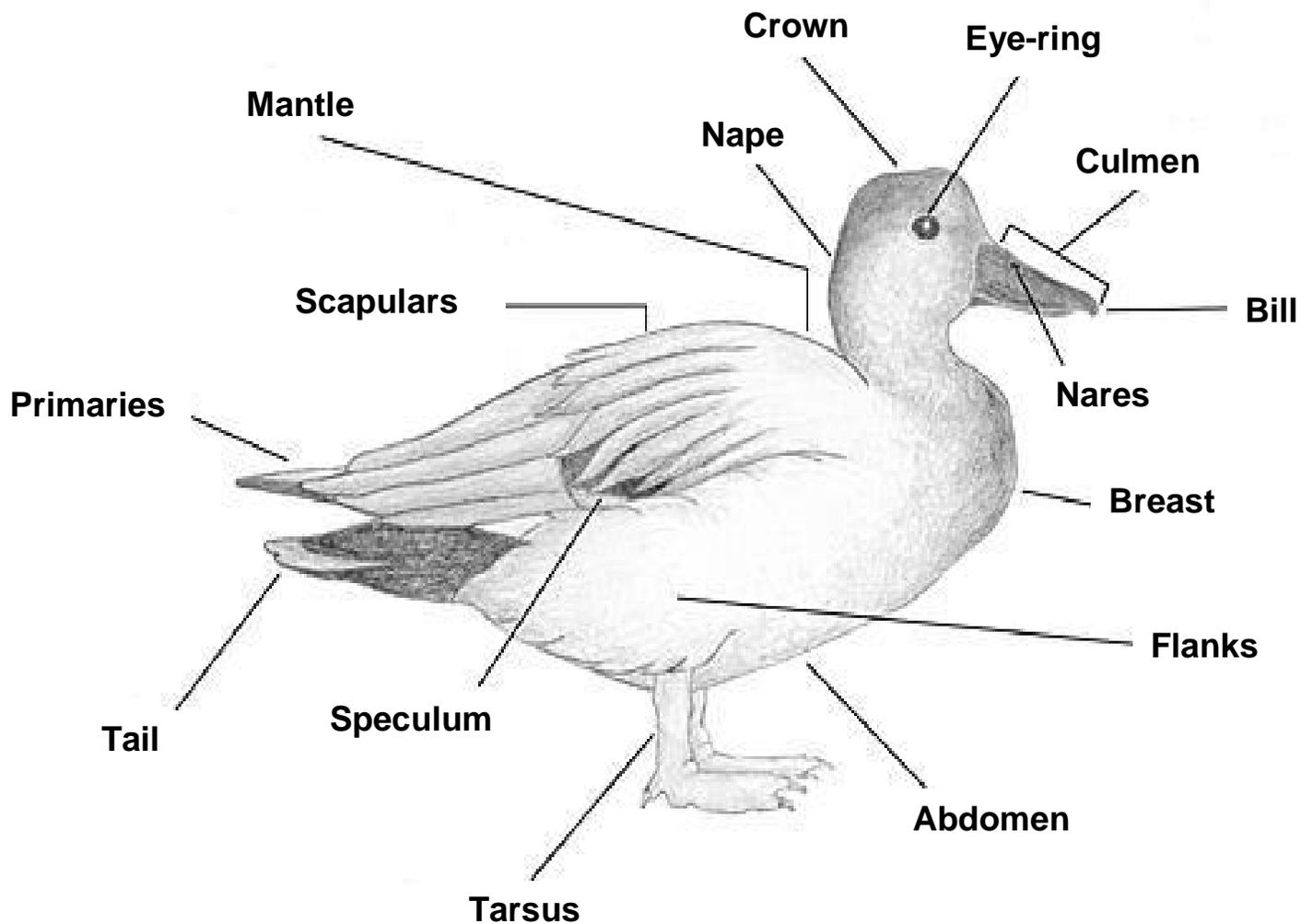
Part Two: Fill in the Blank

Instructions: Provide the word or words to correctly identify the external anatomy part of the Turkey.



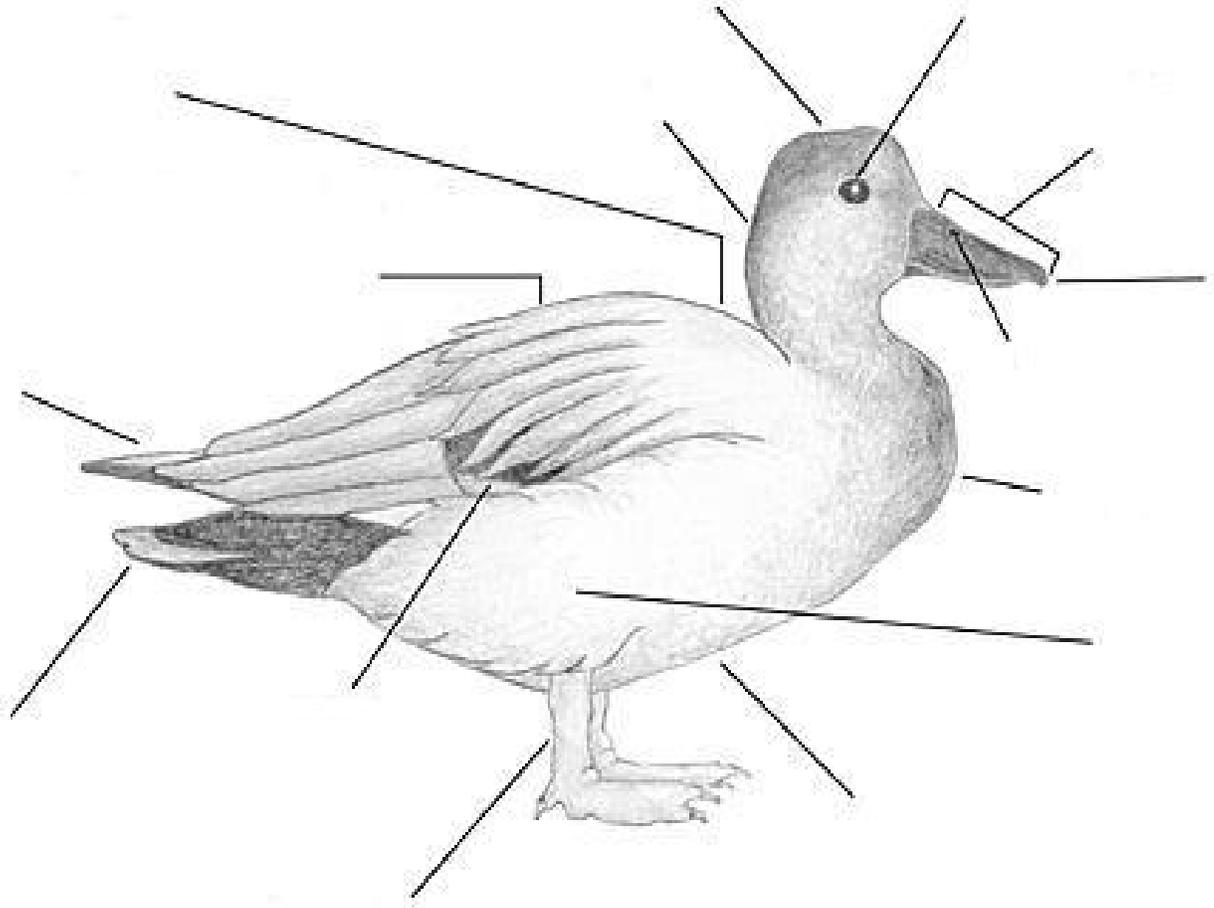
- 10. _____
- 11. _____
- 12. _____
- 13. _____
- 14. _____
- 15. _____
- 16. _____
- 17. _____
- 18. _____
- 19. _____
- 20. _____

EXTERNAL PARTS OF A DUCK



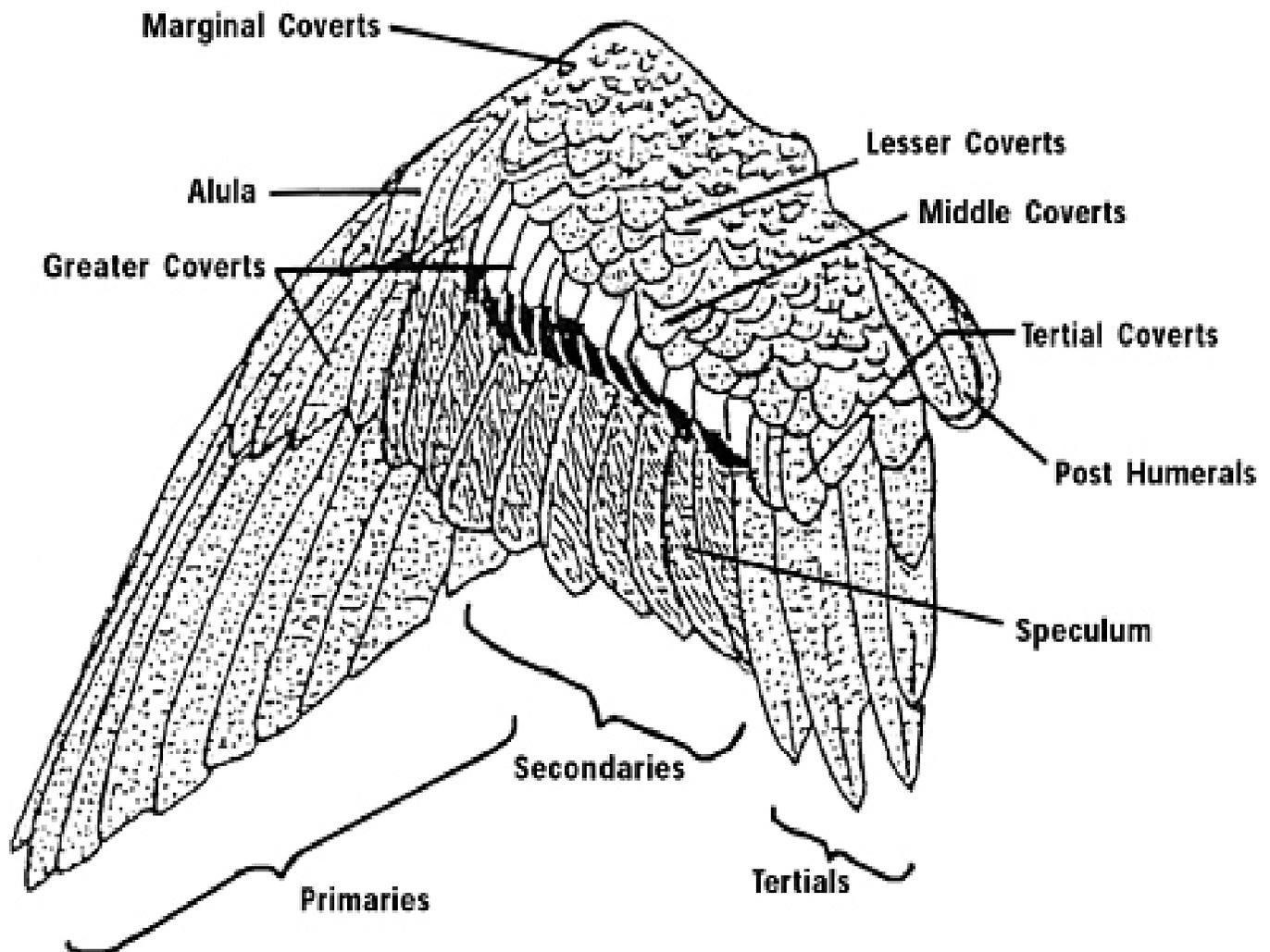
WS: 4-1

EXTERNAL PARTS OF A DUCK



TM: 4-2

EXTERNAL PARTS OF A WING



WS: 4-2

EXTERNAL PARTS OF A WING

